Overweight, obesity and weight management

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Overweight, Obesity & Weight Management

By

Julie Alexander-Cooper

A Doctoral Thesis
Submitted in partial fulfilment of the requirements for the award of
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2009

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Abstract

There is significant research evidence to demonstrate that physical activity can produce weight loss, weight maintenance and positive health effects in the overweight and obese. However, it can be difficult to get this population sufficiently active to achieve these benefits. This thesis reports on a series of studies that explore physical activity used alone and in conjunction with other weight management strategies. The primary aim was to gain a greater understanding about how weight loss and continued long term weight maintenance could be achieved. The first study was a systematic review on the dose of physical activity associated with weight loss and weight maintenance, it investigated if the current treatment dose was appropriate. The findings correlated with the recently published new CDC guidelines. In the second study, semi-structured interviews were employed to explore the attitudes and experiences of overweight and obese individuals towards weight loss and health. It was reported by participants that they prefer autonomy and personalisation to tailor weight loss and health strategies to their own lifestyles. It was also found that their knowledge base was confused and outdated. In the final study, a sample of overweight and obese adults took part in participatory action research with the aim to design and assess their own weight management programme. A multi-strategy weight management programme emerged that could be tailored to individual lifestyle. Tips and ideas were also devised to aid weight maintenance. This thesis found that the overweight and obese appeared to favour a multi-strategy weight management intervention that could be incorporated, personalised and tailored to their everyday lives. Physical activity (that was enjoyable, lifestyle or accomplished through accumulated bouts), dietary changes, education/improved knowledge base, support and weight monitoring all appeared to be important factors to aid weight management.

KEY WORDS: Physical Activity, Exercise, Overweight, Obesity, Weight Loss, Weight Maintenance, Health, Dose Response, Lifestyle, Diet
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I would like to thank everyone who participated in the research in this thesis. The research journey was an emotional one for all involved. I was impressed by the participants' commitment and openness, especially the individuals that gave their time, energy and support to participate in the Action Research study.

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This thesis is dedicated to my cousin Ellen Hodgekins who tragically died prematurely.
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1.0 Introduction

The global incidence of overweight and obesity has increased rapidly over the last 15 years. The World Health Organisation (WHO) Report in 2000 forecast that overweight and obesity would increase by 50% by 2015. The WHO estimates that there are around 1 billion adults globally with a BMI above the lower boundary of the overweight classification which is 25kg/m² (World Health Organisation, 2005) and this estimate does not account for the Asian-Pacific population whose increased health risk begins at the lower overweight classification measure of BMI>23kg/m² (Weisell, 2002; World Health Organisation, 2005).

The UK has the highest rate of obesity in the European Union and it is estimated that at least 1/3 of adults, 1/5 of boys and 1/3 of girls will be obese by 2020 if the current trend continues (National Obesity Forum, 2005). The economic burden from medical intervention to treat obesity-related health disorders is likely to parallel overweight and obesity incidence in the UK and globally, which could create negative financial ramifications for all health services concerned (Fry & Finley, 2005).

The increase of obesity within the population, however, is not purely an economic problem, but a human and social one too. Numerous psychological and physiological disorders increase the chance of morbidity and reduce the quality of life for overweight and obese individuals (Reilly et al., 2003). The overweight and obese have an increased risk of metabolic syndrome, type 2 diabetes, coronary heart disease, hypertension, cancer, renal failure and depression (Must & Anderson, 2003; Solomon & Manson, 1997), each one of which can reduce longevity and quality of life.

Regular participation in physical activity has been found to produce positive weight loss and weight maintenance effects in the overweight and obese. However, research has highlighted that the general population, particularly the overweight and
obese, do not undertake sufficient physical activity to produce weight loss and weight management (Health Survey for England 2004, 2005; The National Diet and Nutrition Survey, 2004). To date, little research has been conducted to determine whether the overweight and obese population know how much physical activity they are required to do to produce a weight loss or weight maintenance effect or how they feel about using physical activity as a weight loss and weight management tool.

The purpose of this thesis was to investigate if and how physical activity could be used effectively within a healthy weight loss and weight maintenance programme for the overweight (BMI>25kg/m²) and obese (BMI>30kg/m²) (World Health Organisation, 2005). The aim was to conduct exploratory research which was not bound to a particular theoretical perspective or standpoint. It was not believed appropriate to imbed this thesis in one theoretical process because the aim was to gain wider views on the experiences and opinions of people who were overweight and obese.

If physical activity is to be used effectively for weight loss and weight maintenance, then it is important for the overweight and obese to know how much, what type and what intensity they should be doing. These objectives directed the explorations and purpose of the three studies conducted in this thesis.

Study 1 (Chapter Two) investigated the dose of physical activity required to produce weight loss and weight maintenance in the overweight and obese. After extensive literature searches I found two systematic reviews that had analysed the effect of physical activity on weight loss and weight maintenance (Fogelholm & Kukkonen-Harjula, 2000; Ross & Janssen, 2001). I considered that it had been a number of years since these reviews had been conducted hence I aimed to determine whether the recommended dose of physical activity for weight loss and weight maintenance needed to be revised. Also, neither of the reviews could determine if the physical activity treatment dose should be different dependant on gender, age or ethnicity. I aimed to find
out if physical activity treatment doses for weight loss and weight maintenance needed to be revised and also if different treatment doses should be recommended dependant on gender, age and ethnicity. I conducted a systematic review of papers published between 2000 and 2006 that had investigated the use of at least one form of physical activity for weight loss and weight maintenance.

Study 1 established that physical activity could be used to produce weight loss and weight maintenance. However was physical activity a weight management strategy that the overweight and obese population were happy to employ? A previous systematic review established that obesity correlated with reduced physically activity (Trost et al., 2002). So was physical activity an unpopular weight management strategy with this population? Or were there other determinants that were affecting the exercise behaviour of the overweight and obese? To find answers to these questions I conducted a review of literature to determine what weight management strategies were popular with this population and to find out what were the overweight and obese person’s views towards physical activity and other strategies to aid weight management. Previous research studies could indicate strategies that the overweight and obese had found to aid weight management (Bidgood & Buckroyd, 2005; Byrne, Whitehead, & Breen, 2003; Cioffi, 2002; Kayman, Bruvold, & Stern, 1990; Jeffery et al., 2004; Klem, Wing, Lang, McGuire, & Hill, 2000), however I could find no studies that asked this population their opinions on physical activity as a weight management strategy.

To develop a greater understanding about the overweight and obese population’s feelings towards strategies to aid weight management, Study 2 (Chapter Three) explored the attitudes, experiences and beliefs of a sample of overweight and obese men and women with regard to physical activity and diet for weight loss and health. I aimed to determine which strategies the adults deemed to be important and achievable tools to accomplish weight and health management. I also aimed to discover information
about their knowledge base and attitudes towards the health and weight loss processes they had experienced. I planned to explore: weight loss strategies they had previously used; feelings towards food and physical activity; any barriers that prevented them from participating in sufficient physical activity to produce weight loss and weight maintenance effects; where they preferred to access information and help; who they sought support from and their thoughts/opinions on physical activity for weight loss, health and weight management.

After conducting the first two studies, my third study (Chapter Four) aimed to find out what a weight management programme would look like if the overweight and obese designed it and what strategies they would choose to include. This study planned to determine what strategies and influences affected weight loss and weight maintenance. Key questions included: what forms of physical activity the overweight and obese were happy to undertake (if any) to produce weight loss and weight maintenance effects; if barriers prevented participation in physical activity; what other weight management strategies they liked to implement and how important autonomy and personalisation of strategies were in a weight management programme.

Finally, in Chapter Five, I draw together the findings from all three studies to determine the significance of physical activity as a weight loss and weight maintenance tool. I also highlight other strategies and factors that appeared to positively or negatively affect weight loss and ultimately, long term weight management in the overweight and obese. In this chapter I discuss any similarities or differences between findings from all three research studies and previous literature, I then make my conclusions and recommendations for future research. The term weight management was used throughout the thesis to relate to all aspects of weight related behaviour unless there was a need to use a more specific alternative such as weight loss or weight maintenance.
2.0 Study One: Physical Activity for Weight Loss and Maintenance in the Overweight and Obese – A Systematic Review

2.1 The Purpose of This Review

The prevalence of obesity in the UK has nearly trebled since 1980, with nearly two thirds of men and over half of women classified as either overweight or obese by 2001 (Sprotson & Primatesta, 2003). Similar trends are evident throughout the western world (CDC, 2008; Parliamentary Library, 2008). To be overweight or obese increases individual risk to an assortment of physiological and psychological health disorders (Mulvihill & Quigley, 2003).

Research studies analysing the effects of physical activity on the overweight and obese demonstrate that health benefits can be derived that help to improve quality and longevity of life (Donnelly et al., 2004; Jakicic et al., 2001; Pate et al., 1995; Poirer & Despres, 2001; Ross et al., 2000; Saris et al., 2003). Studies researching the effect of weight loss on the overweight and obese have found that a 10% reduction in body weight can reduce the risk of obesity related diseases (Oster, Thompson, Edelsberg, Bird, & Colditz, 1999).

To be overweight or obese can increase the risk to mental health disorders such as depression, anxiety and stress. To lose weight and maintain weight loss can produce significant improvement to individual lives by increasing self-worth, self-esteem and self-confidence (Myers & Rosen, 1999).

The purpose of this study was to determine what the physical activity dose recommendations for weight loss and weight maintenance should be for the overweight and obese. At the time this review was conducted the guideline for physical activity participation to maintain overall health was 30 minutes of moderate intensity activity...
most days of the week (Pate et al., 2005). This guideline was promoted as a measure to protect the general population against debilitating health disorders and premature morbidity, including obesity related health disorders. However, for overweight or obese individuals the American College of Sports Medicine (ACSM) and the Centers for Disease Control and Prevention (CDC) recommended 1-1.5 hrs of daily moderate intensity physical activity to produce weight loss and/or weight maintenance (ACSM, 2001; CDC, 2003), a significantly higher recommendation of physical activity than that required for health maintenance (Weight-control Information Network, 2006).

Research has highlighted that the sedentary, overweight and obese population find it difficult to habitually achieve the 30 minutes of physical activity for health guideline (Food Standards Agency, 2008; United States Department of Health & Human Studies, 2008), so it is reasonable to assume that this population may have difficulty achieving the guidelines recommended for weight loss and weight maintenance.

Although physical activity appears to be a difficult or unpopular health strategy for the overweight and obese to incorporate into their everyday lives, it has been found to be an important component to incorporate into a weight loss and weight maintenance programme (Kirk et al., 2003; Slentz et al., 2004). Physical activity has been found to provide physiological and psychological benefits that can not be achieved through using dietary weight loss strategies alone (Della Valle, Grimaldi & Farinara, 2008; Khan et al., 2001; Kruk, 2007; Warburton, Nicol & Bredin, 2006). So because physical activity has been found to be a multi-beneficial health and weight management strategy it is important to fully understand if the present physical activity dose recommendations for weight loss and weight maintenance should remain.

Two systematic reviews were found that analysed the effects of physical activity on weight loss and weight maintenance (Fogelholm & Kukkonen-Harjula, 2000; Ross & Janssen, 2001). The first review found that 1500-2000 kcal per week of physical activity
was associated with improved weight maintenance (Fogelholm & Kukkonen-Harjula, 2000). The second review found that 3000-3500 kcal per week of physical activity would produce healthy weight loss (Ross & Janssen, 2001). Each of these reviews provided valuable treatment guideline recommendations for the management of obesity. However there are a number of reasons why it is important to re-review the dose response effect of physical activity on weight loss and maintenance in the overweight and obese.

Firstly, a number of years have lapsed since the first two reviews were published, and further evidence may have emerged. Secondly, the methodological quality of the papers analysed in both reviews was variable. Many of studies reviewed were non-randomised or observational. Also many of the studies used sample group sizes with insufficient power or did not include intention-to-treat analysis. The aforementioned types of design methodology are believed to reduce reliability in the effectiveness of treatments tested and reduce protection against research bias. Thirdly, the previous reviews had insufficient data to establish if gender or age influenced/affected the relationship between physical activity and weight loss/weight maintenance. Finally, the previous reviews predominantly studied the dose response effect of physical activity on Western non-Asian-Pacific adult populations.

The physical activity recommendations in the previous two reviews were presented as energy expenditure (kcal) per week. This form of recommendation is probably impractical and difficult for the general population to understand. Instead physical activity recommendations that are portrayed in minutes/hours per week and intensity level may be easier for people to understand. This study aimed to provide clear physical activity guidelines (the amount of time and intensity level) that were easy to understand and useable for the general public.

The first aim of this review was to determine whether the physical activity recommendations for weight loss and weight maintenance need to be revised. The
second aim was to clarify whether clear guidelines on the duration and intensity of physical activity to produce weight loss and maintenance outcomes can be personalised to gender, age, ethnicity and weight classification.

The main objectives of this systematic review were:

- To determine if the present US physical activity dose response recommendations for weight loss and weight maintenance should remain or whether they need to be revised

- To identify whether the dose response recommendations of physical activity for weight loss and weight maintenance may differ depending on age, gender, ethnicity or weight classification (overweight/obese)

2.2 Methodology

2.2.1 Literature Search

The search strategy was based on words and MeSH terms relating to weight loss and weight maintenance (e.g. weight loss, weight maintenance, weight management) physical activity (e.g. physical activity, exercise, lifestyle activity) and weight status (e.g. overweight, obese, obesity). Search terms were tailored to each database. Typical search terms included: physical activity, lifestyle activity, dose response, energy expenditure, intensity, overweight, obesity, weight loss, weight maintenance, exercise, walking, aerobic, resistance training and systematic reviews.

Literature searches were conducted using the following databases: Ante (CSA Illumina), ArticleFirst, ASSIA, IBSS, Medline, SPORTDiscus, Zetoc, SOSiG, WorldCat
and Biological Sciences, Web of Science and Pubmed. Searches were also conducted through the British Library, the Association for the Study of Obesity and the Obesity Taskforce. All searches were performed from January 2000 to the most recently published papers in 2006.

Hand searches were conducted to source any further papers from the following journals: International Journal of Obesity, Obesity Reviews and Medicine and Science in Sports and Exercise. These journals were chosen because they had emerged frequently as research sources during the database searches. Reference lists of included papers were scanned to identify further papers that could potentially be included in this review.

2.2.2 Selection of Studies for Inclusion

The search strategy resulted in 3267 titles, which were initially screened for relevance. After the initial screening, 289 titles and abstracts were scanned by one reviewer for relevance against the inclusion and exclusion criteria outlined in section 2.2.3. Studies that did not meet the inclusion criteria were rejected. All relevant full papers were retrieved and analysed. This process was checked by a second researcher and any disagreements were resolved through discussion.

2.2.3 Selection and Inclusion Criteria

Selection and inclusion criteria for articles to be included in this review were:

- Included male and female subjects aged 18 years and over
- Included participants with a BMI>23kg/m² for Asia-Pacific populations or a BMI>25kg/m² for the general population
- Studies that assessed the dose response of exercise and physical activity on weight loss and weight maintenance, or intervention studies that included...
physical activity as a singular or combined treatment for weight loss and weight maintenance

- Papers published in the English language, consequently excluding foreign language articles, unpublished papers, abstracts, posters, theses, dissertations, conference proceedings and grey literature

2.2.4 Data Extraction

The data extraction format followed Centre for Reviews and Dissemination (CRD) guidance (NHS, 2001). Data extraction tables were adapted from the tables used in the previous two reviews (Fogelholm & Kukkonen-Harjula, 2000; Ross & Janssen, 2001). These tables provided clear instructions/decision rules about coding data that aided data synthesis. The tables were initially piloted to identify data that were missing or was not needed. After the final tables were designed, the papers included in this review were read in full and data were extracted. Data detailing participants, study design, exercise prescription, interventions, intention-to-treat, outcome measures and results were recorded and tabled (Tables 2.1-2.5). All work was reviewed and checked by a second researcher to reduce bias and maximise internal validity (Clarke & Oxman, 2000).

2.2.5 Quality Assessment

The quality of the studies included in this review was assessed by identifying whether one or more of the following components (deemed important to minimize research bias) were incorporated in each study’s design: randomization, intention-to-treat, allocation concealment and blinding of outcome assessment. Methodological quality was assessed and studies were included that could reflect internal validity,
whereby a study's results were deemed to be 'true' and unbiased and external validity, whereby a study's results could be made applicable and generalised outside of the study to the targeted population (the overweight and obese).

2.2.6 Data Analysis

During the data analysis process the papers were examined and it was determined that the dose response effect of physical activity on weight could be divided into three analysis groups: the effect of physical activity on weight loss, the effect of physical activity with diet on weight loss and the effect of physical activity on weight maintenance. This method enabled the examination of the dose response effect of physical activity used alone on weight loss and weight maintenance and if this was different when used in conjunction with dietary treatment.

To compare the effect of physical activity on weight loss or weight maintenance between the different studies, physical activity energy expenditure from each study was calculated from minutes and intensity. The energy expenditure calculation used was 5kcal per minute for low intensity activity, 7.5kcal per minute for moderate intensity activity and 10kcal per minute for vigorous intensity activity (Ainsworth et al., 2000). During the data analysis process the effect of age, gender, ethnicity, exercise duration, exercise intensity and exercise type on weight loss and weight maintenance was ascertained.

2.3 Results

After systematically searching for the papers that fitted the inclusion criteria sixteen papers were reviewed (see Table 2.1 for a list of papers). Some of the studies assessed exercise alone while other studies assessed the effect of physical activity with
diet and other weight loss and maintenance strategies. During the analysis process the following results were compiled.

2.3.1 Study and Participant Characteristics

Tables 2.1-2.5 detail the study and participant characteristics. Eleven of the sixteen studies were randomised control trials (RCT), four studies were randomised trials and one study was a non-randomised pre test/ post test study. Seven studies included overweight and obese women (Brill et al., 2002; Irwin et al., 2003; Jakicic et al., 2002; Jakicic et al., 2003; Schmidt et al., 2001; Sykes et al. 2004; Villani et al. 2000), four studies included overweight and obese men (Borg et al., 2002; Demling & DeSanti, 2000; Ross et al., 2000; van Aggel-Leijssen et al., 2001) and five studies included overweight and obese men and women (Anderson et al., 2002; Deibert et al., 2004; Jeffery et al., 2003, Kirk et al., 2003 and Slentz et al., 2004).

Five studies tested the effect of physical activity with dietary intervention and behavior therapy (Andersen et al., 2002; Borg et al., 2002; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003), four studies tested physical activity with dietary intervention (Brill et al., 2002; Ross et al., 2000; Schmidt et al., 2001; & van Aggel-Leijssen et al., 2002), five studies tested the effect of physical activity alone (Deibert et al., 2002; Irwin et al., 2003; Kirk et al., 2003; Slentz et al., 2004; Sykes, et al., 2004), two studies tested exercise with dietary supplement (Villani et al. 2000) and dietary intervention (Demling & DeSanti, 2000).

Physical activity interventions lasted from 8 to 12 weeks for eight studies (Andersen et al., 2002; Brill et al, 2002; Demling & DeSanti, 2000; Ross et al., 2000; Schmidt et al., 2001; Sykes et al. 2004; van Aggel-Leijssen et al., 2001; Villani et al. 2000) and 5 to 18 months for eight studies (Borg et al., 2002; Deibert et al., 2004; Irwin
et al., 2003; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; Kirk et al., 2003; Slentz et al., 2004). All of the studies tested different forms of aerobic exercise and one study also tested aerobic against resistance exercise (Borg et al., 2002). Physical activity treatments included treadmill and lifestyle walking, jogging, cycling, water aerobics and resistance training.

2.3.2 Methodological Quality

The methodological features of the studies included in this review can be found in Table 3. Overall, the 16 studies were of reasonably high effectiveness quality. All 16 studies included one or more of the following quality assurance components: randomised control trial design, randomisation, experimental research design, blinding, double-blinding and the inclusion of intention to treat analysis. These components are believed to protect against biases and increase the validity (internal validity), applicability and generalisability (external validity) of research findings (NHS Centre for Reviews and Dissemination, 2001).

However, a number of the studies in this review did have methodological limitations. Twelve of the studies failed to state whether the use of concealment allocation was employed leaving each study vulnerable to possible researcher/participant manipulation and bias (Andersen et al., 2002; Borg et al., 2002; Deibert et al., 2004; Demling & DeSanti, 2000; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004; Sykes et al. 2004; van Aggel-Leijssen et al., 2001). Six of the 16 studies stated that intention to treat analysis was conducted (Borg et al., 2002; Brill et al., 2002; Deibert et al., 2004; Demling & DeSanti, 2000; Irwin et al., 2003; Jakicic et al., 2003). However, the remaining 10 studies did not state whether they had employed intention to treat analysis which
increased the possibility of attrition bias (Andersen et al., 2002; Jakicic et al., 2002; Jeffery et al., 2003; Kirk et al., 2003; Ross et al., 2000; Schmidt et al., 2001; Slentz et al., 2004; Sykes et al., 2004; van Aggel-Leijssen et al., 2001; Villani et al., 2000).

Nine of the sixteen studies results (Andersen et al., 2002; Borg et al., 2002; Brill et al., 2002; Irwin et al., 2003; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; Sykes et al., 2004; Villani et al., 2000) were based on self-reported physical activity. Hence it is difficult to know if the reporting was correct, some of the participants may have over or under reported duration and intensity of physical activity.

2.3.3 Outcomes

From the sixteen papers found and reviewed, six papers (Irwin et al., 2003; Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004; Sykes et al., 2004; Villani et al., 2000) analysed the dose effect of physical activity on weight loss in the overweight and obese (Table 2.1), nine papers (Andersen et al., 2002; Brill et al., 2002; Deibert et al., 2004; Demling & DeSanti, 2000; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; van Aggel-Leijssen et al., 2001) identified the dose response effect of carefully controlled doses of physical activity with diet intervention on weight loss in the overweight and obese (Table 2.3) and one study (Borg, Kukkonen-Harjula, Fogelholm, & Pasanen, 2002) analysed the dose effect of physical activity on weight maintenance (Table 2.5). Two of the sixteen papers (Kirk et al., 2003; Slentz et al., 2004) also provided a follow up phase that assessed the effect of physical activity on weight maintenance and so were included in the weight maintenance analysis (Table 2.5). None of the sixteen papers provided sufficient data to assess the treatment dose of physical activity required to promote weight loss or maintenance dependant on weight classification.
2.3.3.1 Dose Response of Physical Activity on Weight Loss

Analysis of methodological design found that all six studies (Irwin et al., 2003; Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004; Sykes et al. 2004; Villani et al. 2000) were either randomised control trials (RCT) or randomised trials (RT). In three of the six studies participants were supervised during physical activity performance (Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004) and in the other three studies participants were unsupervised (Irwin et al., 2003; Sykes et al. 2004; Villani et al. 2000).

Study length from baseline to completion ranged from eight weeks to fourteen months. Three studies included a physical activity ramping phase ranging from eight weeks to six months (Irwin et al., 2003; Kirk et al., 2003; Slentz et al., 2004). The ramping phase is a period of time in which study participants are introduced to the physical activity that is going to be tested. Participants begin by training at a lower duration and intensity, which is gradually increased until they reach the level at which the researchers wish to test.

It was found that five of the six studies monitored the adherence of participants to the prescribed physical activity. Adherence levels ranged from 56% - 100% (Table 2.4). One study did not report programme adherence of participants (Irwin et al., 2003). Four of the six studies specified that participants were sedentary or not participating in regular physical activity at baseline (Irwin et al., 2003; Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004). Two studies did not stipulate or assess participants’ physical activity habits at baseline (Sykes et al., 2004; Villani et al., 2000).

Methods used to monitor intensity, duration and energy expenditure of physical activity within studies were varied. Three studies used supervisors to monitor physical activity (Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004). The other physical activity monitoring methods included the use of heart rate monitors, exercise machines,
oxygen consumption and exercise records. All of the studies used anthropometric measurements to collect data to determine how physical activity affected weight loss.

The age of participants ranged from 19-73 years. Three studies were conducted in the USA, one in Singapore, one in Australia and one in Canada (Table 2.1). Three studies included women only (Irwin et al., 2003; Sykes et al., 2004; Villani et al., 2000), one study included men only (Ross et al., 2000) and two studies included both men and women (Kirk et al., 2003; Slentz et al., 2004).

Five of the six studies (Table 2.2) found that the prescribed dose of physical activity tested had a positive effect on weight loss in the overweight and obese (Irwin et al., 2003; Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004; Sykes et al., 2004). The sixth study did not find the treatment dose of physical activity to be effective in producing weight loss in its sample group (Villani et al., 2000). The difference between the five effective treatments and the one non-effective treatment appeared to be that the effective treatments incorporated a variety of different physical activities and supervision, while in the non-effective treatment participants self-reported their physical activity and did not have physical activity variety or supervision. Lack of supervision and physical activity variety may have de-motivated study participants and participants may not have completed sufficient exercise to induce weight loss.

Physiologically, moderate intensity aerobic activity was found to produce fat loss (with no lean body mass loss) and reductions in body weight (BW), body mass index (BMI), waist circumference (WC), waist to hip ratio (WHR) and % body fat (BF) (Irwin et al., 2003; Ross et al., 2000; Sykes et al., 2004). However, no differences were found in lean body mass between the control group and participants performing moderate intensity aerobic activity (Slentz et al., 2004). While 120 minutes of moderate intensity walking activity was found to have no significant effect on body weight, fat free mass, fat
<table>
<thead>
<tr>
<th>Year</th>
<th>Author</th>
<th>Study</th>
<th>Exercise Prescription</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>Jeffery</td>
<td>16mth Randomised Behavioural Therapy with EE of 1000kcal/wk</td>
<td>Walking to achieve an energy expenditure of 2500kcal per week</td>
</tr>
<tr>
<td>2002</td>
<td>Andersen</td>
<td>12wk R. Behaviour therapy, exercise and self selected diet intervention.</td>
<td>G1=AER at MI 3-4x5mins/wk</td>
</tr>
<tr>
<td>2002</td>
<td>Bond Brill</td>
<td>12wk. RCT. LED and walking</td>
<td>DE1=30mins5d/wk</td>
</tr>
<tr>
<td>2002</td>
<td>Borg</td>
<td>2nd VLED &amp; 6mth WM. Walking &amp; running.</td>
<td>EE 400kcal/pls (est.) 3x45mins walk at 60-70%VO2 max</td>
</tr>
<tr>
<td>2002</td>
<td>Delbert</td>
<td>6mth RCT. 3 treatment groups tested.</td>
<td>2 x 80min/wk guided PA</td>
</tr>
<tr>
<td>2000</td>
<td>Damling</td>
<td>12wk RCT</td>
<td>4x30-35min/(120-140min/wk)</td>
</tr>
<tr>
<td>2003</td>
<td>Irwin</td>
<td>12th RCT. Exercise facility &amp; home based exercise with</td>
<td>5x45min/d/wk</td>
</tr>
<tr>
<td>2003</td>
<td>Jakicic</td>
<td>16th Behavioural WL. LED and exercise</td>
<td>TW, SB, ST, W, AER, B</td>
</tr>
<tr>
<td>2003</td>
<td>Jakicic</td>
<td>12th University based behaviour and exercise RT.</td>
<td>Home and facility based</td>
</tr>
<tr>
<td>2003</td>
<td>Jeffery</td>
<td>16th Randomised Behavioural Therapy with EE of 1000kcal/wk</td>
<td>Leisure time PA</td>
</tr>
<tr>
<td>2003</td>
<td>Kirk</td>
<td>16mth WL 10mth WM RCT exercise</td>
<td>Increased PA to 200min/wk by wk 9 and maintained</td>
</tr>
<tr>
<td>2000</td>
<td>Ross</td>
<td>3mth RCT. 2 point doubly labelled water method. 1 of 4 groups.</td>
<td>Walking or jogging on treadmill to 80%MHR</td>
</tr>
<tr>
<td>2000</td>
<td>Schmidt</td>
<td>12wk diet and exercise control trial. Self monitored</td>
<td>G1x10min/day</td>
</tr>
<tr>
<td>2001</td>
<td>Slientz</td>
<td>8mth RCT. 3 separate exercise groups.</td>
<td>Walking and jogging</td>
</tr>
<tr>
<td>2003</td>
<td>Sykes</td>
<td>8wk RCT. Exercise induced WL Mean WL=</td>
<td>Walking on T &amp; Cycling on SC</td>
</tr>
<tr>
<td>2001</td>
<td>Van</td>
<td>12wk. 2 treatment groups. Diet &amp; exercise + Exercise</td>
<td>G1 = 35-40mins5x400kcal/wk</td>
</tr>
<tr>
<td>2001</td>
<td>Villani</td>
<td>8wk Randomly assigned exercise and L-Carnitine,</td>
<td>Laboratory PA 3xthr/wk and 1x1hr/wk</td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td>36 women</td>
<td>at home. 40% VO2 max cycling, walking &amp;</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td>19 - 48 years</td>
<td>30min std/wk walking at 60-70%</td>
</tr>
</tbody>
</table>

**Abbreviations:** VLED = very low energy diet, WM = weight maintenance, EE = energy expenditure, RT = resistance training, RCT = random control trial, R = randomised trial, LE = lifestyle education, SD = substitute diet with physical activity, WT = weight training, RDA = recommended daily allowance, WL = weight loss, LED = low energy diet, VI = vigorous intensity, MD = moderate duration, HD = high duration, MD = moderate duration, T = treadmill walking, SB = stationary bike, WA = water aerobics, AER = aerobic activity, LIFE = lifestyle activity.
## Table 2.2: Physical Activity Dose Measurement Effect on Weight Loss

<table>
<thead>
<tr>
<th>Author</th>
<th>Amount of Days Per Week</th>
<th>Minutes Per Day</th>
<th>Minutes Per Week</th>
<th>Energy Expenditure Per Session (kcal/s)</th>
<th>Energy Expenditure Per Week (kcal)</th>
<th>Intensity</th>
<th>Activity</th>
<th>Weight Loss Effect</th>
<th>Ramp Phase</th>
<th>Treatment Phase</th>
<th>Supervision During Physical Activity</th>
<th>Sedentary</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irwin</td>
<td>3.5</td>
<td>50.2</td>
<td>176</td>
<td>377</td>
<td>1320</td>
<td>60-75% MHR (moderate)</td>
<td>Sport &amp; Recreation &amp; Walking at Home &amp; Facility Treadmill Walking, Exercise Bike &amp; Water Aerobics</td>
<td>-1.3kg average weight loss</td>
<td>8 wks</td>
<td>44 weeks</td>
<td>No</td>
<td>Yes</td>
<td>Female</td>
</tr>
<tr>
<td>Kirk</td>
<td>5</td>
<td>45</td>
<td>225</td>
<td>650 men</td>
<td>3250 men</td>
<td>75% HRR</td>
<td>Men = -5 kg Body Fat</td>
<td>4mths</td>
<td>10 months</td>
<td>Yes</td>
<td>Yes</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>Ross</td>
<td>7</td>
<td>60</td>
<td>420</td>
<td>700</td>
<td>4900</td>
<td>70% VO₂ max</td>
<td>Brisk Walking Light Jogging on Treadmill</td>
<td>None</td>
<td>12 weeks</td>
<td>Yes</td>
<td>Yes</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>Slentz</td>
<td>3.5</td>
<td>51</td>
<td>179</td>
<td>384</td>
<td>1343</td>
<td>40-55% VO₂ max</td>
<td>Brisk Walking Light Jogging on Treadmill</td>
<td>2-3 mths</td>
<td>Between 5 &amp; 6 months</td>
<td>Yes</td>
<td>Male &amp; Female</td>
<td>Mixed</td>
<td></td>
</tr>
<tr>
<td>Sykes</td>
<td>5</td>
<td>35-40</td>
<td>175-200</td>
<td>400</td>
<td>2000</td>
<td>Borg 12/13</td>
<td>Exercise Cycle and Treadmill Walking</td>
<td>None</td>
<td>8 weeks</td>
<td>No</td>
<td>No</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Villani</td>
<td>4</td>
<td>30</td>
<td>120</td>
<td>225</td>
<td>900</td>
<td>60-70% MHR</td>
<td>No effect on weight loss</td>
<td>None</td>
<td>8 weeks</td>
<td>No</td>
<td>No</td>
<td>Female</td>
<td></td>
</tr>
</tbody>
</table>

### Abbreviations and Energy Expenditure Calculations

mlm = moderate intensity/moderate duration, vlm = vigorous intensity/moderate duration, mlh = moderate intensity/high duration, vlm = vigorous intensity/moderate duration, vlh = vigorous intensity/high duration, SBT = standard behavior therapy, HPA = high physical activity, mlf = moderate intensity/low duration, vl = vigorous intensity/low duration & vlf = vigorous intensity/low duration.

Energy Expenditure was calculated as 5 kcal per minute for light intensity activity, 6 kcal per minute for moderate intensity activity and 7.5 kcal per minute for vigorous intensity activity (Ainsworth, 1993).
Table 2.3: Physical Activity Dose Measurement Effect with Diet on Weight Loss

<table>
<thead>
<tr>
<th>Author</th>
<th>Amount of Days per Week</th>
<th>Minutes Per Day</th>
<th>Minutes Per Week</th>
<th>Energy Expenditure Per Session (kcal/s)</th>
<th>Energy Expenditure Per Week (kcal)</th>
<th>Intensity</th>
<th>Activity</th>
<th>Weight Loss Effect</th>
<th>Ramp Phase</th>
<th>Treatment Phase</th>
<th>Supervision During Physical Activity</th>
<th>Sedentary</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andersen</td>
<td>3-4</td>
<td>45</td>
<td>135-180</td>
<td>338</td>
<td>1013-1350</td>
<td>Moderate</td>
<td>Aerobic - brisk walk, video workout, stationary bike</td>
<td>-6.27kg</td>
<td>None</td>
<td>12 weeks</td>
<td>No</td>
<td>Less than 2 exercise bouts per wk</td>
<td>Male &amp; Female</td>
</tr>
<tr>
<td>Bond Brill</td>
<td>5</td>
<td>30</td>
<td>150</td>
<td>225</td>
<td>1125</td>
<td>Vigorous</td>
<td>Lifestyle Bouts</td>
<td>Lifestyle -5.2kg</td>
<td>No</td>
<td>12 weeks</td>
<td>No</td>
<td>Yes</td>
<td>Female</td>
</tr>
<tr>
<td>Deibert</td>
<td>2</td>
<td>60</td>
<td>120</td>
<td>5</td>
<td>NR</td>
<td>Moderate</td>
<td>Endurance</td>
<td>-6.9 kg</td>
<td>9 weeks</td>
<td>26 weeks</td>
<td>Yes</td>
<td>No</td>
<td>Male &amp; Female</td>
</tr>
<tr>
<td>Deming</td>
<td>4</td>
<td>30-35</td>
<td>120-140</td>
<td>239</td>
<td>1677</td>
<td>Not reported</td>
<td>Resistance Training Various bout lengths of exercise &amp; home equipment</td>
<td>- 2.5 kg</td>
<td>1 week</td>
<td>11 weeks</td>
<td>Yes</td>
<td>No</td>
<td>Male</td>
</tr>
<tr>
<td>Jakicic</td>
<td>Not reported</td>
<td>Not reported</td>
<td>200</td>
<td>0</td>
<td>0</td>
<td>Not reported</td>
<td>Various bout lengths of exercise &amp; home equipment</td>
<td>- 7.8 kg</td>
<td>9 weeks</td>
<td>69 weeks</td>
<td>No</td>
<td>No</td>
<td>Female</td>
</tr>
<tr>
<td>Jakicic</td>
<td>4.5 (mean)</td>
<td>34</td>
<td>152</td>
<td>222</td>
<td>1000</td>
<td>Moderate</td>
<td>Various Bout lengths of Walking</td>
<td>- 6.3 kg (m) - 7.0 kg (v/m) - 0.2 kg (m/h) - 6.0 kg (v/h)</td>
<td>8 weeks</td>
<td>44 weeks</td>
<td>No</td>
<td>Yes</td>
<td>Female</td>
</tr>
<tr>
<td>Jeffery</td>
<td>Not reported</td>
<td>Not reported</td>
<td>47</td>
<td>211</td>
<td>444</td>
<td>Mixed low to vigorous</td>
<td>Walking &amp; Lifestyle</td>
<td>- 8.1 kg</td>
<td>8wks SB &amp; 6mths</td>
<td>16 months</td>
<td>Partial &amp; Buddies</td>
<td>No</td>
<td>Male &amp; Female</td>
</tr>
<tr>
<td>Schmidt</td>
<td>5</td>
<td>30</td>
<td>150</td>
<td>225</td>
<td>112</td>
<td>75% HRR</td>
<td>Aerobic Exercise Bouts</td>
<td>- 1.30 x min = - 2.7 kg 2 x 15min = - 2.9 kg 3 x 15min = - 4.36 kg 15.2kg</td>
<td>8 weeks</td>
<td>4 weeks</td>
<td>Yes</td>
<td>Non exercising</td>
<td>Female</td>
</tr>
<tr>
<td>van Aggel-Leijssen</td>
<td>4</td>
<td>60</td>
<td>240</td>
<td>450</td>
<td>1800</td>
<td>Cycle Ergometer, Walking &amp; Aqua Jogging</td>
<td>None</td>
<td>12 weeks</td>
<td>3 sessions supervised at home</td>
<td>Less than 2 hours sport per week &amp; non physical job</td>
<td>Male</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations and Energy Expenditure Calculations
m/m = moderate intensity/moderate duration, v/m = vigorous intensity/moderate duration, m/h = moderate intensity/high duration, v/h = vigorous intensity/high duration, SBT = standard behaviour therapy, HPA = high physical activity, m/f = moderate intensity/low duration, v/l = vigorous intensity/low duration & v/h = vigorous intensity/high duration. Energy expenditure was calculated as kcal per minute for light intensity activity and 7.5 kcal per minute for vigorous intensity activity.
<table>
<thead>
<tr>
<th>Author</th>
<th>Adherence/ Attendance</th>
<th>Control</th>
<th>Ramping</th>
<th>Length of Treatment Phase</th>
<th>Intention to Treat</th>
<th>Weight Loss Effect</th>
<th>Weight Maintenance Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andersen</td>
<td>Lifestyle 68%</td>
<td>No</td>
<td>None</td>
<td>12 weeks unsupervised</td>
<td>No</td>
<td>Yes w/d</td>
<td></td>
</tr>
<tr>
<td>Bond Brill</td>
<td>63%</td>
<td>No</td>
<td>None</td>
<td>12 weeks unsupervised</td>
<td>Yes</td>
<td>Yes w/d</td>
<td></td>
</tr>
<tr>
<td>Borg</td>
<td>Walking 82%</td>
<td>Yes</td>
<td>None</td>
<td>6 months supervised</td>
<td>Yes</td>
<td>Weight maintenance study only</td>
<td>Walking No</td>
</tr>
<tr>
<td>Deibert</td>
<td>90%</td>
<td>No</td>
<td>None</td>
<td>26 weeks supervised</td>
<td>Yes</td>
<td>Yes w/d</td>
<td></td>
</tr>
<tr>
<td>Demling</td>
<td>60%</td>
<td>No</td>
<td>1 week</td>
<td>11 weeks supervised</td>
<td>Yes</td>
<td>Yes w/d</td>
<td></td>
</tr>
<tr>
<td>Irwin</td>
<td>Not Reported</td>
<td>No</td>
<td>8 weeks</td>
<td>44 weeks unsupervised</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Jakicic</td>
<td>78%</td>
<td>No</td>
<td>9 weeks</td>
<td>69 weeks unsupervised</td>
<td>No</td>
<td>Yes w/d</td>
<td></td>
</tr>
<tr>
<td>Jakicic</td>
<td>94%</td>
<td>No</td>
<td>8 weeks</td>
<td>44 weeks unsupervised</td>
<td>Yes</td>
<td>Yes w/d</td>
<td></td>
</tr>
<tr>
<td>Jeffery</td>
<td>Standard Behaviour Therapy 87%</td>
<td>No</td>
<td>SBT 8 weeks</td>
<td>SBT 18 months unsupervised</td>
<td>No</td>
<td>Yes w/d</td>
<td>Yes w/d</td>
</tr>
<tr>
<td>Kirk</td>
<td>High Physical Activity 90%</td>
<td>Yes</td>
<td>8 months</td>
<td>10 months supervised</td>
<td>No</td>
<td>Yes for men</td>
<td>Yes</td>
</tr>
<tr>
<td>Ross</td>
<td>62%</td>
<td>Yes</td>
<td>None</td>
<td>12 weeks supervised</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Schmidt</td>
<td>83%</td>
<td>Yes</td>
<td>4 weeks</td>
<td>8 weeks supervised</td>
<td>No</td>
<td>Yes w/d</td>
<td></td>
</tr>
<tr>
<td>Slentz</td>
<td>61%</td>
<td>Yes</td>
<td>2-3 months</td>
<td>5-6 months supervised</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sykes</td>
<td>100%</td>
<td>No</td>
<td>None</td>
<td>8 weeks unsupervised</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>van Aggel-Leijssen</td>
<td>100%</td>
<td>No</td>
<td>None</td>
<td>12 weeks supervised</td>
<td>No</td>
<td>Yes w/d</td>
<td></td>
</tr>
<tr>
<td>Villani</td>
<td>77%</td>
<td>No</td>
<td>None</td>
<td>8 weeks unsupervised</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: w/d = with diet, SBT = standard behaviour therapy, HPA = high physical activity
Table 2.5: Physical Activity Dose Measurement Effect on Weight Maintenance

<table>
<thead>
<tr>
<th>Author</th>
<th>Days per Week</th>
<th>Minutes per Day</th>
<th>Minutes per Session (kcal)</th>
<th>Energy Expenditure Per Session (kcal)</th>
<th>Energy Expenditure Per Week (kcal)</th>
<th>Intensity</th>
<th>Activity</th>
<th>Weight Maintenance Effect</th>
<th>Ramp Phase</th>
<th>Treatment Phase</th>
<th>Supervision During Physical Activity</th>
<th>Sedentary</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borg</td>
<td>3</td>
<td>45</td>
<td>135</td>
<td>300</td>
<td>900</td>
<td>60-80%</td>
<td>Resistance Training</td>
<td>Resistance Training = + 0.3kg</td>
<td>None</td>
<td>6 months</td>
<td>Yes</td>
<td>No</td>
<td>Male</td>
</tr>
<tr>
<td>Borg</td>
<td>As above</td>
<td>As above</td>
<td>As above</td>
<td>As above</td>
<td>As above</td>
<td>60-70%VO₂ max</td>
<td>Walking</td>
<td>Walking = + 10.1kg</td>
<td>None</td>
<td>23 months</td>
<td>No</td>
<td>No</td>
<td>Male</td>
</tr>
<tr>
<td>Kirk</td>
<td>5</td>
<td>45</td>
<td>225</td>
<td>400</td>
<td>2000</td>
<td>75% HRR</td>
<td>Stationary Bike, Treadmill Walking &amp; Water Aerobics Walking Jogging</td>
<td>Walking = + 10.1kg</td>
<td>Exercise females exhibited WIM effect against controls</td>
<td>6 months</td>
<td>10 months</td>
<td>Yes</td>
<td>Male &amp; Female</td>
</tr>
<tr>
<td>Slentz</td>
<td>7</td>
<td>30</td>
<td>210</td>
<td>225</td>
<td>1575</td>
<td>40-55 VO₂</td>
<td>Walking</td>
<td>Effective for male &amp; female</td>
<td>2-3 months</td>
<td>5-6 months</td>
<td>Yes</td>
<td>Yes</td>
<td>Male &amp; Female</td>
</tr>
</tbody>
</table>

Abbreviations and Energy Expenditure Calculations

m1m = moderate intensity/moderate duration, v/h = vigorous intensity/high duration, m1h = moderate intensity/high duration, v/h = vigorous intensity/high duration, SBT = standard behaviour therapy, HPA = high physical activity, mI = moderate intensity/low duration, v/I = vigorous intensity/low duration & v/h = vigorous intensity/high duration.

Energy Expenditure was calculated as 5 kcal per minute for light intensity activity, 6 kcal per minute for moderate intensity activity and 7.5 kcal per minute for vigorous intensity activity

(Alnsworth, 1993).
mass, resting energy expenditure and respiratory quotient and skinfold measurements were found to have increased from pretest to posttest (Villani et al., 2000).

None of the six studies investigated the psychological effects of the physical activity interventions being tested. However, one study reported that lack of time and conflict with work lead to attrition (Kirk et al., 2003), while another study found that longer bouts of physical activity made participants weary but didn’t increase dropout (Sykes et al., 2004).

The studies that found a positive weight loss response to treatment dose energy expenditure from physical activity ranged from 1140 – 4900 kcals per week, while the non effective study’s energy expenditure from physical activity was 720 kcals per week.

Equating energy expenditure to duration and intensity to create a positive weight loss response the treatment dose required was found to be 2-7 hours per week (114-420 minutes) of moderate to vigorous intensity activity. For example 2 hours per week (>114 minutes) at moderate intensity over a 5-6 month time period (Slentz et al., 2004) or 3 hours per week (>175 minutes) of moderate to vigorous intensity physical activity for eight weeks (Sykes et al., 2004) was found to produce weight losses of 1.3-2.3kg. To produce a more significant weight loss (a 10% body weight loss in an overweight or obese individual) a minimum of 7 hours (420 minutes) per week of moderate intensity or 3 3/4 hours (225 minutes) per week of vigorous intensity PA may be necessary. For example, Ross et al., (2000) demonstrated that 7 hours a week over a 12 week term resulted in a 7.6kg body weight loss (Ross et al., 2000).

2.3.3.2 Dose Response of Physical Activity & Dietary Intervention on Weight Loss

Analysis of methodological quality found that eight of the nine studies randomised participants into test groups (Andersen et al., 2002; Brill et al., 2002; Daibert
et al., 2004; Demling & DeSanti, 2000; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; van Aggel-Leijssen et al., 2001) and one study did not (Schmidt et al., 2001). Four studies supervised participant physical activity (Deibert et al., 2004; Demling & DeSanti, 2000; Schmidt et al., 2001; van Aggel-Leijssen et al., 2001) and five studies did not (Andersen et al., 2002, Brill et al., 2002, Jakicic et al., 2002; Jakicic et al., 2002; Jeffery et al., 2003). Four of the nine studies analysed by intention-to-treat (Brill et al., 2002; Deibert et al., 2004; Demling & DeSanti, 2000; Jakicic et al., 2003), the remaining five studies did not (Andersen et al., 2002; Jakicic et al., 2002; Jeffery et al., 2003; Schmidt et al., 2001; van Aggel-Leijssen et al., 2001). None of the studies stated the use of allocation concealment. Study length from baseline to completion ranged from twelve weeks to eighteen months.

Six studies included a physical activity ramping phase ranging from one week to six months (Deibert et al., 2004; Demling & DeSanti, 2000; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; Schmidt et al., 2001). Treatment length ranged from twelve weeks to eighteen months.

All nine studies monitored the adherence of participants to the programme of physical activity. Adherence levels ranged from 60% - 100% (Table 2.4). Five studies specified that participants were sedentary or not participating in regular physical activity at baseline (Andersen et al., 2002; Brill et al., 2002; Jakicic et al., 2003; Schmidt et al., 2001; van Aggel-Leijssen et al., 2001). Four studies did not stipulate or assess participants' physical activity habits at baseline (Deibert et al., 2004; Demling & DeSanti, 2000; Jakicic et al., 2002; Jeffery et al., 2003).

Methods used to monitor intensity, duration and energy expenditure of physical activity within studies were varied. Four studies used supervisors to fully or partially monitor physical activity (Deibert et al., 2004; Demling & DeSanti, 2000; Schmidt et al., 2001; van Aggel-Leijssen et al., 2001). The other physical activity monitoring methods
included the use of heart rate monitors, exercise machines, oxygen consumption and exercise records. All of the studies used anthropometric measurements to collect data to determine how physical activity affected weight loss.

The age of participants ranged from 21-50 years. Seven studies were conducted in the USA, one in Germany and one in the Netherlands (Table 2.1). Four studies included women only (Brill et al., 2002; Jakicic et al., 2002; Jakicic et al., 2003; Schmidt et al., 2001), two included men only (Demling & DeSanti, 2000; van Aggel-Leijssen et al., 2001) and three sampled both men and women (Andersen et al., 2002; Deibert et al., 2004; Jeffery et al., 2003).

Physiologically, moderate to vigorous intensity physical activity in combination with diet was found to improve cardiovascular fitness (Schmidt et al., 2001), cardiorespiratory fitness (Jakicic et al., 2003) and glycemic control (Deibert et al., 2004). It was also found to reduce BMI, SF, WC, TFM, BW, % BF and central adipose tissue (Andersen et al., 2002; Brill et al., 2002; Deibert et al., 2004; Demling & DeSanti., 2000; Schmidt et al., 2001;). Low intensity exercise with diet was found to counteract the decline in fat oxidation induced by body weight loss in the post diet period (van Aggel-Leijssen et al., 2001). Although higher duration and intensity of physical activity was found to provide greater weight losses, one study found that participants were more prone to injury and illness (Jeffery et al., 2003). Another study found that higher intensity physical activity did not significantly increase weight loss in comparison to moderate intensity activity (Jakicic et al., 2002).

Psychologically, multi-strategy interventions that incorporated behaviour programs, physical activity, diet and support (in the form of meetings, professional/exercise support and social support) appeared to aid adherence to physical activity and help participants maintain long term weight loss (Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003).
All of the studies reviewed (Table 2.3) found that the prescribed dose of physical activity with diet and one or more other treatments had a positive effect on weight loss in the overweight and obese. The studies that found a physical activity energy expenditure of 900 – 2321 kcal per week in a multi-faceted intervention provided a positive weight loss response.

Equating energy expenditure to duration and intensity to create a positive weight loss response with dietary intervention (most commonly 1200-1800 kcal intake per day dependant on gender and reduced fat intake) the treatment dose of physical activity required would need to be 2 1/4 hours to 4 hours per week (135-240 minutes) of moderate to vigorous intensity activity or 4 hours to 6 1/2 hours per week (240-387 minutes) of mixed low to vigorous intensity activity. Four studies reported significant 10% body weight losses in overweight and obese individuals who participated in a twelve week mixed physical activity and diet intervention (Andersen et al., 2002; Brill et al., 2002; Schmidt et al., 2001; van Aggel-Leijssen et al., 2001). It has been suggested that focusing on one treatment can produce a clearer result (Thomas & Nelson, 2001) and within these weight loss studies the addition of diet could confound the physical activity dose response result.

2.3.3.3 Dose Response of Physical Activity on Weight Maintenance

From the 16 papers reviewed two papers were found that provided a follow-up phase that assessed the effect of physical activity on weight maintenance (Kirk et al., 2003; Slentz et al., 2004) and one paper was found that reported a dose effect of physical activity on weight maintenance (Borg, et al., 2002). The remaining 13 papers did not include a follow up phase to assess weight maintenance.
Analysis of methodological quality found that all three studies (Borg et al., 2002; Kirk et al., 2003; Slentz et al., 2004) randomly assigned participants to test groups and provided a control group (Table 2.5). Two of the studies participants were supervised during physical activity (Kirk et al., 2003; Slentz et al., 2004) and one study's were unsupervised (Borg et al., 2002). One of the three studies analysed by intention-to-treat (Borg et al., 2002), however none of the studies performed any form of allocation concealment. Study length from baseline to completion ranged from eight to twenty three months. Physical activity ramping phases ranged from two to six months. Treatment phases ranged from five to twenty three months.

All of the studies monitored the adherence of participants to physical activity. Adherence ranged between 56%-82% (Table 2.4). All of the studies used full or partial supervision to monitor physical activity. Other monitoring methods included the use of heart rate monitors and oxygen consumption. All of the studies used anthropometric measurements to collect data to assess the physical activity affect on weight maintenance.

The ages of study participants ranged from 19-65 years. Two studies participants were American and the other study's participants were Finnish (Table 2.1). Two studies included both men and women (Kirk et al., 2003; Slentz et al., 2004) and one study sampled men only (Borg et al., 2002).

Physiologically, moderate intensity physical activity was found to increase maximal aerobic capacity, exercise duration was found to maintain total body weight and exercise intensity appeared to determine the gain in lean body mass (Kirk et al., 2003; Slentz et al., 2004).

All three studies found a positive weight maintenance response to the physical activity treatment doses being tested. Physical activity energy expenditure ranged from 900-2000 kcal per week for the duration of five to ten months. However the physical
activity dose of 1200kcal per week (walking) at six months testing and 900kcal per week (resistance training) after a twenty three month follow up did not have a weight maintenance effect (Borg et al., 2002). This study observed that physical activity decreased when the participants were unsupervised which indicated that regular physical activity supervision and motivational support may be required to maintain exercise behaviour (Borg et al., 2002).

Equating energy expenditure to duration and intensity to create a positive weight maintenance response the treatment dose required was found to be a minimum of $3^{1/2}$ hours per week (210 minutes) of moderate to vigorous intensity activity per week. This amount of physical activity would be sufficient to maintain body weight after a 10% weight loss (Borg et al., 2002; Kirk et al., 2003; Slentz et al., 2004).

2.3.3.4 Adherence to Physical Activity

Adherence in dose response studies ranged from 56% - 100%. Different physical activities within studies were assessed on adherence to dose measure and intervention treatments (Table 2.4). The studies were sectioned into three adherence groupings ranging from highest % to lowest % participant adherence, to identify factors that positively or negatively affect adherence to physical activity.

Five studies were found to have achieved above 90% participant adherence to one or more of the physical activity treatments tested (Andersen et al., 2002; Deibert et al., 2004; Jakicic et al., 2003; Sykes et al., 2004; van Aggel-Leijssen et al., 2001). Dietary intervention in combination with physical activity was a common denominator in four out of five of these studies (Andersen et al., 2002; Deibert et al., 2004; Jakicic et al., 2003; van Aggel-Leijssen et al., 2001). Physical activity dose measurements of duration, intensity and energy expenditure were evaluated. Exercise was found to be of moderate intensity in four of the five studies, while one study incorporated moderate and vigorous
intensity activity (Jakicic et al., 2003). Energy expenditure from physical activity ranged from 720-2000kcal per week. Duration of physical activity ranged 34-80 minutes, two to five days per week. These findings indicated that dietary intervention combined with physical activity may have aided physical activity adherence.

A further five studies were found to have achieved 75%-89% participant adherence to one or more physical activities tested. Walking, lifestyle and bouts of physical activity were common to all five studies (Borg et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; Schmidt et al., 2001; Villani et al., 2000). Three out of the five studies also incorporated dietary intervention (Jakicic et al., 2003; Jeffery et al., 2003; Schmidt et al., 2001). Physical activity was of moderate intensity in three of the five studies, one study tested the effect of mixed intensity activity (Jeffery et al., 2003) and one study did not report intensity (Jakicic et al., 2003). Energy expenditure ranged from 720-2321 kcal per week. Duration of physical activity ranged from 30-45 minutes, two to five days per week. These findings indicated that the participants' preferred to incorporate or could more easily incorporate physical activity of moderate intensity and duration that could be tailored to their lifestyle.

Seven studies achieved participant adherence of 55%-74% to one or more of the physical activities assessed (Andersen et al., 2002; Borg et al., 2002; Brill et al., 2002; Demling & DeSanti, 2000; Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004). Full or partial supervision during physical activity was included in five out of these seven studies (Borg et al., 2002; Demling & DeSanti, 2000; Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004). Physical activity duration ranged from 30-60 minutes, three to seven days per week. Exercise intensity was predominantly moderate to vigorous and exercise expenditure ranged from 810-4900 kcal per week (Andersen et al., 2002; Borg et al., 2002; Kirk et al., 2003; Ross et al., 2000; Slentz et al., 2004). Two studies did not report intensity or energy expenditure (Brill et al., 2002; Demling & DeSanti, 2000). One study
did not report or provide information to determine adherence to the physical activity tested (Irwin et al., 2003).

2.4 Discussion

Sixteen studies were included in this review. After analysis it was evident that physical activity could produce a weight loss and weight maintenance effect (with or without other intervention) in the overweight and obese. However the physical activity treatment dose findings need to be considered with caution due to the methodological limitations of the studies reviewed.

2.4.1 Methodological Issues and Limitations

The search procedures adopted in this review were comprehensive. However, unpublished and non-English language papers were not reviewed which increased the possible impact of publication and reporting bias (Egger & Smith, 1998). The conclusions in this review, like other reviews, were dependent on the quality of the studies included.

The studies reviewed were of higher methodological quality than studies analysed in the two previous reviews (Fogelholm & Kukkonen-Harjula, 2000; Ross & Janssen, 2001), however methodological limitations were still evident. For example, although 15 of the 16 studies trials were randomised, only three studies described the use of concealment allocation. Without the implementation of allocation concealment, there is an increased risk of selection bias and the responsiveness of the treatment within a trial may be exaggerated (Khan, Daya & Jadad, 1996).

Other methodological limitations were evident, only six of the sixteen studies reviewed included intention-to-treat analysis and only three studies provided sufficient evidence to reduce attrition bias. Hence the efficacy of the treatments tested may have
been overestimated and possible side effects or limitations of the treatments not acknowledged (Bryman, 2004; Thomas & Nelson, 2001).

2.4.2 Physical Activity and Weight Loss

The combined results confirmed that low, moderate and vigorous intensity physical activity of varying durations used alone as a treatment could produce a 10% of body weight loss or more. There was evidence that those following regular physical activity could maintain the treatment with minimal adverse physiological effects. Only high intensity and greater duration exercise increased the possibility of injury, illness or fatigue. However, due to the fact that half the studies participants' physical activity was self-reported it is difficult to ascertain whether physical activity was over or under reported.

Consenting research participants may be more motivated than the general population to follow a physical activity programme. Issues of adherence to and uptake may require particular attention when working with the overweight and obese population outside of clinical research studies. Previous research has found that the sedentary, overweight and obese population find it difficult to begin, continue and incorporate physical activity into their everyday lives (Lawton, Ahmad, Hanna, Douglas & Hallowell, 2006; Thomas, Alder & Leese, 2004). Hence, the introduction of physical activity for the overweight and obese could be difficult and painful to perform at the outset. So physical activity used alone as a weight loss treatment may not be popular.

This systematic review found that the overweight and obese are likely to require guidance, support and motivation to help them to become physically active. In practical terms, even though smaller amounts of physical activity were not found to produce significant weight losses, it may be best to introduce the overweight and obese to exercise by setting small amounts of achievable and enjoyable lifestyle or leisure activity.
The recommended treatment dose could be built up over time after smaller targets have been achieved.

Finally, due to methodological issues within the six studies there was an increased risk of participant/researcher manipulation and attrition bias, so it is difficult to confirm whether the treatment doses of physical activity reported could provide the same results in the real world.

2.4.3 Physical Activity, Diet and Weight Loss

This review’s findings indicated that by combining the same treatment dose of physical activity (as physical activity alone) with dietary reduction, weight losses could be achieved more rapidly. These results highlighted that in practical terms, individuals could make choices with regard to the amounts of physical activity they performed in relation to the amount of dietary calorific reduction introduced as a weight loss method. For example, if an individual did not enjoy physical activity or found difficulty in implementing the recommended amounts of physical activity to produce weight loss, they could combine physical activity with diet to achieve the same weight loss outcome as performing physical activity alone.

The inclusion of dietary intervention and supervision was found to aid adherence to physical activity. These findings suggested that in practical terms overweight and obese individuals may prefer to use physical activity as part of a multi-strategy weight loss intervention rather than using physical activity alone.

2.4.4 Physical Activity and Weight Maintenance

There was evidence that physical activity could produce a weight maintenance effect in overweight and obese adults and no adverse effects were reported. However, it
was found that adherence to a physical activity treatment dose suitable for weight maintenance reduced overtime. This effect was also highlighted in the two previous reviews (Fogelholm & Kukkonen-Harjula, 2000; Ross & Janssen, 2001). These results indicated that the implementation of a long term physical activity programme amongst the wider population might be problematic, hence behavioural strategies may need to be introduced to aid the performance of continued physical activity sufficient to maintain weight loss. In this review it was found that regular support, general supervision, dietary intervention and exercise specialist supervision helped aid exercise adherence, hence these strategies could be used in future interventions to help weight maintainers stay active.

Finally, due to methodological issues within the three studies there was an increased risk of participant/researcher manipulation and attrition bias, so it is difficult to confirm whether the treatment doses of physical activity reported could provide the same results in the real world.

2.4.5 What Type of Physical Activity is required to Achieve Weight Loss or Weight Maintenance?

The types of exercise researched in this review included walking, the use of exercise machines, jogging, resistance training, aqua-exercise and lifestyle activities. Type of physical activity only produced a different dose response effect for weight loss and maintenance if the intensity was different; for example jogging in comparison to walking. If energy expenditure were the same for the different types of exercise, then the weight loss and weight maintenance responses were found to be the same.

The most important factors to be considered when recommending type of physical activity appeared to be the effect on adherence and motivation (American
College of Sports Medicine, 1997). Obesity, weight loss and weight maintenance research has highlighted the importance of enjoyment (Hamilton, 2002), limitation of physical discomfort (Poirer & Despres, 2001), being able to fit physical activity into lifestyle (Afridi, Siddique, Safdar, & Khan, 2004; Wing & Hill, 2001), individual tailoring (Saris et al., 2003) and avoidance of illness or injury (Donnelly et al., 2004) for the overweight and obese.

Accumulated bouts of exercise have been found to provide the same weight loss effect as long bouts of exercise as long as the accumulated duration, intensity and energy expenditure of exercise was the same (Andersen et al., 2002; Schmidt et al., 2001). Hence overweight and obese individuals could be introduced to exercise by starting with small amounts such as 5 or 10 minutes a few times a day rather than beginning with larger amounts. Introducing physical activity as small accumulated bouts could provide a number of benefits such as the prevention of injury, fitting into lifestyle, limiting physical discomfort and being an easier target to achieve.

2.4.6 Intention to Treat

Intention to treat analysis involves analysing all participants according to the group they were allocated to, regardless of whether they dropped out, completed, adhered or received a different treatment. This form of analysis protects against research bias and helps to make clear any problems, limitations or side effects of an intervention.

Six of the sixteen included studies reported that their analyses were based on 'intention to treat' (Borg et al., 2002; Brill et al., 2002; Deibert et al., 2004; Demling & DeSanti, 2000; Irwin et al., 2003; Jakicic et al., 2003). Each of these studies found that participants experienced positive weight loss and/or weight maintenance as a result of
physical activity treatment used alone or in conjunction with dietary treatment (Table 2.4). These results indicated that the interventions tested were likely to be effective physical activity weight loss and weight maintenance treatments for the general population. However, only three of the six studies provided sufficient follow up information to determine that intention-to-treat analysis had taken place (Borg et al., 2002; Irwin et al., 2003; Jakicic et al., 2003).

2.4.7 Gender

This review aimed to identify whether the dose response recommendations of physical activity for weight loss and weight maintenance may differ dependant on gender. It was confirmed that there were few comparative studies on gender, physical activity and weight change and that more studies had tested women only samples than men only. A gender breakdown from studies in this review confirmed that the number of women (704) participating in single sex studies were far greater than the number of men (138). Unfortunately none of the mixed male and female studies provided a break down on the 644 men and women participating.

Only one study in this review compared responses between men and women (Kirk et al., 2003). Men were found to reach their target physical activity level much quicker than women. The reason given for this outcome was that the men expended a greater amount of energy per session of physical activity because their body weight was greater.

When comparing the weight loss effect of physical activity in single sex studies of similar length (Ross et al., 2000; Sykes et al., 2004) no gender differences could be found. When considering the weight loss and weight maintenance effect of physical
activity the outcomes were found to be the same (as long as the energy expenditure was the same) regardless of gender (Kirk et al., 2003).

2.4.8 Age, Ethnicity and Weight Classification

It has been found that the metabolic rate reduces with age increasing the chance of weight gain and that metabolic rate is different dependant on body size (Kleiber, 1947; Piers, Soares, McCormack, & O'Dea, 1998). It could be presumed that increased physical activity or decreased dietary consumption would help to maintain weight. Ethnic genetic differences have been found to affect the resting metabolic rate (Weyer, Snitker, Bogardus, & Ravussin, 1999). It could be presumed that differences in RMR could affect physiological responses of physical activity to promote weight loss and the prevention of weight gain.

The studies included in this review did not assess and did not provide data that could be analysed to indicate if or how age, ethnicity or weight classification affected the amount of physical activity required to produce weight loss and maintenance. Further research studies are required to analyse the effect of age, ethnicity and weight classification on physical activity treatment dose for weight loss and maintenance.

2.4.9 Adherence to Physical Activity

When considering the differences between the highest adherence group of studies and the lowest adherence group of studies, it was found that the inclusion of diet, accumulated bouts of physical activity and moderate intensity PA, such as walking and lifestyle activity were strategies commonly reported in the high adherence studies.

One study (Andersen et al., 2002) was reported in both the high adherence group (for lifestyle activity) and the low adherence group (for mixed aerobic activity). This
finding suggests that participants may have preferred or found it easier to incorporate lifestyle activity into their everyday lives. Autonomy in their physical activity choices may have also aided adherence.

In lifestyle activity studies home based exercise such as walking was found to have better compliance than physical activity that required participants to commute to a specific venue (Borg et al., 2002). Home based exercise has been reported to improve adherence in exercise and health behaviour in other studies (Ruser, Federman, & Kashaf, 2005). Factors that were found to negatively affect physical activity adherence were illness and injury (Jeffery et al., 2003).

Motivational factors that may have positively affected adherence in these studies were supervision, the use of machines and the monitoring of progress and results (Demling & DeSanti, 2000; Jakicic et al., 2003; Jeffery et al., 2003; Kirk et al., 2003; Ross et al., 2000; Schmidt et al., 2001). Supervision comprised of participants being under direct supervision of research personnel or being instructed by interventionists, exercise coaches or personal trainers specifically trained in physical activity. The exercise specific experience and knowledge base of the supervisors may have assisted in motivating the research participants. Supervision and support have previously been found to have a positive effect on adherence to physical activity (Biddle, Fox & Boutcher, 2000; Thomas & Kotecki, 2006).

Other elements that were found to assist adherence to physical activity were behaviour therapy, social support, encouragement from family and friends, and the use of pedometers (Jeffery et al., 2003; Schmidt et al., 2001). Motivating the overweight and obese to adhere to long term weight loss and maintenance programmes is understood to be difficult to achieve (Wing & Hill, 2001). Supervision, behaviour therapy, social support and the use of machines, logs or pedometers to monitor have previously been found to promote adherence to exercise behaviours (Klein, Burr, & Stone, 2005).
To conclude, these findings indicated that a combination of physical activity, diet and monitoring methods could benefit the overweight and obese in their weight loss and weight maintenance goals.

2.4.10 Physical Activity Measurement and Monitoring Techniques

Data collection measures included physical activity calorific energy expenditure and oxygen consumption measures, the use of calibrated exercise machines to perform exercise, heart rate monitor readings and the use of trained supervisors to educate participants and monitor physical activity. Six studies from Table 2.1 triangulated data collection measures by using several measurement methods which provided an opportunity to assess the effect of duration, intensity and energy expenditure against each other (Borg et al., 2002; Kirk et al., 2003; Ross et al., 2000; Schmidt et al., 2001; Slentz et al., 2004; van Aggel-Leijssen et al., 2001) producing greater confidence in the findings (Bryman, 2004). Triangulation is deemed to increase confidence and reliability of research results. The remaining ten studies did not triangulate measurement methods (Andersen et al., 2002; Brill et al., 2002; Deibert et al., 2004; Demling & DeSanti., 2000; Irwin et al., 2003; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; Schmidt et al., 2001; Sykes et al., 2003; Villani et al., 2000).

Also, ten of the sixteen papers in this review (Andersen et al., 2002; Brill et al., 2002; Borg et al., 2002; Irwin et al., 2003; Jakicic et al., 2002; Jakicic et al., 2003; Jeffery et al., 2003; Ross et al., 2000; Sykes et al., 2004; Villani et al. 2000) asked participants to self-report their physical activity during part of or the total intervention. Self-reporting can lead to participant bias and to participants over or under reporting the duration and intensity of the physical activity performed. Hence confidence in the validity and reliability of the physical activity dose measurement effect on weight change outcomes is reduced.
2.5 Conclusion - Physical Activity Dose Recommendations for Weight Loss & Weight Maintenance

The objective of this systematic review was to determine whether dose response recommendations need to be revised and to identify whether the treatment dose needed to differ by age, gender, weight classification or ethnicity. After analysing the results, this review recommends that the minimum treatment dose of physical activity alone for weight loss, sufficient to produce 10% body weight loss in 12 weeks, should be 225 - 420 minutes (3 ¼ - 7 hours) per week at vigorous or moderate intensity (sufficient to expend >3250kcal per week). These results are consistent with previous findings (Ross, 2001). The treatment dose of physical activity could be completed over two to seven days in long or short bouts and could be designed to fit into the lifestyle of the individual.

The recommended minimum treatment dose of physical activity with dietary intervention for weight loss sufficient to produce 10% body weight loss in 12 weeks is >135 minutes (2 ½ hours) per week at moderate intensity sufficient to expend >1013kcal per week.

The minimum treatment dose of physical activity found to produce weight maintenance or prevention of weight regain, was >210 minutes (3 ½ hours) per week at moderate intensity or >140 minutes (2 ¼ hours) per week at vigorous intensity to expend >1400kcal per week. These results are consistent with previous findings (Fogelholm & Kukkonen-Harjula, 2000).

This review found that significant weight loss and weight maintenance effects could be achieved through lower physical activity dose recommendations than the ACSM and CDC guidelines (ACSM, 2001; CDC, 2003).

Since this review was completed the CDC and ACSM have published updated physical activity guidelines for healthy weight loss and weight maintenance. These
guidelines recommend a minimum of 150 minutes of moderate intensity or 75 minutes of vigorous intensity physical activity per week alongside dietary modification for weight maintenance and a higher amount (a minimum of 150-250 minutes) of physical activity per week for weight loss (ACSM, 2009; CDC, 2009). These recommendations are consistent with the findings of the current review. The CDC guidelines also suggest that individuals may need to participate in a higher amount of physical activity to produce weight loss and weight maintenance dependant on their weight.

However, the CDC and ACSM recommendations do not state what form of healthy weight an individual should expect to achieve from these recommendations (5%, 10% initial body weight loss or more) or how much physical activity is required to produce weight loss and maintenance when used alone without dietary modification. The findings of the current review could help to provide overweight and obese individuals greater choice on how they use and incorporate physical activity into everyday life to produce long term weight loss and weight maintenance.

In practical terms to achieve the minimum physical activity recommendations to produce 10% body weight reduction, an individual would need to increase their vigorous or moderate activity by 20-33 minutes a day with dietary modification or 32-60 minutes a day using exercise alone. To achieve weight maintenance using physical activity alone an individual would need to increase their activity (vigorous or moderate) by a minimum of 20-30 minutes per day. The targets for moderate activity could be achieved by increasing everyday activity such as walking and accumulating short bouts. Lifestyle activities could be tweaked for example, walking or cycling could be used as a method of transport to get to work or to do the school run, the stairs could be taken instead of using the escalator or lift and a person could walk to local shops instead of using the car and so forth.
Alternatively jogging, dancing, swimming and other active hobbies could be pursued alone or alongside walking/cycling to achieve the short and long bouts of accumulated physical activity for the week. The aim would be to encourage individuals to choose/employ activities that could provide weight loss but that could also be incorporated easily into normal living for life in order that the activities could be continued to achieve long term weight maintenance.

The studies reviewed indicated that participants did not achieve their PA targets. To promote positive weight loss and weight maintenance through physical activity, treatment levels may need to be 10 to 15% greater than the present dose recommendations. Physical activity recommendations could be achieved with or without dietary intervention, however dietary inclusion was found to promote greater adherence to treatment and adoption of health behaviour. There is the possibility that individuals who lose weight using physical activity and diet may encounter problems maintaining their weight loss in the long term, if life circumstances negatively affect their motivation to sustain physical activity and dietary changes (Borg et al., 2002; Slentz et al., 2004).

Clear treatment dose measures for men or women were not found, but findings would suggest that where energy expenditure is the same the weight loss effect is the same. This review was also unable to establish physical activity dose response recommendations dependant on age, ethnicity or weight classification. These findings would indicate that further research is required in all four areas.

To conclude, this study found that a minimum of 2½ to 4 hours per week of physical activity (vigorous or moderate) with dietary intervention or 3½ to 7 hours per week of physical activity (vigorous or moderate) without dietary intervention was required to achieve 10% body weight loss and that 2½ to 3½ hours per week of vigorous or moderate physical activity could result in maintenance of lost weight.
2.6 Study Limitations

This review was restricted to English language and published papers. Other researchers in the field were not contacted for recent but unpublished work. Research published in other languages and unpublished papers may have reported different findings such as the dose effect of physical activity for weight loss and weight maintenance dependant on ethnicity, gender and age. Hence the dose effect of physical activity on weight loss and weight maintenance reported in this review can not be generalised beyond the characteristics of the samples employed (e.g. predominately white middle aged men and women).

2.7 Future Directions

This review identified the following gaps and methodological issues that require investigation and attention in future research into the use of physical activity as a weight loss and weight maintenance tool for the overweight and obese.

2.7.1 Patient Groups

Although the trials reviewed assessed the effect of physical activity on weight loss and weight maintenance in the overweight and obese, none of the studies analysed how the treatment recommendations may differ dependent on weight classification. Different physical activity treatment doses may need to be recommended related to whether an individual is morbidly obese, obese or overweight.

Other concepts to consider are that as a person loses weight they may need to increase physical activity duration and/or intensity to produce further weight losses (Kirk et al., 2003; Slentz et al., 2004). In a weight loss programme this outcome could be demotivating, however finding enjoyable physical activities that each individual likes could
help. Support and participating in physical activity with others may also make exercise more attractive and easier to accomplish.

When considering the different needs of the wider population, physical activity information, education and support that is specifically targeted may increase the use of physical activity alone or in conjunction with other strategies as a weight loss and maintenance tool.

2.7.2 Other Outcomes

This study may have been able to determine guideline physical activity recommendations for weight loss and weight maintenance in the overweight and obese, but what about the bigger picture. 1) Will overweight and obese people be happy to increase their physical activity to produce weight loss? 2) How can physical activity be made more attractive/easier to do? 3) Will the recommendations need to be changed as and when a person's weight changes? 4) How can the physical activity message be spread to individuals and groups with different needs, health issues, age, ability, ethnicity, gender and culture?

It is likely that physical activity would feel uncomfortable for overweight and obese individuals who have previously lead sedentary lives. At the outset individuals are likely to require realistic strategies on how to incorporate physical activity into their lives and motivational support to encourage them to become active. Recommendations could include increasing lifestyle activity, starting a previously enjoyed physical activity and setting small targets of accumulated bouts of physical activity.
2.7.3 Intervention Components

There was little evidence to confirm whether physical activity used alone or as part of a multi-strategy intervention would be adhered to in the long term by the overweight and obese as a weight maintenance strategy. This gap highlighted the need for further research investigating the use of physical activity as a weight maintenance tool.

2.7.4 Methodological Issues and Design

The results from this study highlighted future research areas that require further investigation. These included conducting randomised control trials that analyse the effect of physical activity on weight loss and maintenance in different ethnicities, gender, age and weight classifications to determine if different dose recommendations need to be applied. They also highlighted the need for further weight loss and weight maintenance trials that incorporate the use of randomisation, allocation concealment and intention-to-treat analysis and that include 'a follow up phase' of 1-2 years to assess long term physical activity adherence.

It was also found that further research is required to assess the effect of continued motivational and educational support on weight maintenance and the effect of accumulated bouts of physical activity to promote weight loss and maintenance.

This study was able to determine physical activity guidelines for weight loss and weight maintenance. In the chapter three I aimed to investigate the experiences and attitudes of overweight and obese adults' towards weight loss and health, and their feelings towards physical activity and diet as weight loss and health strategies.
3.0 Study Two: The Experiences and Attitudes of Overweight and Obese Adults towards Weight Loss and Health

3.1 Introduction

In study one I investigated whether the physical activity dose recommendations to produce weight loss and/or weight maintenance in the overweight and obese needed to be revised. It was concluded that the present recommendations should remain. However, although the amount of physical activity to produce weight loss and weight maintenance effects in the overweight and obese have been determined within the research field, it is not understood whether the overweight and obese population are aware of how much and what intensity of physical activity is required to produce weight loss or weight maintenance.

To date there has been little research into the weight management and health knowledge base of the overweight and obese. The aim of this study was to explore overweight and obese participants' beliefs, understanding and knowledge on how to achieve weight loss and weight maintenance through diet and/or exercise and what experiences they had had. These aims directed the interview question design.

It is evident that the overweight and obese have an increased risk of a reduced length of life and quality of life through a number of different physiological and psychological disorders such as metabolic syndrome, type 2 diabetes, coronary heart disease, hypertension, cancer, renal failure and depression (Must & Anderson, 2003; Solomon & Manson, 1997). Epidemiological research has also found that fitness, not fatness, influences mortality (Miller, 1999) in the overweight and obese. However, protection of personal health without weight loss may not be a sufficient motivator for an overweight or obese person to adhere to healthy lifestyle behaviours (Brink & Ferguson, 1998; Hankey, Leslie, & Lean, 2002; Tod & Lacey, 2004).
Increased physical size through being overweight or obese can reduce the quality of life in general day to day living (Fontaine, Cheskin, & Barofsky, 1996; Jeffery, Kelly, Rothman, Sherwood, & Boutelle, 2004; Kolotkin, Meter, & Williams, 2001; Mannucci et al., 1999; Sarlio-Lahteenkorva, Stunkard, & Rissanen, 1995; Sobal & Maurer, 1999). Research has found that social acceptance and size prejudice occurs in all aspects of life for the overweight and obese (Bessenoff & Sherman, 2000; Puhl & Brownell, 2001; Puhl & Brownell, 2003; Willis & Campbell, 1992). Media representation (Cohen, Perales, & Steadman, 2005), peer and social isolation (Xie et al., 2005), health treatment from GPs and medical staff (Brown, 2006; Puhl & Brownell, 2003) and size stigma (Wang, Brownell, & Wadden, 2004) can have a negative impact on the lives of the overweight and obese.

A literature search was conducted to find papers that explored the attitudes, experiences, beliefs and behaviours of overweight and obese individuals with regard to weight loss and health. Internet and hand searches were made in the following categories including medicine and health, sport and exercise sciences, psychology and social sciences, human sciences, environment and education. Many quantitative research papers were found that investigated weight loss and health issues for the overweight and obese. These papers have included randomised control trials testing the dose response of physical activity and diet on weight loss, maintenance and health (Curioni & Lourenco, 2005; Fogelholm, 2005), intervention trials testing singular and combined treatments for weight loss, maintenance and health using diet, behaviour therapy, medication and physical activity (Blair, 1993; Tudor-Locke & Bassett, 2004), systematic reviews investigating the effect of various factors on weight loss and maintenance (Curioni & Lourenco, 2005; Douketis, Macie, Thabane, & Williamson, 2005; Flynn et al., 2006; Fogelholm & Kukkonen-Harjula, 2000; Fogelholm, 2005; Millier, Koceja, & Hamilton, 1997; Orzano & Scott, 2004; Ross & Janssen, 2001; Tsai &
Wadden, 2005), and studies assessing the effects of medical and surgical intervention on obesity reduction (Fisher & Schauer, 2002; Livingston, 2002; Mun, Blackburn, & Matthews, 2001). However, these studies did not investigate the opinions, beliefs and experiences of the participants with regard to the weight management strategies tested, nor did the studies determine whether the participants believed if the diet, lifestyle or physical activity strategies tested could become habitual or whether they liked or understood how to continue to implement these strategies.

Only nine published qualitative papers could be found that investigated the attitudes, experiences and beliefs of the overweight and obese to weight loss and health. The nine published papers were sourced from the internet, from hand searches and by contacting authors of retrieved papers to request their help to ascertain if there was any further research.

In six of the nine studies data were collected from individual interviews (Brink & Ferguson, 1998; Byrne, Cooper & Fairburn, 2003; Cioffi, 2002; Hankey, Leslie, & Lean, 2002; Kayman, Bruvold, & Stern, 1990; Tod & Lacey, 2004). From the remaining three studies, one study’s data were collected from a combination of individual interviews and focus groups (Bidgood & Buckroyd, 2005), another study collated its data throughout a six month weight loss intervention (Jeffery et al., 2004) and the remaining study’s data were collected from self-administered questionnaires (Klem, Wing, Lang, McGuire, & Hill, 2000).

From the nine papers found, three papers investigated the weight maintenance methods used by previously overweight and obese people (Byrne, Cooper & Fairburn, 2003; Kayman, Bruvold, & Stern, 1990; Klem et., 2000). A further three papers researched overweight and obese people’s motives to lose weight (Brink & Ferguson, 1998; Hankey, Leslie, & Lean, 2002; Tod & Lacey, 2004). The final three papers
explored overweight and obese people's weight loss methods and experiences of losing weight (Bidgood & Buckroyd, 2005; Cioffi, 2002; Jeffery et al., 2004).

Studies found that participants achieved weight maintenance success through routine, regular exercise, low calorie intake, dietary changes and by following enjoyable strategies that empowered them (Byrne, Cooper & Fairburn, 2003; Cioffi, 2002; Kayman, Bruvold, & Stern, 1990; Klem et al., 2000; Tod & Lacey, 2004). Dichotomous thinking, emotionally led eating styles and dissatisfaction with reduced weight was commonly found in weight regainers (Tod & Lacey, 2004). Weight loss motivation was found to diminish as initial physical, psychological and social rewards experienced through losing weight reduced over time (Jeffery et al., 2004).

Reasons given by participants for wanting to lose weight included improving appearance and attractiveness, 'clothes not fitting', self-esteem issues, health, fear, fitness, competition and age (Brink & Ferguson, 1998; Hankey, Leslie, & Lean, 2002; Tod & Lacey, 2004).

Studies highlighted the need for weight monitoring, on-going motivational support in and out of the class/facilitator environment, professional weight loss counselling, coping skills and weight loss and weight maintenance strategy training to aid long term weight loss and weight maintenance (Bidgood & Buckroyd, 2005; Cioffi, 2002; Kayman, Bruvold, & Stern, 1990; Jeffery et al., 2004).

The first paper (Byrne, Cooper & Fairburn, 2003) investigated the psychological factors that may account for lack of persistence with weight maintenance following successful weight loss. 76 females (28 formerly obese women, 28 obese women who had regained lost weight and 20 women of healthy stable weight) were interviewed firstly as individuals and secondly in groups. The group interviews were employed as a respondent validation tool to provide trust and credibility in the findings. Analysis was conducted using NUD*IST software. This study found that certain psychological factors
were identified which characterised weight regainers, these were: failure to achieve weight goals, dissatisfaction with weight achieved, tendency to evaluate self-worth in terms of weight and shape, lack of vigilance with regard to weight control, dichotomous think style and a tendency to use eating to regulate mood.

The second paper (Kayman, Bruvold, & Stern, 1990) interviewed 108 women (44 obese weight regainers, 30 formerly obese weight maintainers and 34 control females) about their weight management strategies and experiences. Participants were interviewed using a specifically developed questionnaire. Researchers used the Joint Method research design to generate and confirm hypotheses. Participant responses were grouped and coded for analysis. This study found that most weight maintainers and control subjects exercised regularly, were conscious of their behaviours, used social support and personalised strategies. Weight regainers reportedly ate in response to emotions and few used social support or exercise to maintain weight loss.

The third study investigated strategies used by weight maintainers and the reported effort/pleasure they associated with the weight maintenance behaviours. In this cross-sectional study, self-administered questionnaires were sent to 758 female and 173 male weight maintainers from the National Weight Control Registry (Klem et al., 2000). Key findings from this study were that individuals who maintained their weight losses for longer used fewer weight maintenance strategies and reported less effort was required to maintain weight.

The fourth study (Brink & Ferguson, 1998) investigated the reasons people gave for wanting to lose weight, if the reasons differed between successful and unsuccessful weight losers and whether the decision to lose weight had any influence on sustainability of long term weight loss. This study was an exploratory/descriptive design whereby 162 participants attended one open-ended, semi-structure interview for 1-11/2 hours. One researcher conducted general content analysis to analyse the data collected. This study
found that the reasons given by males and females for entering a weight loss regime included attractiveness or appearance, health, fear, self-esteem issues, age and competition. It also found that for ‘Successful Dieters’ attractiveness and health were the two major motivations.

The fifth study (Hankey, Leslie, & Lean, 2002) aimed to determine the reasons a cohort (n=91) of overweight and obese males wanted to lose weight. Participants were recruited to this study as part of a worksite weight management programme. The males attended one short interview each. Open ended questions were asked, data were collected, categorised and rank ordered to assess results. In this study participants reported that health was their main reason for attempting weight loss, followed by improved fitness, appearance and well-being.

The sixth study (Tod & Lacey, 2004) aimed to find out what factors motivated or hindered taking action with regard to weight. Slimming world consultants (n=16) were recruited and interviewed once (semi-structured). Questions were based on Prochaska and DiClemente ‘stages of change model’. Naturalistic methodology was used to frame and analyse the data. This study revealed that weight loss decisions were found to be complex and fragile and were linked to low self-esteem and confidence. Triggers included embarrassment, humiliation, fear, health, critical events and image. Experiences reported were also found to mirror the ‘stages of change’ model described by Prochaska and DiClemente (1992).

The seventh study (Bidgood & Buckroyd, 2005) aimed to explore the feelings and experiences of overweight and obese men and women during attempts to lose and maintain weight loss. Some of the participants attended one semi-structured interview and the others attended focus groups. One researcher analysed the data thematically to identify similarities and differences. The study found that participants believed that they
needed help to lose weight and maintain lost weight. The authors of the study concluded that counselling could play a greater role in the treatment of obesity.

The eighth study (Cloffi, 2002) aimed to find out why a cohort (n=175) of overweight and obese individuals who had been recruited to a weight management group had joined the group, what their experiences had been during the programme and what lifestyle changes they had implemented. Each person was interviewed once. Naturalistic methodology was used and during data analysis categories were formed to compare and contrast key ideas. Participants reported that they found the programme to be beneficial, enjoyable and empowering. However, it was also reported that they needed greater weight monitoring and ongoing support.

The ninth and final study (Jeffery et al., 2004) aimed to identify the thoughts and feelings accompanying weight loss that might explain the phenomenon. 60 overweight and obese women participated in a six month weight loss intervention. Various measures were conducted over the six months to compare and determine overall statistical significance of findings. Key findings were that over time positive but not negative reactions to the weight loss experience decreased, as did the beliefs that the benefits of weight loss were worth the effort.

The consensus findings from these papers were that some overweight and obese individuals were motivated to lose weight to become 'fit and healthy' and others were motivated to lose weight through external pressure to conform to physical ideals or through the fear of not being accepted within society. Overweight and obese participants' experiences of weight loss were found to be regularly effected by negative emotion.

Weight loss and maintenance strategy education appeared to aid empowerment for some research volunteers, helping to strengthen weight loss and health decision making (Hankey, Leslie & Lean, 2002). On-going support and professional education
were also cited by other volunteers as important weight loss and maintenance strategies (Cioffi, 2002; Tod & Lacey, 2004). No research studies were found that investigated participants' understanding of the amount and intensity of physical activity required to produce weight loss, maintenance and/or health benefits.

From the nine papers reviewed, one study’s interview questions were based on Prochaska and DiClemente ‘stages of change model’ (Byrne, Cooper & Fairburn, 2003). The remaining eight studies were of exploratory design and were not based on any particular theory (Bidgood & Buckroyd, 2005; Brink & Ferguson, 1998; Cioffi, 2002; Hankey, Leslie, & Lean, 2002; Jeffery et al., 2004; Kayman, Bruvold, & Stern, 1990; Klem et al., 2000; Tod & Lacey, 2004).

Methodological weaknesses were present in a number of the studies which did not provide sufficient information to establish credibility and trustworthiness in the research findings. For example, over half of the studies failed to confirm if peer debriefing, respondent validation, member checking or triangulation of data collection/analysis had been conducted leaving the findings vulnerable to possible researcher/participant manipulation and bias (Bidgood & Buckroyd, 2005; Brink & Ferguson, 1998; Byrne, Cooper & Fairburn, 2003; Cioffi, 2002; Hankey, Leslie, & Lean, 2002).

The themes emerging from these qualitative studies are interesting as it appears the overweight and obese participants' weight loss and health requirements do not reflect the present provision made for them. It also appears that as researchers we may still not fully understand what the overweight and obese want. Weight loss and health provision is costly, so it is important to have a good understanding about the overweight and obese populations' needs and wants. Extensive resources and finances continue to be committed to finding solutions to tackle rising obesity. Strategies include weight loss, weight maintenance and management programmes and various health interventions.
Current policy has targeted doctors, nurses and teachers to be the health, weight management, physical activity and nutrition information providers (NICE, 2006). Unfortunately there is little evidence to confirm whether the general public would access information from these chosen facilitators.

It would be useful to know how and where the overweight and obese source their information, what aspects of weight loss and health interventions they like and dislike and which particular areas of further weight loss and health education they would benefit from. With sufficient information, weight loss and health education interventions could be targeted to the appropriate demographic and learning resources situated in places the overweight and obese are happy to frequent. These areas of investigation lead to the focus and direction of the open-ended questions, clarification questions, probes and prompts designed for this study (Appendix 1).

In a previous pilot interview study conducted with one overweight and one obese woman, it was found that both women were unclear about the current guidelines on exercise and diet for weight and health management. There is little understanding of sources used by the overweight and obese to access information and knowledge; their attitudes to, knowledge of, and participation in physical activity; or their food shopping and cooking behaviours.

3.2 Aims of the Study

The primary aim of this study was to explore overweight and obese participants' beliefs, understanding and knowledge on how to achieve weight loss and weight maintenance through diet and/or exercise. The secondary aim was to investigate how and where the sample had gathered their knowledge. The final aim was to explore what
the participants believed other obese/overweight individuals would want in a weight loss program.

3.3 Methodology

The epistemological approach to this study was naturalistic inquiry. The naturalist paradigm is based on five axioms. 1) The nature of reality (ontology), the naturalistic concept that realities are multiple, constructed and holistic. 2) The role of values in inquiry (axiology), naturalistic inquiry is value-bound. 3) The possibility of causal linkages, naturalistic inquiry is based on emergent design, hence it is believed that it is impossible to distinguish causes from effects because all entities are deemed to be shaping and changing mutually and simultaneously. 4) The relationship between knower to known (epistemology), naturalistic inquiry believes that the relationship between knower and known are interactive and inseparable and 5) the possibility of generalization, only time and context-bound working hypotheses can be achieved through this form of inquiry (Guba & Lincoln, 1985).

Naturalistic axioms and characteristics formed the structure of this research study. Fourteen characteristics are recommended to guide research and to ensure trustworthiness of naturalistic inquiry. These characteristics include conducting the research in a natural setting, using the human as an instrument (in this study myself) to gather data, utilizing tacit (felt, intuitive) knowledge as well as language knowledge in the research, using qualitative methods to gather data (in this study interviews were conducted), using purposive sampling to find participants (snowball technique), using inductive data analysis, the use of grounded theory whereby theory emerges from the data collected, the use of negotiating meanings through verification and interpretation of data with participants and setting of boundaries based on the emergent focus of data.
These characteristics are employed to determine credibility, transferability, dependability and confirmability (Guba & Lincoln; 2007; Lincoln & Guba, 1985).

3.3.1 Participant Recruitment

The snowballing technique was used to source the ten study participants (Streeton, Cooke, & Campbell, 2004). This method involves one interviewee introducing the next interviewee and so on. The first participant recruited to this study was a personal friend, she introduced one of her friends, who introduced a couple she knew, the couple introduced a further volunteer and so on until ten people had confirmed commitment to the study.

The benefit of the snowballing technique is that it can be a simple, quick and inexpensive method to find research candidates. The disadvantage is that, if each interviewee has been introduced by a friend or family member there is a greater likelihood that interviewee attitudes and behaviours are similar (Carter, McGee, Taylor, & Williams, 2006). A diverse participant sample, whereby interviewees differ by age, socioeconomic, living environment and upbringing could produce more varied responses (Ball & Crawford, 2006; Wardle & Steptoe, 2003). A more diverse participant response means that the findings might be generalised to a larger population. However, despite the use of the snowballing technique, in the present research study participants were from different age groups, socioeconomic status, nationality, education, and living environment.

A total of three men and seven women participated. Ages ranged from 34 – 65 years. Interviewees lived in three different regions in the Midlands in England, these included Kenilworth town in Warwickshire (n=6), Coventry city in the West Midlands
(n=3) and Loughborough town in Leicestershire (n=1). All of the interviewees were Caucasian.

Volunteers included eight English, one Irish and one Spanish national. Eight of the interviewees had been born, grown up and continued to live in England. Six of the interviewees had lived close to their families and socialised with friends who they had known for much of their life. The other four interviewees had lived in various locations.

All participants were able-bodied at the time the interviews took place. However some participants' lived with obesity-related health disorders such as type 2 diabetes, gout, depression, low-self esteem, and hip and knee vulnerability. All of the volunteers were married or living with their partner at the time of the interviews. The social classifications of the interviewees were A, B and C1 (Mortimore, 2002). The social class indicator classifies households into six categories dependant on the chief income earner in the house (Table 3.6).

Before the recruitment of participants took place, ethical issues were considered and implemented. These related to ethical codes of conduct and research responsibilities, they included: participant safety and well-being, researcher safety and well-being, data protection, research integrity and justice, respect of people’s rights and dignity, researcher competence, participant informed consent, confidentiality, professional conduct, participant debriefing, avoidance of deception, research feedback, sharing and publishing (Loughborough University, 2005). A research proposal and ethical clearance checklist was submitted to and approved by the Loughborough University Ethical Advisory Committee (Loughborough University, 2005). The classification of overweight and obese was determined by being above the recommended weight for height (Heyward, 1998), the Caucasian BMI cut offs of 25kg/m$^2$ - 29.9kg/m$^2$ for overweight and >30kgm$^2$ for obese were adopted. Appointments for interviews were arranged over the telephone. All participants were interviewed.
<table>
<thead>
<tr>
<th>Social Classifications</th>
<th>Occupation</th>
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<tr>
<td>A</td>
<td>Professionals and fully qualified people such as doctors, solicitors, dentists, architects, senior executives, senior managers, senior civil servants and high ranking grades of the Services</td>
</tr>
<tr>
<td>B</td>
<td>Individuals with very responsible jobs such as university lecturers, heads of local government, middle managers, qualified scientists, police inspectors and upper grades of the Services</td>
</tr>
<tr>
<td>C1</td>
<td>All others doing non-manual jobs; nurses, technicians, pharmacists, salespeople, publicans, clerical positions, police and middle ranks of the Services</td>
</tr>
<tr>
<td>C2</td>
<td>Skilled manual workers/craftspeople who have served apprenticeships, manual workers with special qualifications and lower grades of Services</td>
</tr>
<tr>
<td>D</td>
<td>Semi-skilled and unskilled manual workers</td>
</tr>
<tr>
<td>E</td>
<td>Those on lowest levels of subsistence including pensioners, casual workers and people on minimum incomes</td>
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separately at their convenience. Prior to the first interview participants read a participant information sheet and signed an informed consent form (Appendix 1). Interviewees were informed that to participate in the study they would be required to attend two interviews and that they should expect the first interview to last for 1-11/2 hours and the second interview to be roughly 30-60 minutes.

Interviewees were informed before interviewing took place that they did not have to answer any questions they did not wish to. They were also informed that they could withdraw from the study at any time if they wished without having to give a reason. Interviewees were allowed time to ask questions before committing to the study. Great consideration was given to the emotional welfare of the participants during the interviews and at the end of each interview. For example, time was allowed to check each interviewee was at ease before beginning interviews, their comfort was assessed verbally and visually during the interview and time was allowed to chat in a relaxed manner before they departed.

3.3.2 Procedures

The initial interview schedule of open-ended questions was developed for a pilot study with one overweight and one obese female (Appendix 1). After analysing the results from the study it became clear that some of the questions required amending to improve clarity. After the pilot study was conducted the questions were discussed and developed further with two experienced researchers Dr Emma Rich and Dr Trish Gorely. It was decided not to base the questions around one theory but to conduct an exploratory qualitative study. The reason for this decision was to gain a wider understanding of the opinions and experiences of people who were overweight and obese. The open-ended questioning style was chosen because previous studies have
found that open-ended questions encourage interviewees to provide greater depth, explanation and quantity of verbal response (Denzin & Lincoln, 1983; Guba & Lincoln, 1981; Hoepfl, 1997; Millwood & Heath, 2000). The questions were not delivered in the order as listed in the interview schedule but delivered to flow appropriately during each individual interview. Probes, prompts and clarification questions were used during the interviews to clarify and confirm understanding and to encourage participants to describe their views and experiences in greater depth (Appendix 1). Prompts used included Why, How, Who and Where to confirm understanding and to explore the participants’ responses further. Interview questions explored a variety of areas including how important weight loss was for each candidate and whether they were actively trying to lose weight. The study reports on the life experiences of these men and women during their weight management journey and provides an opportunity to see the world from their point of view.

Areas of investigation included establishing and ascertaining:

- The participants’ physical activity history, knowledge and experiences
- The participants’ weight loss history, knowledge and responses to methods experienced
- If and how society’s norms affected their weight loss and health decisions
- Factors they believed would produce a successful weight loss programme
- Attitudes to food and cooking
- Participants’ reasons for wanting to lose weight
- If and how participants had acquired information on health and weight loss
Participants were interviewed twice, in order to gain a deep understanding of the individual's thoughts, experiences, knowledge and beliefs and as a respondent validation tool. First interviews were one to one and a half hours in length and second interviews thirty to sixty minutes. Responses were recorded by voice activated micro cassette recorder (Olympus Pearlcorder S713) and later transcribed. Themes emerging from the responses were compiled and analysed. To comply with privacy and confidentiality, individual's names were not attached to transcripts and cassette recordings were kept in a locked cabinet. Participants were given the opportunity to check transcriptions from interviews for accuracy, all of the participants declined. After transcription, all cassette recordings were destroyed (Denscombe, 2002; Hay, 2000).

3.3.3 Rationale for Interview Method

3.3.3.1 Interview Rationale

The semi-structured interview method was chosen because it allowed for investigation of each individual's life experiences, feelings and beliefs while also providing an opportunity for participants to voice issues personal to them. This technique can produce a more detailed response to questions than a survey or questionnaire and can allow the interviewer more freedom to explore participants' responses as they unfold (Drever, 1995). The semi-structured interview may also reduce the risk of interviewer bias as the participants' are allowed to talk about subjects that are important to them (Bryman, 2004). Prior to this study I had had several years experience as an interviewer. I had also received professional training in interview skills, non-verbal communication (body language) and voice intonation analysis. This experience and skill helped me to establish rapport with candidates so that they felt comfortable to open up and trust me.
3.3.3.2 Interview Design

Open-ended interview questions were chosen to reduce research bias. Probes were used to confirm understanding of responses and to encourage participants to speak in depth (Patton, 2002). Dr Emma Rich and Dr Trish Gorely assisted during the various stages of question construction, interview design and participant response evaluation process. After reflection and discussion with my peers the questions designed for the pilot study were reviewed to produce the final questions for this study.

It was decided, between my peers and I that participants would be interviewed twice because this method of inquiry allows a second opportunity to investigate areas that might require further clarification and precision. It also provided validation of interpretation and understanding of responses in the first interview.

This method worked well at producing rich dialogue in the pilot study and as a direct result was chosen as part of this study’s interview design. Although interviewing participants twice can be time consuming it provides a greater opportunity to achieve data saturation and hence helps to increase the reliability, credibility and trustworthiness of the data collected (Denzin & Lincoln, 2000). Past research has also found that second interviews are a beneficial method for gathering descriptive dialogue that can create a deeper understanding of each person’s experiences and perspectives (Loftus, Klinger, Smith, & Fiedler, 1990).

The interview format provided me with visual and audio cues (e.g., body language and voice intonation) that could inform me how the subject was feeling. This information helped me to respond to each individual empathically and appropriately when probing deeper with my questioning (Guye-Vuillème, Capin, Pandzic, Thalmann, & Thalmann, 1999; Richmond & McCroskey, 2004). It was decided to record the interviews on Dictaphone and to take discreet observational notes during the interviews because these methods were believed to be as unobtrusive as possible. Field notes were also
written during the ongoing interview process. These notes included description of participant behaviour and my reflections on the interviews and the data emerging. Direct observation using a video camera or the presence of a second researcher were considered but not chosen because these data collection methods can be deemed intrusive by participants. This effect can result in interviewees feeling awkward and uncomfortable during interviews, which in turn can affect interviewees’ behaviour and responses (Thomas & Nelson, 2001).

3.3.4 Critical Analysis of Research Study

Interviewees were interviewed twice using open ended questions to avoid interviewer misunderstanding or bias. However, the nature of the investigation may have influenced the participants’ responses. Previous research has highlighted that volunteers may wish to please researchers by providing answers that they believe the researcher wants to hear (Sparkes, 2002; Wood & Kroger, 2000). For example, this study was investigating exercise and dietary behaviour and the interviewees may have suggested that they participated in more exercise and ate a healthier diet than they did in reality.

I, as the interviewer, may also have influenced the research findings (Sparkes, 2002). My physical size, appearance, gender and presence, the subject areas that I investigated, how I asked the questions and how I responded to the answers may all have influenced the responses of interviewees.

I am a white, British, middle class, educated, 5ft 21/2in (short), slim, middle aged blonde woman. The participants may have made assumptions about how I lived my life dependant on my appearance. They may have thought that I did or did not eat certain foods because I was slim. They may also have believed that I participated in physical activity. The interviewees could also have believed that I was interested in diet and
exercise due to the research topic I had chosen to investigate. All of these responses would be based on assumptions but the assumptions, whether true or not, could have influenced the participants' responses to questions asked.

How I personally responded to the interviewees' answers could have also affected responses. Facial expressions, interest in responses, words used to increase dialogue could all have been interpreted by participants in ways that influenced their own verbal responses. In short, participants may have given me answers that they perceived would please me. To overcome researcher influence I aimed to respond neutrally both facially and verbally to interviewee feedback.

Considering researcher reflexivity, I have worked in the field of health and exercise for fifteen years, so have considerable experience working with overweight and obese individuals. I have worked in a number of settings with individuals and groups, for organisations like Weight Watchers and on a consultancy level. My experiences have developed my own particular views on the subject and this I believe should be made clear, to avoid researcher bias. My dealings with overweight and obese people have lead me to believe that there can be many reasons why an individual has gained weight and many reasons why they may have difficulties losing and maintaining their weight loss. Difficulties with weight management I have encountered include physiological, psychological, knowledge based and organisational reasons. My bias, may be that I believe that everybody can lose weight and maintain weight loss if their individual underlying problems are recognised.

3.3.5 Data Analysis

The paradigm for this study was Naturalistic Inquiry. To ensure validity and reliability of data and to provide trustworthiness and credibility of the research findings a
triangulation approach to data collection was devised. This approach included peer debriefing (discussing interview responses with two experienced researchers), creating an audit trail by demonstrating how what was said in the interview (quote) became a theme, making notes on responses to follow up in second interviews, checking and validating participants' responses during the first and second interviews through cooperative inquiry and checking internal consistency of data. This approach also included recording discrete observational and field notes, conducting interviews until data saturation was achieved (whereby no new ideas or opinions emerged) and asking respondents to read and check transcripts for accuracy (all of the participants declined to read and check transcripts). Respondent experiences, opinions and attitudes were found to correlate which indicated a good level of saturation.

The interview transcripts were analysed using content analysis methodology in which coding categories derive from key themes that emerge from the text data (Hsieh & Shannon, 2005). Key themes evolved through systematically analysing the communication content in each individual interview (Flick, 1998). The systematic analysis involved a data reduction process which focussed on developing themes from quotations (Denzin & Lincoln, 1998). The interview transcripts were read and reread to source both different and similar opinions and experiences. Differences and similarities were grouped under themes, then read, reread and reduced. A descriptive approach was used to contextualise the behaviour and values of the individuals interviewed and to provide an opportunity to understand the social environment that they operated within.

A tree map technique was used to structure the large volume of data collected from the interviews into a hierarchy of themes. The tree map technique chosen (Diagram 3.1) to structure the data began with a single trunk which symbolised the major theme. Branches growing from the trunk represented the sub-themes, the twigs growing from the branches and the leaves growing from the twigs represent further sub-themes.
(Davies, 1998). The themes were then analysed, discussed and positioned within the current field of literature.

3.4 Results and Discussion

Participants in this study were very forthcoming about their weight loss and health beliefs attitudes and experiences. They all described their perceived reasons for gaining weight which included: transportation infrastructure, lack of time, changes in social life, the demands of work and bringing up children. They believed that these reasons had resulted in reducing their personal physical activity and focus on weight maintenance. Most of the participants had attempted weight loss during their lives with varying but limited success. All of the participants were following some form of weight loss and/or health strategies at the time of interview. Aliases were given to participants to protect each person’s identity.
Diagram 3.1: Tree Map Demonstrating the Development of Themes
Participant List

Gaynor - married with three adult children and five grandchildren, retired and in her 60's. Gaynor had worked part-time as her three children were growing up and now, with the assistance of her husband, regularly looked after her young grandchildren. She was a friendly, open woman who was happy to share her weight loss and health experiences. Gaynor had attempted to lose weight numerous times during her life but had always regained the lost weight. Now in her later life and officially clinically obese, she had decided to stop the yo-yo dieting to focus on maintaining her present weight due to health concerns. Her motivation she explained was that over the previous few years she had been diagnosed with diabetes, gout and knee cartilage erosion.

Linda - a married, full time lecturer/researcher in her mid 40's with a school aged son. Linda was an articulate and witty conversationalist who had previously worked as an actress, singer and dancer before changing her career later in life. She was very conscious about looking after her own and her family's physical and dietary health. Linda appeared to be a confident, extrovert woman, but she explained that she had been very conscious about her body size since her teens and had tried every diet going. She stated that her body focus was now health driven due to health problems (which she did not wish to disclose) even though she confirmed, she would still love to be slim.

Janet - a married, full time mother in her 30's with school aged son and baby. Janet had previously worked part-time before having her baby. She had enjoyed work but preferred to focus her energies on her family, home and friends. She came across as a kind, thoughtful and caring woman. Janet was well dressed for each interview and indicating that she took time to look after her appearance. She appeared to be a little shy and self
conscious, as if she had little belief in herself or her abilities. She had followed diets and
joined slimming groups in the past to lose weight but had had difficulties keeping the
weight off. She was now clinically morbidly obese. She was motivated to lose weight for
health and appearance reasons and explained that she had been diagnosed diabetic
several years previously.

**Lisa** – a married, part time artist and mother in her 30's with three young children. Lisa
had experienced weight gain and lost it with her previous pregnancies. During the
interview period she was focused on losing the weight she had gained during the
pregnancy for her third child. Lisa was slightly guarded and appeared to be slightly shy,
unconfident and reserved. However, she was happy to share her weight gain and loss
experiences. She had previously been successful at losing and maintaining the lost
weight after her previous two pregnancies. She had previously attended commercial
slimming groups and found them to work for her. She had returned to Slimming World
and was happy with the progress. Lisa's focus was to lose weight to be slim to improve
her appearance and she was not concerned about losing weight for her health.

**Alison** – a married, retired physiotherapist in her 50's with two adult children. Alison was
a confident, forthright woman who knew her own mind. She was happy to discuss her
experiences and beliefs with regard to the health and weight loss of others and herself.
She had strong opinions about weight loss and health. She had previously worked full
time for the NHS and had found combining motherhood and full time work difficult to
juggle.

**Ruth** – a married, part time artist and mother in her later 40's with two primary school
aged children. Ruth was Spanish and had moved to England to study an Art degree.
She had met and married her husband in England. Before having children she had worked as a full time artist and illustrator. Ruth was overweight with very low self esteem. However, she was an attractive woman but didn't believe that she was. She explained that she felt great difficulty with socialising with others and felt introverted and self-conscious. She had felt like this since her teens and had emotionally swung between feeling OK to feeling very badly about herself. Ruth explained that she had tried every diet going, but none worked because she always sabotaged her own attempts.

Josie – a married, full time mother in her late 30's with two young children. Josie came across as very confident, forthright and would probably be perceived as intimidating. She had worked full time for the NHS as an Occupational Therapist before having her children. At the time of the interviews she was attending Weight Watchers meetings to lose the weight she had gained during her second pregnancy.

Lawrence – a full time PhD researcher in his mid 40's, father of one primary school aged son and married to Linda. Lawrence had grown up in Belfast, Northern Ireland and had moved to England as a young adult. For a number of years he had worked backstage and as management for various theatres. He had recently changed careers. He was an extroverted, jovial character, who joked and painted a visual image with his descriptions of his life experiences. He had grown up with little interest in food and had not really enjoyed the food he had been brought up on as a child. He had gradually become overweight. He believed this was down to his working hours and lack of participation in sport. He had never actively tried to lose weight, but had recently taken up walking for health reasons and had lost weight as a by product.
John – a retired grandfather in his mid 60’s, father of three adult children and married to Gaynor. John appeared to be confident and self assured but it took a little time for him to feel comfortable to freely express his weight and health experiences and opinions. John had a very straightforward attitude towards weight management and believed he simply had to eat less and exercise more to lose or maintain his weight. He didn’t appear to be particularly concerned about his weight (he was clinically obese at the time the interviews took place) but was motivated to be physically active and eat healthily to maintain his health.

David – a full time business man in his early 50’s and married with two adult children. David was a very domineering, competitive and high achieving character. He had worked his way up to director level within the field of business. He fitted the A type psychological profile. He appeared to be the type of person that if he put his mind to something he would achieve it. He came across as a hard worker and a winner. David had gained weight gradually during his working life, he believed he had lost focus on what he was eating and was not being sufficiently physically active because of time constraints caused by work. He had not previously tried to lose weight and although he had been diabetic for a number of years, his motivation to lose weight was for appearance and social acceptance, not for health. He was morbidly obese at the time the interviews took place and had employed the services of an exercise psychologist and physiologist to help him to lose weight.

After analysing the twenty interview transcripts the following results were compiled. Headings and subheadings follow the tree map themes (Diagram 3.1). Quotations from individual interviews have been included to provide a ‘voice’ for the participants and to give the reader insight into the interviewees’ lives and experiences.
3.4.2 Physical Activity

This section reports the interviewees' attitudes towards physical activity and their individual experiences. The participants vocalised barriers that had prevented them from being physically active and their personal reasons for wanting to participate in physical activity.

3.4.2.1 Participation

All of the interviewees in this study had participated in sport, dance or other forms of exercise during their childhood and adult life. Involvement in physical activity was considerable for most participants while attending school and further education. Activities participated in included gym sessions, circuits, hockey, rounders, tennis, netball, ballet, dance, skiing, gymnastics, yoga, football, swimming, cricket, rugby, basketball, running and cycling.

The types of activities participated in by the female interviewees after leaving full time education included yoga, swimming, toning exercises, callisthenics, aerobics, Dynaband, dancing, tennis, netball, karate, treadmill, Nordic Track home exercise, walking and cycling. Rugby, swimming, walking, football and Ballroom dancing were the forms of activity pursued by the male interviewees.

John continued participation in a team sport throughout school life and into his late 30's. Interestingly, although he remained physically active, he still gained weight during this time. He put his weight gain down to the strong social and drinking culture that went with playing rugby. One of the female interviewees also described how her motivation to play netball was predominantly social. She also described how participation in the team sport wasn't altogether healthy.
'A friend from school - she was at Warwick University and was on the netball team and was setting one up and she said 'do you want to play, you used to play didn't you?' 'yes OK' 'do you want to come along?' and got some other school friends in as well. It was quite good. Yes, we used to stay behind and have a drink, a few cigarettes.' (Josie)

Past research has questioned the association between sporting participation, risk taking and health behaviours. It has been found that those involved in team sports have a greater chance of participating in risk-taking behaviours such as drinking alcohol and smoking than non-sports participants (Black, Lawson, & Fleisman, 1999; Garry & Morrissey, 2000; Patel & Luckstead, 2000).

Most of the men and women confirmed sporadic participation in physical activity during their adult years. Five of the participants highlighted that they regularly walked for health and/or weight loss and weight maintenance reasons. One woman described how she used the transportation activity of walking (instead of using her car) to provide the daily physical activity she believed necessary to produce weight management and health benefits.

'8.35 am I walk to school and I'm at school at about 8.50am so that's about fifteen minutes. Then I walk on to nursery so that's another ten minutes. Then I walk around the town. Then walk home. To walk home from town is about twenty minutes. Then I perhaps walk back to town another twenty minutes and walk back again after getting my son from nursery. So, then I walk to school and back at the end of the day. So that's another twenty minutes, so two hours, a good two hours plus of walking.' (Josie)
All of the interviewees stated that they believed exercise was good for looking after their physical and mental health, maintaining weight and helping them to lose weight. Participants confirmed that they walked most or all of the days of the week to promote weight loss, weight maintenance or to look after their health. Swimming, treadmill exercise, yoga, gardening and looking after children were highlighted as currently performed exercise. Looking after children was cited as physical activity by grandparents but not by mothers or fathers of younger children.

Some of the men and women suggested that making exercise become a habit was the best way of maintaining regular exercise behaviour. Conversely, interviewees stated that negative habits e.g. a sedentary lifestyle and the need to break habitual behaviour was often one of the reasons for not being active.

'However because I wasn't on tour I could have made an effort but I'd spent ten years getting out of the habit. So I do regret that a bit because I do think that continuity is pretty important, as it's very easy to get out of the habit of things and if you are playing, the great beauty of organised sport is you don't have to organise it yourself, you don't have to say 'I better get out, I haven't been out for two days because it has been pouring with rain and on day three it's still pouring with rain. Well I better put a big coat on and go out.' You're playing, you've got your match times, you've got to do this. You're expected to be somewhere otherwise you'd be letting somebody else down. It's a damn sight easier to keep on top of what you're doing if you're involved in it....so I would. For anybody else now I would recommend it because it is very easy for a few years to get out of the habit.'

(Lawrence)
Interview data from this study established that involvement in physical activity as children had not prevented the interviewees from becoming overweight or obese in adulthood. However, most of the men and women did believe that physical activity was important and they understood that continued physical activity was beneficial to produce positive long term physical health. A couple of women confirmed that they really needed to increase their personal activity to look after their body.

'I'm sure what I actually need is just to get off my arse and umm use my body in the way it was intended to. It's a working body and instead it has just been sitting so it's no wonder that it's ceased up and it aches and it creaks, gets puffed out.' (Linda)

'Not enough, I know I don't. I do have quite a lot of stiffness. You know that knees and hips and things. I need to do more really and we've just bought bikes that we are going to get back into doing because we knew that we weren't doing enough external activity. We've also been doing a lot of very physical renovations. Umm, so I kidded myself for a while that that was enough. It isn't really, I found that dance, mobility type activity were compromised, not strength and stamina, but mobility type activity.' (Alison)

3.4.2.2 Factors Related to Reduced Physical Activity

A sharp decline in physical activity occurred for many of the interviewees on completion of full time education at secondary school, college or university. Reasons given for the drop in physical activity included increased social activity, reduced opportunity to participate in team sports, relationships with friends and work schedules.
Most of the females interviewed explained that exercise participation decreased or stopped when they started dating. Many of the women confessed that their focus switched from participation in physical activity pursuits to focussing on attracting a partner and establishing a relationship.

'I suppose because I had just left school, I was working full time, I was interested in socialising, went to the theatre, you know, went out with friends. So I suppose the friends didn’t do those sorts of activities, so I didn’t do them basically. Umm and then of course when men came into my life you go out socialising.' (Gaynor)

A number of women confessed that they became self-conscious about their changing bodies around adolescence and that these feelings negatively affected their exercise participation. Ruth and Linda described how they felt self-conscious when their bodies started to change during puberty and that the increased attention that they experienced, decreased their desire to be physically active.

'I've really thought about it myself as well I was getting quite a lot of attention on how my breasts were growing. I never liked that, I really always hated it.' (Ruth)

'I went from sort of flat chested to at fourteen suddenly growing enormous breasts and so the leaping up and down at classes you know and various teachers saying 'Perhaps you should sit this one out' so you know in all it really didn’t work for me.' (Linda)

None of the men interviewed cited dating or puberty as reasons for their own decline in physical activity participation. However, a recent systematic review on
physical activity in school-aged children found sport and exercise participation declined in boys and girls during puberty (Strong et al., 2005). The men interviewed in this study stated that work schedules, the demands of work and focus on career advancement caused their decline or cessation of previous sport and exercise involvement.

‘Yeah, obviously, by that time you're working corporately. You're spending your time behind a desk, you're working, spending time in the car. My lifestyle changed and I didn't compensate. I then had children, so of course. Not that that's an excuse. Your life style changes and the exercise, the things you do, tend to go by the by. You have to keep up with the corporate game and give the remaining attention to your family.’ (David)

The rationale imparted by the interviewees for the decline or cessation of regular physical activity included changes to environmental infrastructure, having children, lack of motivation and getting married. These determinants were verbalized by both sexes. One woman explained that when she was younger she used to cycle to work. However the construction of new roads without cycle tracks had made her previous route to work too dangerous to cycle.

‘I used to use my bicycle to drive to work. But I worked in the centre of Coventry so parking the bike was a bit difficult. There was a space at the back of the shop, but traffic. It was the era when they were building all the new roads in Coventry and it just got so dangerous that I stopped doing it. I rode a bicycle at the weekend.’ (Gaynor)
Gaynor's comments resonate with previous research work which has found environment changes to reduce foot and cycle transportation in the population (Berrigan & Troiano, 2002; Frank & Engelke, 2001; Frank, Schmid, Sallis, Chapman, & Saelens, 2005).

The older interviewees had a common belief that overweight and obesity was an issue of concern for younger generations but not for them. This finding could indicate that some older generations may be less inclined to change their health behaviour because they believe themselves to be too old.

Adults who had children or had adult children confirmed that swimming and walking were the most common exercise forms participated in individually or as a whole family. Other forms of organised activity were found to be difficult to start or maintain due to either lack of childcare provision, physical activity coinciding with a child's hobby or because the adult felt that they should be spending time with their partner and children and felt 'guilty' using quality time to exercise.

A number of the participants communicated that they would not go to group exercise sessions. Some firmly established that they were not the 'gym type'. Reasons given for their viewpoints were fear, not feeling confident to mix with others and not being extrovert. Others, such as Alison, stated that it just wasn't something they would enjoy. 'Umm, in the past I have done the odd gym class or exercise classes, but they never really suited me.'

'Hum. I'm not very good at collective things apart from being a member of the union. Immobile collective is fine. Umm, yes generally that sort of thing just didn't suit me. Umm and I got quite embarrassed when I was younger as a teenager.'

(Linda)
'I would say in the past it has made me feel like a second class citizen (being overweight in a fitness environment). And you're aware of being stared at a bit more, like situations going swimming, being at the gym. You are aware of being big.' (Janet)

'I suppose fear of showing myself up. I'm just not that way inclined. I'd hate it. A one to one maybe I'd do, but I wouldn't do it with a dozen or half a dozen other women around. I've never been that way perhaps that's why I'm not in clubs and groups and things.' (Gaynor)

One woman did confirm that she would use a gym if there was no one else there! Another woman felt that she would attend a gym willingly if she had someone to go with. Janet confirmed that her attitude changed after attending a gym based GP referral programme. She found to her surprise that she enjoyed the gym based activities and became comfortable with the gym environment.

'I did go to a gym a few years ago and it was through a doctor's thing, it was free for me for so many weeks, and initially I was horrified, I didn't want to go, I dreaded it, once you started going you feel better about yourself, you actually really enjoyed and looked forward to going, so I think it's just the initial push in the right direction.' (Janet)

Unfortunately this individual woman did not continue attending the gym after the GP referral scheme had finished because she couldn't afford the gym fees. Other attendees of GP referral schemes may have the same limited financial resources and may not be provided with sufficient knowledge at the end of the GP referral scheme.
continue physical activity in a non-gym environment. NICE confirmed that there were clear training needs for GPs and other professionals for promoting physical activity (Cavill, Buxton, Bull & Foster, 2006). It was also suggested that the expertise of exercise and behaviour change specialists would be beneficial to offer in-depth and continued support.

3.4.3 Diet and Nutrition

This section reports on the interviewees' attitudes towards diet, nutrition and eating behaviour, highlighting the forms of food the interviewees' perceived to constitute eating healthily. Participants also describe their personal eating, cooking and dietary experiences and discuss their feelings towards food, ready meals and home cooking.

3.4.3.1 Ready Meals

When the interviewees were asked about their dietary experiences and beliefs it was found that ready meals were perceived as one of the major causes of weight gain by most of the participants, while home cooking was believed to prevent weight gain and help maintain weight.

'But you're still not going to stop people having takeaways, fast foods, not cooking their own food umm all that sort of thing. Because that's what it boils down to, isn't it you know. Because people are not buying fresh food, not cooking food themselves everyday it's out of a packet most days. Umm that's absolutely last resort in this house. Everything is made, cooked fresh, everyday fresh food. Umm.' (John)
Interviewees believed that ready meals were used for convenience. Few of the interviewees admitted to currently eating ready meals. It appeared that they believed the act of eating ready made food was bad, “sinful” and an embarrassment to admit to.

Some of the participants were defensive when talking about ready meals. They presumed that ready meals were unhealthy to eat and appeared to believe that admitting eating ready meals deemed them to be stupid. One of the few interviewees comfortable to confess to eating convenience food explained that ready meals could be useful when cooking for one and that she deemed ready meals aided weight control.

'I did buy them. I used to buy them and have them in the freezer ready for if I was on my own if my husband was going out. It was something I could put in the oven or put in the microwave, so simplicity really. All the points were on the back they were never more than five, six or seven, never really any higher than that. Umm did I like them? Some of them, some of them were OK.' (Josie)

Another interviewee communicated her past use of ready meals with disdain. She explained how in recent years she had learnt more about the negative factors associated with overuse of convenience foods. She explained that she had cooked ready meals when her children were growing up because she had a heavy workload at the time. She stated that the use of ready meals was perceived positively by society at the time so she hadn’t worried about it.

A few of the participants explained that they preferred not to eat ready meals because of the taste. Participants proclaimed that they had all consumed ready meals at some point in their lives. It appeared that many of these individuals felt embarrassed or guilty when discussing their use of convenience foods. The embarrassment and guilt felt
by participants may have stemmed from social pressure to conform to current attitudes towards healthy living.

3.4.3.2 Home Cooking

Collective findings confirmed that women were the main cooks and shoppers for food in the home. It was established that mothers and grandmothers had been the main cooks and teachers of cooking over the generations. When asked about cookery education all of the females stated that they had undergone lessons at school. Some had learnt cookery from mothers or grandmothers in the home, while others had learnt through discussions with friends or from recipes in magazines.

The male interviewees' cookery experiences were more limited - they confirmed that they had only learned about cooking within the home. Like tradition before them, the interviewed females were the dominant decision makers with regard to diet, cooking and food for the family.

'My diet is probably better now than it ever has been. Umm, in a lot of ways my wife is a great one for cracking the broccoli whip. Umm, seed of the devil, but umm, she's very conscious of the portions a day and all that so I have to pretend to try and get my son to eat stuff.' (Lawrence)

Both male and female participants believed that the planning of meals was important, reasons given for planning meals were: - to produce healthy tasty food to enjoy, prevent weight gain, to assist weight loss and to maintain weight. John believed that the reason for the increase in obesity in society was because people did not take sufficient time to analyse and organise their diet 'Umm, I think the majority of people
don’t take sufficient time to look after their diet. I think people are eating what would be classified as fast food and microwave style dishes.

There was a general perception that home cooking was more expensive and time-consuming than ready meals and that people would have to put effort into organising their eating.

‘The problem is I suppose a lot of the foods, the lifestyle to keep the weight loss off is more expensive and more demanding than one that doesn’t. So it’s difficult isn’t it, I don’t know how you give them the support that they need without spoon feeding them and then they would be less likely to maintain it when you stop.’

(Alison)

Some of the women described the amount of work that was necessary to deal with the different food requirements within the family as complicated and laborious. Difficulties with juggling home and work responsibilities for women have been found previously (Yancey, Leslie, & Abel, 2006).

‘It’s a la carte menu. Umm, my daughter is quite easy really she is getting better with vegetables especially when they are really kind of hidden. My son is very fussy very, very fussy. He loves pasta but if it is toasted on the top he doesn’t like that. Umm, my husband usually prepares the meal because I am usually on a diet, so he is putting pasta or things with sauces, with gravy or something like that and I will stick with the diet and have something with salad. Sometimes it’s like cooking 3 different meals.’ (Ruth)
'Err, it's very interesting the compromises that you make, you just do, because my husband was brought up, his family had no interest in food, his mother had no interest in food and she was responsible for the cooking. And no awareness of healthy eating at all, absolutely none, staggering, umm, and would cook vegetables for hours just to make sure, so my husband is an absolute horror at vegetables. Being brought up in Northern Ireland where they weren't exactly very aware of healthy eating anyway generally as a culture, so it's a real struggle, a real struggle. Unless you're eating meat at least 18 times a week it isn't a proper diet anyway! Umm and my son umm, whom I brought up on day one on solids organic steamed. I had an organic vegetable basket delivered, I steamed everything, pureed it, it was wonderful, he had the most perfect diet, everything I could think of for 21/2 years and then he refused to eat vegetables and I didn't want to push it because I didn't want to make him hate vegetables, which I now think might have been a tactical mistake, as he's now nearly 10.' (Linda)

The provision of food within the home was deemed wearisome, however many interviewees confirmed efforts were being made to eat well, cook food from scratch and organise their eating. A number of reasons were verbalized for taking these actions, including: - to maintain or lose weight; to eat healthily; to eat socially with the family; or simply to enjoy good quality, tasty food.

'It's a very conscious decision between the pair of us because I became very uncomfortable with the fact that I was allowing the insane business of life to get in the way of everything else and family life sitting down eating together - eating well or eating at least half decently umm and so I took a very conscious decision.' (Linda)
It materialized that a few participants presupposed their childhood diet was less healthy than their present day diet. Various candidates stated that childhood food was unexciting and overcooked, especially vegetables. A number of interviewees blamed the British philosophy of food and expressed the belief that Britain didn't possess a food culture like other European countries.

'There was no creativity, there was no, this was just the way things were. Umm you know very traditionally gendered so my mother cooked. But she's a structural engineer you know, she wasn't particularly interested. She'd cook and she's the same now. I have a very different relationship with food from my upbringing but it has taken a long time.' (Lawrence)

'Umm yes, they could shop at the market in the day, cook it, eat it and enjoy it as opposed to your 55 minute normally dribbling crumbs over your keyboard. It's no surprise really is it, that's why we are rubbish with food.' (Linda)

Alison commented on the different attitude towards food held by her adult daughter compared to herself. This woman believed that healthy food messages being promoted in the current climate about the consumption of fruit, vegetables and organic produce were influencing the food choices of individuals within society. She confirmed that attitude changes to food were positive but her personal opinion appeared to be that such food awareness was over the top. She stated that 'My daughter is quite fixated on health. She and her husband really enjoy cooking. They buy all the organic stuff, they do all the right things and eat the right food.'
3.4.3.3 Eating Behaviour

When participants described their eating behaviours and relationship with food most confirmed that they loved food and enjoyed eating a variety of foods. One man did confirm that food had only been ‘fuel’ while he was growing up. Through experiences as an adult he described how he had adapted to enjoy a wider variety of foods.

'Um and what I do recognise is that my upbringing, the family that I grew up in, had really no relationship with food at all other than hot fuel. There was no creativity. This was just the way things were.' (Lawrence)

Ruth confirmed that she was uncomfortable around food and found it difficult to control her emotional eating 'You just get the first thing, the biscuit or whatever it is and that, and you finish the packet and you just lost it completely, your confidence just goes down completely. And you feel worthless, you haven't been able to be strong enough and that's it lost, lost and that goes, you know, really eating and it's not the food itself, it doesn't care what you eat, it's a vacuum cleaner day, eating whatever you find, bread it's (sic) and it doesn't taste of anything. But it's a way, I find myself hurting myself.'

Over half of the female interviewees pronounced emotionally led eating responses. They stated that they ate more when they were feeling down, for comfort reasons or when triggered by their menstrual cycle. Tiredness, habit, emotions and stress were also mentioned as triggers for overeating. These findings parallel with past research findings (Larsen, van Strien, Eisinga, & Engels, 2006; Lindeman, 2001; O'Connor, 2004).
'Probably having children I have been more extreme when I lose weight, it’s not only my frustration, but my children’s frustration really, all the extra stress. Probably I use it as an excuse, but that is the way I have learnt to help myself. If I’m stressed or frustrated I eat, it help me (sic) and I have a vicious circle, I put on weight and then I feel worse about myself and it is worse until I start again, the diet again.' (Ruth)

None of the men stated that tiredness, emotional reaction, or stress affected their eating however they did communicate that their eating behaviour was formed through habit (Larsen et al., 2006). Many of the male and female participants explained how they planned eating to prevent over eating, a method that has been found to positively aid weight management (Bidgood & Buckroyd, 2005; Cioffi, 2002; Jeffery et al., 2004).

Individuals interviewed expressed responsibility for the foods they were consuming and appeared to be conscious of eating ‘healthily’. This study did not establish whether they were aware of what constituted a healthy diet. However, it did establish that participants were making an effort to follow information they had learnt. Linda explained ‘um general nutritional guides, what’s good for you and what’s bad for you, looking at the labels and looking at the hidden things that are in there.’

Continual nutrition promotion about the health implications of diet appeared to be positively influencing dietary choices and decisions. Men and women appeared to be looking at food from a social and nutritional perspective. Interviewees from all age groups confirmed nutrition and dietary knowledge and cooking skills to be important to promote positive health and weight management.
3.4.4 Information Sources

This section reports on the weight loss and health information sourced by interviewees and discusses the perceived clarity and credibility of information accessed and the preferred providers for information. It also analyses the health and weight loss knowledge base of the participants who took part.

3.4.4.1 Sources and Preferences

During the interviews participants were asked where they had found information about weight loss and health. The television was highlighted as the most commonly accessed resource, followed closely by the internet. Newspapers and magazines, libraries, specialist books, slimming clubs, aerobic instructors and gym instructors were all popular information resources, doctors and GP surgeries were unpopular. Friends, work colleagues and wives were also highlighted as information providers.

Some of the interviewees felt that there was a lack of information provision and that they themselves had a lack of knowledge. Some found the sourcing of information tricky. However, other interviewees believed as Josie did that 'it was all out there (information) if you want it'.

The internet, books, television, newspapers and magazines were popular with both sexes. Lisa believed that doctors and hospitals probably were not appropriate 'because if the obese are not worried themselves (sic) they wouldn't be going there anyway to ask about it'. John expanded on this theme.

'There's lots of reasons for it, [not going to the doctor's and hospital] one of the reasons is that the management in the NHS is not that good, so I as a person
wouldn't want to go to the NHS for preventative information. Cause I'll get a stock answer from somebody who only did 2 hours nutritional training. What I want is an external body I can go to for information.' (John).

Out of the ten interviewees, only Janet had participated in a GP referral exercise course. She talked positively about her experience attending the GP referral programme. All of the participants were asked about their feelings towards their GP clinic providing health and weight management information. Five individuals stated that they may be interested in sourcing information about diet and exercise for health, weight loss and weight maintenance from their doctor's practice. However, participants in this study also confirmed that they would prefer to pick up an information leaflet from their surgery rather than speaking with a doctor. The reasons given for this choice were that they believed doctors were not specialised in giving dietary and exercise advice. Other interviewees did not feel comfortable speaking with a doctor because they had previously found doctors to be authoritarian, time limited and non-empathic. Linda stated that 'I don't see my GP unless I absolutely have to,' while Lawrence felt that doctors were not the people to source information from.

'They are not specifically trained in that way. Umm if I had a problem I would go to them to possibly be referred to somebody but I wouldn't actually go and ask them anything. You know it's not what I would expect from my GP.' (Lawrence)

Previous studies have indicated that a similar percentage of patients would welcome information to be available from their doctors' surgery, however most did not wish to receive information directly from their GP and did not believe the GP to be
knowledgeable in weight management (Davis, Emerenini, & Wylie-Rosett, 2006; Tan, Zwar, Dennis, & Vaghokar, 2006).

When the participants were asked about preferred information providers, commercial organisations were preferred to GPs and the NHS. Organisations such as Weight Watchers, Slimming World, Rosemary Conley were popular with the women, and three had attended slimming organisations. None of the men interviewed had attended a slimming club.

Jamie Oliver was discussed with admiration. The general belief was that he was making a positive impact on nutritional awareness. Lawrence stated ‘We have the conversation so often, because of the Jamie Oliver thing.’ Gillian McKeith was also admired. However, her dietary recommendations appeared to be popular in theory but too complicated for everyday living.

“I’m sure Gillian McKeith’s is healthy eating and it always looks lovely when you see it on TV and you see the table of healthy foods and I think yeah I could eat all that and I would if someone made it for me. It’s all for an easy life isn’t it.” (Josie)

3.4.4.2 Knowledge

Some of the participants (3) appeared to believe that the information found on the internet, aired on the television or read in the media was correct, honest, usable and appropriate to follow. However, other interviewees (7) believed that there were conflicting messages about diet, health and exercise which lead to confusion. David believed that the information available in the media and on the television was unreliable.
'I think that not only is it unclear, I think that it is also at variance at times and I think that it's written very poorly, it's either over scientific or it's Sun reader mentality, there is very little practical information. I think it's either professionalized for professional people or the Sun reader mentality, there's nothing and the gap is huge. In terms of information, simplicity, non-conflicting information, it's too much. Any kind of website that you go on, weight loss, you get reams and reams of stuff and not enough simple bullet point information. Why do I need to lose weight? Well I'm overweight. Why am I overweight, what caused that? This is what caused it and show people. More charts and diagrams, there's too much heavy text. Pictures, diagrams, flow charts that people can relate to.' (David)

Alison also stated that she believed food labelling introduced in supermarkets and food outlets to inform customers about healthy eating was not achieving its aim 'It's too complicated isn't it and instead of making it simple, I mean their putting all this stuff on the packaging.'

All of the interviewees believed that they were familiar with the most up to date dietary and exercise information concerning positive health and weight loss. However, after further in-depth questioning most of the interviewees confessed that they were unsure about current recommendations. David explained that he believed dietary information to be faddy and unclear.

'There's too much fad, too much this is new lets jump on the band wagon [businesses and individuals making money through diet concepts]. You can eat four squares of dark chocolate, you can drink a glass of red wine, do XYZ I think its all mishmash. People don't have any kind of solid base [clear to understand knowledge and information about diet for weight management and health].' (David)
Lawrence felt differently and believed that the information that he had picked up from different newspapers articles had helped him to look after his himself. 'I started picking up (information) in the discourse of the odd article from the Observer and The Guardian saying 'thirty minutes brisk walk, three times a week, I remember picking up somewhere and I remember thinking right I'll do thirty minutes a day that seems like a reasonable thing to do.' (Lawrence)

The amount of exercise required for health benefits, weight loss and maintenance did not appear to be clearly understood by many of the participants. Over half of the interviewees believed that the most current physical activity recommendations for weight loss and health benefits were the same, twenty to thirty minutes of physical activity a day, three times a week. This is an old health recommendation which suggests that it can take a considerable amount of time (several years) for new recommendations to become known by most of the population. One woman did insinuate that she believed the walking intensity she performed was not sufficient for weight loss or health benefits.

'Umm, err, it's OK, because I walk them to school and back, so I can't do much of a speed when I'm taking them there and bringing them back. But when I'm coming back on my own, I can.' (Lisa)

The individuals with the most up to date relevant health and weight management information read broadsheet newspapers and listened to Radio 4. The individuals with the least up to date information read tabloid newspapers and watched more television. The television and newspapers were reported by participants as their favoured information sources. However, information provided by most of these sources did not appear to be empowering individuals but confusing them instead. It appeared that the transmission of information to the general public may be confused and contradictory.
leaving individuals unsure about what they should be doing. However, television and newspapers could play a vital role in providing clear, relevant and usable knowledge to assist weight management and health objectives for the general population.

3.4.5 Who Pays and Who Provides?

This theme considers the participants' attitudes towards provision of health and weight loss information. It also looks at how the interviewees believed the information and resources should be financed.

3.4.5.1 Government, Commercial, Employer or Individual

Participants did not wish to or believe that weight loss or health information should be paid for. The general consensus was that information and education should be funded by the government and be administered through educational establishments, commercial organisations and to a lesser extent the NHS.

Interviewees believed information and education should be funded in this way because they perceived that the people who required the most health assistance were those with low income and education. Half of the participants interviewed deemed that people from lower social economic groups had the worst health. These perspectives are in parallel with current research (Lynch, Kaplan, & Salonen, 1997; van Lenthe & Mackenbach, 2002; Wardle & Steptoe, 2003; Wen, Orr, Millett, & Rissel, 2006).

Interestingly none of the interviewees were poor or from a low social class and yet they were overweight, obese or morbidly obese, and had co-morbidities. Three interviewees' believed that employers should be involved in financing health and weight loss information provision through initiatives at the workplace.
'I think certainly if you are in employment, employers could do it because it would be financially beneficial to them and it would be beneficial health wise to their employees, because anything that they can do to keep the health of their employees better (laughs) umm, prevent loss of work time.' (John)

To date, solutions have not been found to significantly reduce the number of individuals who become overweight, obese and morbidly obese or to achieve maintained weight loss in this population. The interviewees were asked for their recommendations to promote positive weight loss and health behaviour in the overweight and obese. Interviewees were very happy to discuss their views. They commented on what they felt was missing, who they believed should provide information, places where information could be accessed and how much weight loss and health provision should cost. The following list of strategies incorporates the suggestions made:

- Yearly health MOTs to provide preventative care costing £10-15
- To make exercise a habit
- Cooking practice and nutrition education in schools for both sexes
- Cooking and nutrition education in further education and workplaces
- Health interventions incorporating exercise and diet at key life stages
- Interventions, programmes and information to be personalised e.g. age
- Information and workshops at the workplace
- Leaflet stands with health, exercise and diet information in supermarkets
- Information on how to access qualified and experienced specialists
- Specialists and commercial courses to be funded by government
- Specialist obesity nurse to provide guidance based at GP surgeries
• Dietary sheets provided by doctors surgeries
• One to one advice/support and buddy support systems
• Friendly, supportive and encouraging group leaders
• Group support to provide ideas, tips, encouragement and recognition
• Availability of expert/support – face to face, e-mail, telephone, internet
• Personalization of programmes and information
• Enjoyable exercise – aerobics, fitness, walking in groups or as individuals
• Exercise clothing that puts the participant at ease
• Childcare facilities
• £5 maximum charge per person or per family for classes

Participants all held the belief that most of the strategies should be free so that everyone could access services, especially those on lower incomes. It was felt that services could be funded through the government and that service providers could include the NHS or commercial organisations. Interviewees did express the view that some services may require payment, such as yearly health check ups and fees should be similar to dental check up fees to enable greater access to the less well-off. It was also expressed that minimal fees should be charged for such services as individual, family health and exercise sessions. On the whole, interviewees believed health orientated services should be free because they felt that more people would use the services.
3.4.6 Strategies and Experiences

3.4.6.1 Weight Loss Methods

Not all of the interviewees were actively trying to lose weight, mainly because trying to lose weight was found to be hard work. However four of the seven women and one of the three men were actively trying to lose weight at the time of interview. Three of the four women who were following a weight loss plan were using the support of a commercial weight loss group. Two of these women were happily attending Weight Watchers meetings and one was a member of Slimming World. All three of the women spoke positively about their weight loss groups and group leaders. For example, Janet described her leader as 'Friendly, she made you feel at ease.' All three women had also experienced positive weight loss.

Two of the three women who were attending slimming groups at the time of these interviews explained that they had used their chosen club more than once to lose weight after childbirth. Both women saw attendance at the clubs as a vital and permanent resource to promote the continuation of dietary and exercise behaviour for weight management.

'I mentioned I'm trying to do Weight Watchers, I'd put half a stone on. I'm still struggling to get that off because I've been very casual about it, so today's my first day of making a proper effort. So it's a permanent thing with me. Because I do get complacent, also middle aged spread, metabolism slowing down, just need to keep on top of it really.' (Josie)
Lisa had previously used Weight Watchers but stated that the system had not worked for her, 'because I hadn't got so much weight to lose as some people did, I was on the fewest points and it was really hard to eat anything.' However, Lisa found that the Slimming World method helped her to lose the 'baby weight'. She found that the dietary strategies and choice that Slimming World provided fitted into her life and allowed her a certain amount of autonomy. She also confirmed that she found the group leader to be empathic and supportive:

'Basically the man picks everyone out and you get a round of applause whether you've done well or no. He says 'well you're still maintaining loss of whatever' and he says 'have you got any problems coming up this week' and other people in the group give you tips, share stories and have quite a laugh really.' (Lisa)

All three women confirmed that the major strategies used by the commercial weight loss groups were dietary guidance, group discussion, leader motivation, support and weekly weigh-ins. Physical activity was occasionally discussed at group meetings but was not used as a major strategy to aid weight loss and maintenance. Lisa stated 'It's mainly diet, but we do have the Body Magic Awards.' (awards given to Slimming World members for continued participation in physical activity).

These women added that a greater ratio of women attended meetings to men. In fact only one or two men attended the groups the women frequented. The three women believed that females felt more comfortable meeting and talking in groups, while males, they believed were less comfortable with discussing their feelings. Janet explained that 'Possibly women like the group sessions as they talk more openly than perhaps men.'

Nine out of the ten interviewees had actively tried to lose weight during their lifetime. Weight loss methods used included exercise, cutting down on food, cutting
down on fat, calorie restriction, following dietary guidance from books (Atkins, Hays Plan, GI, 5 Day Miracle Diet), using weight loss products such as Slimfast, Herbal Life, Complan and Weight Watchers meals, attending a Weight Watchers or Slimming World group, reading labels on food, using wrapping treatments and sourcing information from diet magazines.

During the interviews it emerged that the nine interviewees had previous experience of using methods such as dieting, changing lifestyle habits or increasing physical activity to promote weight loss. However, weight management appeared to be beset with problems and confusion.

David explained the confusion he had experienced gathering information to assist his weight management goals 'I think it's either professionalized for professional people or the Sun reader mentality, there's nothing and the gap is huge.'

Alison a retired physiotherapist also expressed the difficulties she and her friends had understanding dietary information to assist weight and health management. 'I mean I don't really know and I should. If I don't know and she doesn't know (a friend), really it's just much, much too complicated.'

The negative experiences encountered by the overweight individuals had been found to de-motivate them and deter them from continuing to follow their weight management strategies (Puhl, Moss-Racusin, & Schwartz, 2007).

3.4.7 Motives

This section discusses the participants' weight loss motives. It highlights appearance, acceptance and maintenance of health as key reasons for the participants wanting to lose weight. It also looks at the importance placed on healthy weight loss.
3.4.7.1 Appearance and Acceptance

Losing weight for health benefits and improved appearance was found to be an important motivator for eight of the ten interviewees. The remaining two participants stated that they were purely motivated to lose weight for their appearance. All of the participants said that they would be happy to lose weight mainly for appearance reasons.

All of the participants interviewed in this study confirmed that looking after their appearance was important to them. Appearance was the major motivator for four of the five participants actively aiming to lose weight. Improved appearance through weight loss was informed helped to increase their self-worth and self-esteem. Alison gave social inclusion and acceptance as a reason for wishing to lose weight to improve appearance 'Well you want to blend in don't you, be the same as everybody else. Or you want to be if not pretty, then at least attractive, have something good about you.'

The other participants interviewed firmly established that they would be very happy to lose weight in order to improve appearance and that to lose weight would make them feel more positive about themselves. The importance of appearance and social acceptance highlighted in this study tallies with findings from the previous qualitative studies that have confirmed improvement of appearance to be a strong motivator for individuals embarking on a weight loss programme (Brink & Wood, 1993; Hankey et al., 2002; Reas, Masheb, & Grilo, 2004; Tod & Lacey, 2004; Wolfe & Smith, 2002).

Key triggers for embarking on a course of weight loss action included clothes not fitting, negative comments from others, to be able to look after the children, to be slim for their wedding day, to gain increased respect at work, to work in a sporting occupation and to look good when returning to work after having a baby. These findings paralleled
with the previous qualitative studies results (Brink & Ferguson, 1998; Hankey et al., 2002; Smith, Burke, & Wing, 2000; Tod & Lacey, 2004).

'But I got to a point where there were some things that I wanted to do, um there were barriers. Or I saw barriers there from physical appearance. To be seen as credible and professional then I couldn't turn up looking like a blob of lard. That's really my driver, you've got to look the part and be the part unfortunately.' (David)

Interestingly one of the participants believed that to lose weight for appearance was vain. A number of the participants highlighted their own discomfort in confessing that their original motive for weight loss had previously been or was currently driven by the need to improve their appearance. It emerged that interviewees felt more comfortable with communicating improved health as a motive for losing weight rather than their appearance. Previous research has found that individuals perceived appearance orientated motives for weight loss to be vain and health orientated motives to be valid and justifiable (Clarke, 2002). However, some of the interviewees' primary motive for weight loss changed from appearance to health as they aged or when their health deteriorated.

'Ask me the same question in my twenties and I probably would have said the same thing but it wouldn't be true (laughs). I would have far rather been thin than healthy (laughs). Which is very sad (laughs) but I do actually mean it now because I've been through illness myself, I've seen other people go through illness and in the end there is nothing as important as health.' (Linda)
All of the participants believed that society looked unfavourably on the overweight and obese. Interviewees stated that the overweight and obese were perceived to be slow, boring, dumb, lethargic, stupid, sleazy, outsiders, idle and figures of fun (Dean, 2005; Vescio, Wilde, & Crosswhite, 2005). Participants also believed that the overweight and obese were unhappy. Interviewees felt that the media - television, film industry, magazines and newspapers - portrayed the overweight and obese as 'lazy, dirty and thick'.

'There's one actor that I interviewed who turned down a job in film. At the time she'd lost four stone in weight but before she had lost the weight she'd been offered the job as the typical fat nutter part and she said 'I don't want girls going to the cinema seeing that and then saying "Oh, that's fat is it."' (Linda)

Previous research has found that females are more conscious of their body image and weight than males (Schwartz & Brownell, 2004; Wardle, Hasse & Steptoe, 2006). Male and female interviewees in this study agreed that body appearance rules within society were stricter for women than for men. John commented 'I think the treatment, there are differences and that women's body shapes and the range of what is regarded as acceptable or attractive is narrower than for men.' Lisa also commented that body acceptance within society treated men and women differently, 'in the same way that if a man gets old, he gets distinguished, constant pictures of beautiful slim women on the telly, society doesn't treat women quite the same'.

'I think there is more social pressure on women to be a particular weight, I don't think that social pressure, social commentary I would use that word, um, there is a little bit more social directive if you like. I think it's more acceptable, in a strange
way for men to be overweight, because in part it's still a masculine world. To be female and to be obese, in certain quarters is not the done thing. I've actually known job candidates be overridden because they were perceived not to have the right attributes and may be have a negative effect on other staff.' (David)

Gaynor believed that 'an obese woman couldn't head a company'. Other research studies have highlighted that being obese can negatively affect wage status and interpersonal treatment across genders within the workplace. However, it was found that women experienced negativity in the workplace towards a lower obesity status in relation to men (Carr, Jaffe & Friedman, 2008; Maranto & Stenoien, 2004).

When Lisa was asked what she would be prepared to do to lose weight she stated 'Anything I guess, apart from I won't have an operation.' Ruth also described the pressures that she felt to maintain an attractive physical appearance in order to remain desirable to her husband.

'Because if I go, you know how it is you go with your husband, you go to a restaurant or you go with friends that you don't know very well but the look of turning the head of a few men, it just err, not because of those men, it's because your husband sees that and that is "Right, OK well done." And that is really a good thing. So that really helps a lot'. (Ruth)

Although both male and female participants believed that society was harsher on the treatment of women there was a general feeling that obesity discrimination could occur to both sexes. Male interviewees confirmed that changes in eating and exercise behaviour to promote weight loss or for health were initiated by their female partners. Further research has also found that women were more likely to initiate and perceive the
need to implement weight loss and health behaviour change than men (Timperio, Cameron-Smith, Burns & Crawford, 2000).

'I suppose without being sexist, women are a little bit more interested in that sort of thing and it's stuff that my wife has picked up and I've latched on to it or we've both had to eat particular things at particular times, because she was doing it. It wasn't me that was the driver it was kind of female driven.' (David)

However, are perceptions of weight status changing within society? Could it be that the overweight perceive themselves as normal weight and the obese as overweight? And how does this affect weight loss and health behaviour change? Research has found that correct identification of weight status has diminished over time. Perception of correct weight status was found to strongly correlate with weight loss attempts and positive changes in health behaviour in both genders hence incorrect perception of weight status could have a negative effect on behaviour change (Johnson, Cooke, Croker & Wardle, 2008; Lemon, Rosal, Zapha, Borg & Andersen, 2009; Schieman, Pudrovska & Eccles, 2007).

When changes had been implemented, the men interviewed confirmed a commitment and determination to continue their new health behaviour. Commitment to implementing changes to diet and physical activity appeared to be affected by emotionally lead responses for many of the women interviewed. Stress, tiredness, negative life events and the menstrual cycle were reasons given by these women for reduced resolve in continuing new health behaviours.
3.4.7.2 Health

Three of the participants who were actively trying to lose weight did confirm that their motive for losing weight was to maintain or improve their health. They also confirmed that they would prefer to lose weight in a manner that wouldn't jeopardise their health. One of these participants, Janet had been diagnosed as diabetic eight years prior to participating in this study. She confirmed that her health status had affected her attitude towards the effect of weight loss on her health. She communicated that 'being slimmer to look nicer' was more important to her before she had been diagnosed with diabetes, but now her values had changed. Health, she disclosed, was now her key motivator to lose weight. Janet's change of attitude and motivation with regard to weight loss may reflect tenets of the health belief model, which suggests a person's readiness to change their behaviour is determined by their perceived susceptibility to an illness and their perception of severity of the consequences (Becker et al, 1975; Harrison, Mullen & Green, 1992; Rosenstock, 1974). When Janet found out that she was diabetic, this knowledge had made her evaluate what was important to her and she concluded that the perceived benefits from changing her health behaviour were greater than the perceived barriers. Hence her physical health became her key focus for weight loss rather than slimness. Throughout both interviews, this woman presupposed in retrospect, that the slimming organisations focussed predominantly on weight loss for aesthetic reasons and less so on health.

'I mean from my point of view I've been to Weight Watchers and I lost quite a lot of weight and I was really happy, with that, emm, but since being diabetic I've realised that a lot of the food 'low fat' is very high in sugar so that counteracts what my purpose is.' (Janet)
Some of the participants confirmed that they did not presently have the motivation or the will to want to lose weight for appearance or health but that they were actively making lifestyle changes to look after their health. The changes vocalized included amendments to dietary intake and the increase of various forms of physical activity. Increased walking was the most common physical activity taken by interviewees. The reduction of food intake was the most commonly cited dietary lifestyle change. The interviewees' lifestyle adjustments were found to include lifestyle changes similar to those reported by past research participants (Byrne et al., 2003; Kayman et al., 1990; Klem et al., 2000).

Only one participant firmly established that he was not motivated to lose weight for his health. He disclosed that although he had been diagnosed with diabetes he was not hampered by the illness since the medication administered for his diabetes eradicated any health and lifestyle problems the illness could inflict.

"In my case no I was diagnosed with type 2 diabetes in 1998 and my motivator now, is not actually health. Although that will be a good thing, it's actually to go back into football coaching at a professional level. Um, and that's my driver."
(David)

Lawrence stated that he had been walking thirty minutes everyday for a number of months for his health and had found that he was losing weight as a 'by-product'.

"I do thirty minutes brisk walking everyday as long as it's not pouring as it was this morning. Err which is related to the fact that I have got a pain in my hip and I've found that exercise helps that and then one or two people have said to me 'Oh you've lost some weight' and it's obviously as a result because I haven't done
anything else. So yeah I have been conscious of it personally oh, clothes sizes and that sort of thing over the last ten years and I've kind of reached I suppose I do think in terms of, I've reached a point now were I can, as of three months ago I've notched a point in of my belt so to be able to stay there.' (David)

He confirmed that he was happy about the inch loss and changes to his appearance. He confessed that the weight loss made him feel better about himself. He also stated that he would not have purposefully aimed to lose weight but was delighted that the walking had produced weight loss benefits.

3.5 General Discussion and Conclusion

Analysis of the participants’ data confirmed that all of the interviewees had previous experience of using diets, lifestyle change or physical activity to promote health, weight loss and weight management. Some of the strategies that they had used had provided short term weight loss benefits. However, participants described a number of factors that limited the implementation of habitual weight management and health behaviour. These included: - the difficulties faced when cooking for and feeding the family; limited time alone to exercise when raising a family; feelings of guilt when spending time away from the family to exercise; limited finance preventing fee paying physical activity, not being a 'gym' person; feeling ill at ease walking into a gym; weather hindering outdoor activity; working hours preventing continued involvement in group sports activities and environmental infrastructure hindering transportation activity.

Knowledge base appeared to be another problem area. Interviewees stated that there was an abundance of information being provided by various sources; books,
internet, newspapers, television, etc. However, participants' knowledge about guidelines on diet and physical activity for positive health and weight management outcomes appeared to be out of date, lacking or confused. On initial questioning participants believed that they knew and understood the present dietary and physical activity guidelines for health and weight management. However, on closer inspection it seemed that the dietary and physical activity information was not sufficiently clear or up to date to enable individuals to make accurately informed choices.

It was found that three quarters of the participants felt uncomfortable at the prospect of speaking to their doctor about their dietary and health needs especially since current policy advocates doctors as the point of contact for the overweight and obese to source health and weight management information. Participants explained that on previous encounters with their GP they had found them to be authoritarian and non-empathic, hence, they were unwilling and unlikely to access information on diet and physical activity from their doctor in the future.

Similar attitudes have been expressed and observed in previous studies focussed on the attitudes and behaviours of doctors and other NHS staff toward overweight and obese patients. GPs and medical staff have been found to be condescending, rude and to verbally express the belief that the patient only has themselves to blame for their health problems (Bocquier et al., 2005; Epstein & Ogden, 2005). Other studies have also found medical staff to belittle and make fun of a patient to other members of staff while the patient was present (Wear, Aultman, Varley, & Zarconi, 2006). When patients experience these types of prejudice it is understandable that they do not wish to put themselves in the same situation again.

Current policy and approaches to obesity prevention are being directed through the health service in England and Wales (NICE, 2006). If the responses of the interviewees in this study are replicated within the wider population then it appears there
may be a problem. Targets set by the government and health services to reduce obesity are unlikely to be met if the overweight and obese do not access the services available because they deem doctors to be inappropriate advisors and facilitators.

A couple of the female participants did confirm that they would be happy to access information about health and weight management from their GP surgery, but would not be happy to access information through their doctor. They specified that they would only be happy to liaise with a nurse specifically trained in nutrition and physical activity for health and weight management.

This study could not confirm whether the information provided by a GP surgery was accurate because none of the participants had actively sourced information from their doctor or surgery. A study conducted to investigate the quality and format of nutrition health promotion in UK primary care (Moore & Adamson, 2002) found that health staff had good levels of nutritional knowledge, although it was highlighted that there had been little discussion with patients about the practical aspects of food. A later study however, found that doctors, nurses and health visitors lacked knowledge in the current physical activity recommendations for health and weight management (Douglas, Torrance, van Teijlingen, Meloni, & Kerr, 2006).

Participants in this study believed that it would be appropriate for teachers to teach children and adolescents about the importance played by nutrition and physical activity in achieving long term positive health and weight management. Interviewees confirmed that they believed focus on physical activity, food education, cookery and budgeting for food was positive and necessary for the younger generation. These findings parallel current NICE guidelines (NICE, 2006) for health programmes to be taught to children and adolescents in schools to reduce the incidence of obesity. Some of the participants believed that educational institutes could teach methods on how to
maintain physical activity throughout the various stages of life. Perhaps physical activity to maintain health and weight could be taught as physical science.

All of the interviewees believed that home cooked food was superior to ready made meals with 'home cooked' deemed as healthier and tastier. Many participants also stated that they were endeavouring to cook healthy, nutritious meals and to eat fruit and vegetables. Adults with children expressed the view that it was difficult to accommodate the food preferences of the whole family. There was a general feeling that the interviewees were trying hard to eat healthily and trying to eat good quality food. However, again there was a feeling that dietary and nutritional knowledge was confused.

On the whole, participants stated that they preferred to access information themselves to achieve habitual nutrition and exercise behaviour to maintain their health and weight. They also wanted to be able to tailor the information to their own individual circumstances and needs. Participants didn’t want to be told what to do, but they did want to be able to access current, accurate and clear information. They expressed a desire for information that would make it easy for them to implement dietary and physical activity changes in their own and their family’s lives.

The venue believed to be accessible to the majority of the population was the supermarket. Interviewees stated that as a weight and health management strategy it would be easy for people to pick up the information with their weekly shopping. Future health promotion information could possibly be directed through supermarkets, for example, a blanket promotion of weight management and health education booklets provided through all supermarkets.

This study found that the participants had a desire and need for autonomy in decision making and that their choices were based on intrinsic motives rather than on external influences or rewards. These findings correlated with the Self-Determination Theory which has as one of its core constructs the idea that motivation is underpinned
by a sense of autonomy (Deci & Ryan, 1985; Deci & Ryan, 1991; Deci & Ryan, 2000). Participant statements also highlighted that after accessing the necessary information they felt confident to implement changes. These findings correlated with the Self-Efficacy Theory which is founded on the principle that people will not make changes unless they believe that they can carry out the required behavior (Bandura, 1977).

All of the participants in this study stated that improvement to their appearance was one of their key motivators to lose weight. Males and females all confirmed that their appearance was important to them to make them feel socially accepted and good about themselves. However, NHS and government lead weight loss health promotions generally do not highlight the benefits of improved appearance and self-esteem gained from weight loss. Instead they predominantly focus on prevention and reduction of physiological health disorders. Information about health and the effect of lifestyle on health is important and this study did find that eight out of the ten participants were motivated to lose weight or change their lifestyle for health reasons.

However, if appearance and the effect of appearance on self-esteem are deemed important to many individuals (Brink & Ferguson, 1998; Tod & Lacey, 2004), perhaps the NHS could follow the lead of commercial weight loss programmes and highlight the benefits of improved appearance and well being as well as physiological health through weight loss. Perhaps this type of marketing may help to motivate more overweight and obese individuals to change their lifestyle behaviour.

Attitudes towards physical activity were positive amongst both male and female interviewees. All of the participants had undertaken some form of physical activity as children and believed that physical activity provided health and weight management benefits. However, most of the interviewees were not currently participating in sufficient physical activity to maintain weight or to produce health benefits. Also, most of the
interviewees had not continued participating in the sport, dance or exercise activities they had pursued in their youth.

The most common activity for all of the interviewees in adulthood was walking, mainly for transport. When asked if they knew the current physical activity recommendations for health and weight loss (with regard to time and intensity) only two of the interviewees understood the current physical activity guidelines for health (thirty minutes of moderate activity per day). Unfortunately, both interviewees were unsure exactly where they had learnt the information. None of the participants knew the current physical activity recommendations for weight loss or for weight management. Hence if individuals wish to use physical activity as a weight management method they could benefit from knowing the clear clinical dose required. Dependant on the type of promotion campaign new recommendations could take months or even years to filter to the general population. Mass media campaigns (television, radio, billboards, etc) have been found to offer the widest exposure, reaching specific target groups and larger numbers of the population most quickly. But, they are costly and require constant follow up to reinforce health behaviour change (Downie, Fyfe & Tannahill, 1990; Health Development Agency, 2004). However, viral marketing through the internet has been found to be quick (messages transmitted in days) and cost effective (Gosselin & Poitras, 2008), indicating that viral marketing may offer quicker, cost effective solutions for future health campaigns.

There appears to be a belief amongst researchers and health professionals that overweight and obese individuals are unlikely to participate in the recommended amounts of physical activity to produce weight management outcomes (Pate et al., 1995). However, some overweight and obese individuals may participate in physical activity sufficient for weight loss and weight maintenance when given clear, concise guidelines.
It has been argued that encouraging children to be physically active at school will produce physically active adults (NICE, 2006; Telama, Yang, Laakso, & Viikari, 1997). Evidence from this research study indicated that although these adults were physically active as children and that they continued to believe that physical activity was beneficial for them in a variety of ways, most were not carrying out sufficient exercise to gain health and weight management benefits. Participants highlighted how changes through their lifespan, such as starting work, getting married and having children had reduced the amount of time they spent being physically active. It appears that more needs to be understood about how to promote habitual physical activity (with regard to time and enjoyment) throughout the lifespan from childhood into adulthood.

Although interviewees considered physical activity to be an important strategy for health and weight loss, their emphasis and focus was predominantly on diet. Interviewees who had or were making lifestyle changes for health and/or weight loss reasons all discussed implementing dietary changes. Most of the interviewees in fact had made changes to their diet rather than increasing physical activity to achieve their health or weight loss aims. Previous studies also highlighted participants focus on dietary changes (Byrne, Cooper & Fairburn, 2003; Cioffi, 2002; Kayman, Bruvold, & Stern, 1990; Klem et al., 2000; Tod & Lacey, 2004). These findings suggest that more needs to be done to encourage people to take up physical activity and that encouragement and professional support may be required to facilitate behavior change.

3.6 Conclusion

To conclude, this study provided an understanding of the experiences, opinions and attitudes of overweight and obese adults towards weight loss and health. Interviewees highlighted a preference for autonomy in their decision making. However,
interviewees appeared to be confused, misinformed or did not know current dietary and physical activity guidelines for health and weight management. Findings indicated that these overweight and obese adults required reliable information on physical activity and diet to achieve their health and weight management goals. It may be beneficial to release weight loss and health research information yearly or bi-yearly rather than in individual sound bites. Perhaps the information could be provided at yearly or bi-yearly health check-ups with a clinic nurse rather than a doctor. Information concerning dietary and physical activity appropriate for health and weight management could also be made available in leaflet form and be dispensed in supermarkets.

3.7 Study Limitations

To install confidence and reliability in the interpretation on these findings participants were interviewed twice and participants were given the opportunity to verify their responses to questions. However, there are a number of methodological issues that need to be considered with regard to the results of this study. The snowballing recruitment technique was used to recruit participants for the study. This was a relatively quick and reliable method of finding interviewees but because the participants introduced each other to the study they may have had similar views and experiences to each other. Also all of the participants in this study were married and Caucasian. None of the volunteers were single, so the attitudes, beliefs and experiences of this segment of the population were not investigated. Hence the findings from this study may not be appropriate to generalise to single individuals within the population.

Individuals in this study came from the social classifications A, B and C1. People from these classes are hypothesised to be educated, employed in white collar occupations and the professions and are more likely to place priority on personal health
(Reid, 1998). The opinions, experiences and beliefs of these individuals could be significantly different to those of individuals from the social classifications D and E.

However, four of the interviewees had lived and worked in a number of locations. Studies have found that remaining in one location can produce parochialism and introversion while transient lifestyles can broaden the views and experiences of an individual (Cannadine, 2000). This research study could have been strengthened if information had been gathered from a more diverse population sample that included single adults, greater ethnicity and more individuals from different social classes and educational backgrounds.

Other recruitment methods such as advertising for participants through different forms of media in different geographical areas may have provided individuals with different attitudes, views and experiences or from different ethnicities and socio demographics.

After analysing the transcripts it became apparent that the wording of questions and inquiry of topic areas could have been improved. During the construction of questions before this study, open-ended questions were chosen to allow interviewees to voice their own feelings, experiences and attitudes. However, during the interviews my prompt and probe questions were sometimes leading which may have affected participants' responses. Also, although interviewees were probed about their attitudes towards physical activity they were not asked directly. In retrospect, the types of questions used to find out about attitudes to food and cooking could have been used to develop a greater understanding of attitudes towards physical activity.

This study could have also benefited from greater exploration into the feelings of participants towards health and appearance, to find out what they understood 'health' and 'appearance' to be and what it meant to them.
For this study Naturalistic Inquiry methodology and its attendant approaches to validity and triangulation of data was followed (Lincoln & Guba, 1985). However, different data collection methods and methodological approaches may have produced different results. For example, different lower/higher order themes may have emerged with the use of another type of methodology such as Interpretative Phenomenological Analysis which recommends that data is analysed by two researchers to increase credibility and trustworthiness of findings (Bryman, 2004). For these reasons and due to the small number of participants interviewed in this study it would be difficult to generalise the results to the greater population.

3.8 Future Recommendations

This study was able to explore and learn about the experiences and opinions of a sample of overweight and obese men and women with regard to weight loss and health. It was found that clear, accessible dietary and physical activity information, facilitators, autonomy and personal tailoring were important to participants when implementing weight loss and health strategies. It was also found that most of the individuals were happier implementing small changes to their lifestyle to produce weight loss, weight management and health benefits. Findings also highlighted that the present delivery and provision of weight loss and health information to the overweight and obese through the NHS may require adaptation.

So what impact do these findings have on future weight loss and health interventions and recommendations for individuals, broader groups and the wider population? It is feasible that interventions and education may be better received if they are tailored to specific groups within the population, such as age related, gender, etc. Different campaigns may need to be considered to motivate populations within society
and to include information on how to incorporate strategies into everyday life. For example, weight loss interventions and campaigns that promote improved appearance (as well as health) may encourage certain members of the population to initiate lifestyle changes, while health focussed weight loss interventions and campaigns may motive others.

Consideration also needs to be placed on who, where and how the information is provided. This study highlighted that accessibility of information and the approachability of facilitators was important. When considering the wider population it may be more appropriate to appoint facilitators that are gender, age, disability and ethnicity specific. For example, if an intervention were targeted at the Asian female community it may be more appropriate to appoint an Asian female or female facilitator.

Other members of the population such as those with physical disabilities, with limited language skills, the elderly or those with learning difficulties may have difficulty accessing or understanding information. Hence alternative methods of provision and delivery of information, specific equipment and resources may be needed for certain populations.

This study also highlighted the following areas that require further research:

- This study determined some of the attitudes, experiences and beliefs of a sample of adult Caucasians towards weight loss and health. However, the greater population has a wider ethnic, social and age mix. Hence it is recommended that a larger qualitative study of overweight and obese people's attitudes and experiences of weight loss and health is conducted to ascertain the knowledge base and views of the wider population.
• To conduct a study to determine the quality and usability of nutrition and physical activity information for weight management provision through UK primary care.
• To investigate the enjoyment and usability of different types of physical activity to promote habitual physical activity throughout the lifespan from childhood to adulthood.
• The participants in this study vocalised the importance of autonomy and personalisation. It may be beneficial to find out what strategies the overweight and obese believe should be in a weight management programme.

Information accumulated from the above investigations could help in the design of future weight management and health programmes and promotions.

Finally, this study was able to find out more about the attitudes and experiences of the overweight and obese towards weight loss and health. It was found that autonomy was important in making weight loss and health decisions. In chapter four I aim to provide a forum for overweight and obese adults to autonomously choose and test weight loss and maintenance strategies, the objective being to find out what a weight management programme would look like that was designed by the overweight and obese.
4.0 Study Three: Weight Management Programme Design by the Overweight and Obese – using Participatory Action Research

4.1 Introduction

In study two, the interview participants highlighted the importance of autonomy in their weight management choices. The study also confirmed that the participants appeared to be confused, misinformed or did not know current dietary and physical activity guidelines for health and weight management. Although participants were unclear about the current guidelines, it became apparent that they had gained considerable weight loss and health experience. Hence it appeared feasible that the overweight and obese population may be able to suggest strategies that could help to produce weight loss and long term weight management.

To secure many physiological health benefits from weight loss, weight loss needs to be maintained at a minimum of 5%, but preferably 10% of initial body weight (Jakicic et al., 2001; Saris et al., 2003). Body weight loss of 5% can reduce, eliminate or prevent coronary heart disease, hypertension, type 2 diabetes and hyperlipidaemia, whilst 10% weight loss can improve glycemic control, increase high density lipoprotein (HDL) and decrease low density lipoprotein (LDL) cholesterol and reduce the risk of ventricular arrhythmias (Pasanisi, Contaldo, de Simone, & Mancini, 2001).

Weight loss and maintenance interventions have been found to produce weight loss in the overweight and obese sufficient to produce health benefits (10% or more body weight reduction) and to reduce risk of obesity related diseases (Douketis, Macie, Thabane, & Williamson, 2005; Hamilton, 2002; Jakicic et al., 2001; Orzano & Scott, 2004; Saris et al., 2003). However, maintenance of weight loss through lifestyle, physical activity and dietary changes has been found to be difficult to achieve, with the majority of
weight losers regaining some or all of their weight loss within 1 to 2 years of weight loss intervention and being unable to maintain 10% body weight loss sufficient to produce health protective benefits (Curioni & Lourenco, 2005; Douketis et al., 2005).

Previous research on weight loss and weight maintenance programme design has sought little or no input from the overweight and obese and has focussed on testing strategies devised by researchers (Borg et al., 2002; Keller, Robinson, & Pickens, 2004; Moore et al., 2003). Given the limited success of such programmes in facilitating weight loss maintenance, perhaps more could be learnt by engaging the target population in the development of a solution.

4.1.1 Rationale for using Participatory Action Research in the Design of a Weight Loss and Weight Maintenance Programme

Before embarking on this study I had considered conducting focus groups (Denzin & Lincoln, 2000) or a randomised control trial to design and test a weight loss and weight maintenance programme. However, after careful consideration I chose to use participatory action research because this process allows the people affected by weight loss and weight maintenance issues to devise, test and discuss possible problems and solutions. I also chose this methodology because the process treats the participating individuals with respect by allowing them to hold equal roles (researcher/stakeholders) with the facilitator and allows democratic action (Reason & Bradbury, 2006). To date Action Research has not been used in the design of a weight loss and maintenance programme for the overweight and obese.

The Action Research process was also selected over other approaches because it has previously been found to be a successful method of investigation and problem solving, in the health (East & Robinson, 1994; Minkler, 2000), business (Sarah et al., 2002), and education sectors (Bennett, 1994; Kelsay, 1991). In the health domain, the
Action Research method has been found to help improve the way in which information about physical activity, nutrition and health are accessed and taught (Lakin, 2002; Vecchiarelli, Prelip, Slusser, Weightman, & Neumann, 2005).

The Action Research process in this study, would provide overweight and obese individuals the opportunity to put forward their thoughts and experiences, trial suggested methods and record outcomes. The participants would then decide which of the methods they believe should be included in a programme to produce weight loss and maintenance through the adherence to health enhancing behaviours.

A group of overweight and obese people may think of problems, opportunities, weaknesses and strengths of different weight management techniques that 'normal' weight individuals would not realise or consider. Participatory Action Research aims to bring problems to light and helps those without a voice (Rubin & Rubin, 2004).

The target group who would directly benefit from the weight management initiatives, the overweight and obese, may not themselves, clearly understand which strategies will aid their weight loss and weight maintenance success in the long term. However, the participants are very likely to have considerable weight management experience and knowledge which together could greatly help in the programme design (Reason & Bradbury, 2001).

4.2 Aims of Study

Past and present weight management programmes and interventions have predominantly been authoritarian and leader focussed. This study used a participatory action research approach that allowed the stakeholders (i.e. the overweight or obese) to choose their own weight loss and maintenance strategies when they decided to so that the programme could 'emerge' (Kemmis & McTaggart, 1988; McNiff, 1988; McNiff &
Whitehead, 2002; Mills, 2003; Reason & Bradbury, 2001; Stringer, 1999). This study aimed to answer the following questions:

Primary Aims:-

- What would a weight loss and weight maintenance programme designed by the overweight and obese look like?
- What strategies would the overweight and obese choose?

Secondary Aims:-

- To determine if or what effect the programme had on weight loss and weight maintenance
- To determine the stakeholders' preferred weight management/loss strategies

This study aimed to reflect on the strategies chosen and tested by each group and the role of the group in implementing the strategies. Through this process, it was expected that a greater understanding would be gained of the overweight and obese group's attitudes towards weight loss, health, physical activity and diet.

4.3 Planning the Study

4.3.1 Discussions with Supervisors

After discussions with my supervisors I decided to explore the use of participatory action research (PAR) as a weight management problem solving methodology. I analysed the work of Lewin, Kemmis and other action researchers to understand how PAR had been used previously to solve a variety of educational, health, social science
and business problems (Lewin, 1946; Revan, 1982; Carr & Kemmis, 1986; Reason & Bradbury, 2006). I found that PAR had not previously been used as a problem solving methodology to tackle the issue of weight management for the overweight and obese.

My supervisors and I discussed in detail how I would tackle the planning, organisation and implementation of a study to design a weight management programme using participatory action research. It was concluded that I should converse and meet with experienced action researchers before commencing my study.

4.3.2 Liaisons with Action Researchers

I met with Dr Gillian Ragsdell who described her experiences using Participatory Action Research. I had prepared a list of questions to ask Gillian (Appendix 2). We discussed how to express the PAR process through scientific writing that would highlight the spirit, colour, excitement, emotion and richness of the real life experiences of the group and as individuals. Gillian explained that she had used the structure of a play in previous writing and gave participants names as characters to describe and explain the process in a real life way.

We talked about the influences which would be most likely to affect group dynamics. We deliberated about group practicalities such as judging the right time to finish a meeting with the group while at the same time maintaining its emotional strength and security. We also discussed my responsibility to the group and its individual members. The establishment of trust entailed the readiness of individuals to express their true beliefs and feelings in a safe environment that respected privacy and confidentiality - an environment that was supportive and non-judgemental. Individuals were very likely to feel uncomfortable or embarrassed about discussing and disclosing
issues personal to them. I understood that I would need to provide a safe environment that could enhance positive change.

We looked at the ongoing and changing dynamic process of PAR. We discussed how the answers and responses of a group of individuals today was likely to be different tomorrow and different if another researcher was asking the same questions. We explored how the feelings and effects of the outside world, news, current affairs, fashion and peer group could all affect individual meeting cohesion and outcomes.

Gillian described a meeting she had had with a PAR group the week after Princess Diana had died. Participants were more emotionally vulnerable than they would usually be. Additionally, everyday life events of the individuals within my groups would be just as likely as external events to affect the meeting dynamics.

As an individual I could affect how the group responds. My physical presence, my mood or disposition on a particular day, personality, gender, ethnicity, clothing and size could all affect how the individuals in the group respond. Gillian suggested that I write up a do's and don'ts manual during the research process explaining how to conduct a similar project for future researchers, educators, facilitators and health workers to use. Gillian recommended a number of eminent qualitative researchers whose work I could look at. The researchers included Donald Schon, Peter Checkland, Reginald Revan (Action Learning), Davyyd Greenwood and Robert Flood.

I also liaised by e-mail with the action researcher Glynis Cousin. Glynis was unable to meet with me in person but she provided me with reading recommendations, tips and resources on PAR. I contacted another Action Researcher by e-mail but due to holiday schedules, workload and time constraints he apologised that he was unable to assist me.
4.3.3 Participatory Action Research

The theoretical principles and key concepts of participatory action research are based on 16 tenets which incorporate traditional (Type 1 action research), practical (Type 2 action research) and critical (Type 3 action research based on the critical theory of the Frankfurt School of philosophy) action research concepts. It is a process that is dependant on authentic, collaborative and self-critical communities that systematically learn through putting ideas, practices and assumptions to the test (McKernan, 1996).

The aim of the tenets is to combine science with common sense (McKernan, 1996). The aims include: to increase human understanding through reflexivity and interpretive understanding, to improve the quality of human practice and action to make it more effective, to focus on the problems of those concerned by them because they are in a better position to identify and analyse the problems and to allow all individuals involved to be stakeholder/collaborators. The tenets aim for the research to be conducted in the natural setting where the problem is experienced and for the research participants to evaluate and reflect on the data in a continuous cycle of action. During this process triangulation of methods, perspectives and theories, shareability of results and continual discourse/critic/reflection is aimed to give the participants greater autonomy and empowerment (McKernan, 1996).

Action Research is an observational and collaborative process in which a facilitator attempts to study a problem systematically with participants (Smith, 2001). Sessions with the stakeholders are in the form of semi-structured discussion, planning and action groups. The facilitator and the participants involved in participatory action research hold joint ownership of the research, so the participants are not described as subjects, but as individuals, participants or stakeholders (Checkland & Holwell, 1998; Cunningham, 1976; Maruyama, 1996; McNiff, Lomax, & Whitehead, 2003).
The Action Research process involves four steps being followed in a spiral process to find solutions to problems being investigated (Dick, 2003). The spiral process involves strategies being chosen by the stakeholders (participants), followed by the strategies being tested by the stakeholder group, the group reforms to discuss the effectiveness of the strategies tested. The stakeholder group go through the process of rejecting, accepting or changing strategies after which the whole process begins again (Denzin & Lincoln, 2003). This process is repeated until the group believes the problem to be solved (Table 4.1).

Table 4.1: The Action Research Process

<table>
<thead>
<tr>
<th>Discourse (among participants)</th>
<th>Reconstructive</th>
<th>Constructive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 Reflect Retrospective on observation (reconnaissance and evaluation)</td>
<td>1 Plan Prospective to action (constructed action)</td>
</tr>
<tr>
<td>Practice (in the social context)</td>
<td>3 Observe Prospective for reflection (documentation)</td>
<td>2 Act Retrospective guidance from planning (deliberate and controlled strategic action)</td>
</tr>
</tbody>
</table>

Source: (McTaggat et al., 1982)
4.4 Methodology

4.4.1 The Framework

I reviewed a number of papers and books that gave guidelines on how to plan and implement a robust action research study (Burns, 1999; Checkland & Holwell, 1998; Kemmis & McTaggart, 1988; McNiff & Whitehead, 2002; Mills, 2003; Stringer, 1999). After considerable evaluation I chose to implement the action research framework developed by Mills (2003) and outlined in the following list:

- Describe the problem and area of focus
- Define the factors involved in your area of focus
- Develop research questions
- Describe the membership of the action research group
- Develop a list of resources to implement the plan
- Describe the data to be collected
- Develop a data collection and analysis plan
- Select appropriate tools of inquiry (group meetings, individual questionnaires, anthropometric measurements, individual exit interviews, follow up group meetings)
- Carry out the plan
- Report the results

Successful implementation of an Action Research study is dependant on the participants (stakeholders) dedicating and giving their time willingly to be involved. It was proposed that action research programmes should be implemented to work with the stakeholders' social and emotional lives as well as having technical or functional worth.
(Kelly & Sewell, 1988; Stringer, 2007). I aimed to make sure that all individuals participating in the study felt included and valued, and not undermined or talked down to (Kickett, McCauley, Satour, & Stringer, 1986).

### 4.4.2 Critical Friends

Qualitative research can open itself to criticism because it can not provide the rigour of statistics employed within quantitative studies. Hence, evidence is required to demonstrate minimisation of researcher bias. Participatory action research guidelines recommend researchers appoint at least one critical friend who will bring their focus, experience and view points to the study (McNiff et al., 2003). A critical friend is someone whose opinion I value and who is able to critique my work and help me to see it in a different light.

To reduce bias further it helps to choose critical friends who have different experiences and perspectives on the ‘problem’ to the researcher and to each other. With this in mind I chose two critical friends with diverse experience from each other to analyse and discuss my research. My critical friends were Andrea Horley a Social Science Researcher at Coventry University. Andrea has considerable practical experience as a Group worker and trainer practising in the field of social work.

My second critical friend was Dr Gillian Ragsdell (Loughborough University) a lecturer, researcher and management consultant with considerable experience in running Participatory Action Research groups. I liaised with my critical friends by email, phone and face to face meetings during the research duration, analysis and writing up phases of this study.
4.4.3 My Role

My role was varied. I was responsible for initiating discussion and debate at the outset of meetings, to listen and to chair the meetings but at the same time to record the meetings in either a written or audio format.

I chaired group discussions to avoid any one participant dominating or intimidating other participants in the meetings, and to make sure that everyone had an opportunity for input. My role also included, when asked, providing the most up to date research information available on weight loss and maintenance approaches for the group to access and discuss. The main discussion topics were determined by the group. If necessary decisions for programme design were voted on democratically. At all times my objective was to remain unbiased and open minded, to learn and take all ideas and opinions on board.

I confirmed with each group that information discussed in the meetings would remain private and confidential and that personal input should not be discussed with others outside the group. It was my responsibility to organise the room booking for all meetings. I also provided the necessary equipment to assist the programme.

4.4.4 Limiting Researcher Influence

A review of literature on the influence of the researcher within qualitative work was conducted. A number of issues were highlighted that a researcher should be aware of and address before embarking on qualitative research. These issues were, in no order of importance: 1) Appearance, 2) Non-verbal body language, 3) Body Size, 4) Personality, 5) Gender, 6) Ethnicity, 7) Researcher’s views and opinions and 8) Researchers’ disposition and mood.
The researcher's physical size, the style of clothing worn, the manner in which the researcher moves, walks and holds their body could all produce non-verbal messages to research candidates. The mood and gender of the researcher could influence participant responses while the views and personality of the researcher/facilitator could affect group interaction and participation. For example, an aggressive personality could intimidate participants, while a passive personality could produce disorder within group meetings.

Research suggests that a positive mood state can promote creative problem solving (Grawitch, Munz, & Kramer, 2003), while a balanced empathic approach, that is sensitive to the gender differences of participants, can encourage openness and provide an environment that enhances the production of ideas, thoughtful discussion and reflection (Rubin & Rubin, 2004; Bryman, 2004; Thomas & Nelson, 2001).

In a mixed ethnicity and social class setting, the researcher would need to consider her own ethnicity and class and the possible affect on the research participants (Cunningham, 2005). Self-classification and social identity differences within the group could affect group interaction, cohesion and validation of the information produced (Eysenck, 2004; Verkuyten, Drabbles, & Van Den Nieuwenhuijzen, 1999).

As the researcher I may not be able to eliminate all influencing aspects about myself. However, I needed to address any potential influences that were within my control. For example, I could actively dress and behave in a manner that would provide a warm, nurturing, safe, empathic and confidential environment conducive for discussion for all participants. Because I was slim I was aware that my physique could alienate some of the participants. Some participants may assume that because I was slim that I would not be able to empathise with them. I had decided to share my personal experiences of weight gain and weight loss at the time if I felt it was necessary to do so (Wetherell, Yates, & Taylor, 2001).
Due to the nature of the study it would be understandable that participants would assume that my working background was in the field of exercise and health. Information about my field of work could influence group responses and expectations. I aimed to make sure that the group focused on their ideas and that the groups did not expect me to set the programme for them.

4.4.5 Recruitment of Participants

To maximise heterogeneity, a variety of methods were chosen to recruit volunteers. Methods included press releases, contacting news editors by telephone, poster and leaflet campaigns in the targeted population locations of Coventry, Kenilworth, Warwick and Leamington Spa.

Three towns – Kenilworth, Warwick and Leamington Spa and one city – Coventry were chosen for their heterogeneity and convenience of access (I live in Kenilworth). Kenilworth and Warwick are historically small market towns and Leamington is a larger Spa town. The Warwickshire area where these towns are located has mixed urban and rural characteristics and has attracted workers of different ethnicities (Warwickshire County Council).

Coventry's population is quite different to the neighbouring towns. Coventry is populated by the broadest cross section of people and was chosen because it could provide great potential for volunteer diversity. Coventry contains a variety of nationalities, ethnicities, social class, economic and educational backgrounds (BBC, 2007a; BBC, 2007b; Coming to Coventry, 2007).

In order to attract participants the Loughborough University marketing department compiled a press release to promote the Weight Management study (Appendix 3). The press release was sent to various media contacts including newspapers and radio
stations in the locality of the study (Appendix 3). Unfortunately none of the organisations targeted by the marketing department printed or aired the press releases.

To combat the non-response from the regional media to the press release, I decided to contact some of the news editors of local newspapers by telephone. I called the news editors at The Kenilworth Times and The Observer (both of whom publish free weekly papers delivered to residents in Kenilworth, Leamington, Warwick and the surrounding areas), The Kenilworth Weekly News and the radio station BBC Coventry and Warwickshire. The free newspapers were targeted to increase the possibility of social and economic diversity of volunteers. I was fortunate to be interviewed on the phone by the editors from all of the newspapers. Each editor confirmed that they would include the 'story' in future publications.

Again not all of the media sources printed information about the study in their papers. Fortunately, a week after the telephone calls the Kenilworth Weekly News, a publication read by roughly 4,649 Kenilworth residents published a short piece about the study which included my contact details. During the same week I was contacted by Heather at BBC Coventry and Warwickshire who invited me to produce an Action Bulletin for them. I recorded the bulletin calling for volunteers for the Weight Management study the following week. Heather informed me that the radio station would air the information at least three times a day for around two months. BBC Coventry and Warwickshire radio station airs to an audience of approximately 75,000.

Two weeks after contacting the various newspaper sources the local free paper published by the Times consortium printed information about my study in the Leamington, Warwick and Kenilworth Times. Interested parties from all three areas telephoned to find out further details about the study and to volunteer. A greater number of women than men responded to the request for research participants and most of the volunteers were only available to attend group meetings in the evening due to working
commitments. Although I had used a multiplicity of methods to recruit participants (Cannon, Higginbotham, & Leung, 1988) all of my volunteers were Caucasian.

I also distributed leaflets (Appendix 3) and posters (Appendix 3) around shops, businesses, hairdressers, supermarkets, libraries, cafes, chemists, schools and nurseries in all four locations. Again I planned the leaflet distribution to target areas that were populated by people with a diversity of class, social, education and work experience.

The medium that provided the greatest volunteer enquiry response (twenty four responses) was the local free weekly consortium paper produced under the titles Kenilworth Times, Leamington Times and Warwick Times. Enquiry response from the combined resources of The Kenilworth Weekly News (fee paying paper), a local school leaflet distribution and local poster campaign produced three responses each. Two other volunteer enquiries were produced from a previous research study. Combined volunteer enquiries from all of the recruitment methods and word of mouth totalled 46 candidates. I did not receive any enquires from the BBC radio advertisement.

The screening of individuals against the study’s inclusion and exclusion criteria (Table 4.2) were applied during the initial telephone interviews. Participants who were suitable for inclusion and wished to participate in the study were then asked to attend an initial meeting. Participants were notified during the initial telephone conversation that the study would involve six months of regularly meeting within a group and regular use of a log book to record tasks and reflections. I informed each individual that the aim of the study was to design a Weight Management Programme that could be used by other men and women to lose and maintain weight. I explained that they would be involved in making suggestions on weight management strategies, would test the weight loss and weight management ideas and that anthropometric measurements would be taken.
During the telephone interview respondents who remained interested in participating in the study were then asked to attend an initial assessment appointment. Individual appointment times, dates and venue details were then given to each participant. More in-depth details on venue location and parking were given to those participants who were less familiar with the centre of Kenilworth.

Unfortunately not all of the volunteers could be considered for inclusion from the outset (Table 8). Nine of the candidates were excluded during the initial telephone conversation. Reasons for volunteers to be excluded from the research study included; 1) Candidates were unable to attend meetings for an extended period due to vacation; 2) If they were attending weight loss classes; 3) They were presently dieting and/or 4) They were exercising above the inclusion criteria.

4.4.6 Inclusion and Exclusion Criteria and Definitions

- The BMI>23kg/m² for the Asia-Pacific population and BMI>25kg/m² for general population are the measures for being overweight (World Health Organisation, 2000). I chose these measures so that a greater representation of the population could be included in the research project.

- An exercise and medical screening form (pre-exercise questionnaire and PAR-Q) was used to assess that participants did not have a health condition that could put them at risk or affect the findings (Appendix 4).

- The classification of sedentary was defined as individuals expending less than 10% of their leisure time expenditure on activities involving 4 MET (moderate
intensity) (Varo et al., 2003) or walk less than 5000 steps (roughly 30 minutes) per day (Tudor-Locke & Bassett, 2004) and was self-reported.

- Participants who could not speak, read or write in English would not be included because I did not have the economic resources to offer translations into the various languages.

- Participants who were on a diet or weight loss programme, pregnant, taking oral contraception, taking medication that could affect weight loss, had an eating disorder or were unable to participate in physical activity were excluded. The reason for these exclusions was that each factor could interfere with and affect the outcome of weight loss and maintenance.

4.4.7 Participant Protection and Ethical Considerations

Before the recruitment of participants took place ethical issues were considered. These related to the ethical codes of conduct and research responsibilities that would ensure participant safety and well-being, researcher safety and well-being, data protection, research integrity and justice, respect of people’s rights and dignity, researcher competence, participant informed consent, confidentiality, professional conduct, participant debriefing, avoidance of deception, research feedback, sharing and publishing (Loughborough University, 2005a; Loughborough University, 2005b). A research proposal and ethical clearance checklist was submitted to the Loughborough University Ethical Advisory Committee (Loughborough University, 2005c). Due to the commitment required of participants in this study a further full ethical submission process was sought and granted by the Loughborough University Ethical Advisory Committee.
### Table 4.2: Inclusion and Exclusion Criteria

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI $&gt; 25\text{kg/m}^2$ for general population</td>
<td>Oral contraception</td>
</tr>
<tr>
<td>BMI $&gt; 23\text{kg/m}^2$ for Asia-Pacific population (World Health Organisation, 2000)</td>
<td>Taking medication that could affect weight loss, maintenance, health</td>
</tr>
<tr>
<td>Age 18 and over</td>
<td>Pregnant</td>
</tr>
<tr>
<td>Sedentary</td>
<td>Participation in any other form of weight loss, maintenance, health programme or method</td>
</tr>
<tr>
<td>Not dieting</td>
<td>Participants with eating disorders: anorexia or bulimia</td>
</tr>
<tr>
<td>Medical screening – fit to participate</td>
<td>Chronic disease or a disability that prevents physical activity</td>
</tr>
<tr>
<td>Medical approval – to obtain medical clearance from their own GP</td>
<td></td>
</tr>
<tr>
<td>Able to speak and write in English</td>
<td></td>
</tr>
</tbody>
</table>
All of the participants were informed over the telephone and at the first meeting about what the study would entail. They were also assessed on suitability and safety to participate in the study (inclusion and exclusion criteria). Participants were informed how much time they would be expected to commit to the study, how long the study term would be and how the meetings would be structured. Each participant was provided with a participant information sheet (Appendix 5) and signed an informed consent form (Appendix 5) before embarking on the study. Before signing the informed consent form were given the opportunity to have any further questions answered and were made aware that they could withdraw from the study at anytime (Denzin & Lincoln, 2000).

Although part of the inclusion and exclusion criteria highlighted that individuals with eating disorders would not be included in the study, it is possible that one or more of the participants may have been unaware that they had an eating disorder. In the event that any participants became distressed or required further psychological assistance I sourced support contacts for participants if required. During the study term participant data were stored and locked in a filing cabinet for protection. Participants' identities were protected by using aliases during the analysis. Group members were also asked to respect and protect each member's privacy (Denzin & Lincoln, 2000).

4.4.8 Meeting Venue

Finding a suitable venue that could accommodate the groups and was available at the times that the groups could attend was challenging. Church halls and community centres in Coventry, Leamington, Warwick and Kenilworth were contacted. Some of the venues were fully booked and others were prohibitively expensive. Eventually a suitable venue with free parking was sourced in central Kenilworth. The venue chosen was the Kenilworth Community Care Centre which could be easily accessed by foot, public
transport or car from all four locations (Coventry, Leamington Spa, Warwick and Kenilworth).

4.4.9 Initial Face to Face Interviews and Assessments

Participants were measured and interviewed individually to provide privacy and to check that they fully understood what the study would entail. At interview each individual was given the opportunity to ask questions and have any concerns answered. During the assessment appointments I spoke with each person to check if they were medically fit and met the study’s inclusion and exclusion criteria. Participants also completed a PAR-Q and exercise/medical questionnaire (Appendix 4) to investigate their personal weight, weight loss/maintenance, health, diet and physical activity history. The PAR-Q is the most established and well-used screening tool for this purpose (Thomas, Reading & Shephard, 1992) and was used with the confidence that it fulfilled the purpose desired. As such, no other instruments were considered.

Participants were also given a Participant Participation Form (PPF). The PPF displayed contact details, so that I or my supervisors could be contacted if an individual participant had any concerns during the study. Individuals who agreed to participate in the study were then asked to thoroughly read and sign an Informed Consent Form. To assist the above process I used tick off check lists which can be found in Appendix 6.

I asked volunteers which days and evenings they were available to meet regularly and then organised groups to accommodate individual availability. Participants who met the criteria for study entry and confirmed commitment to participate were then assigned to a group. They were also given an information sheet that listed the times and dates of meetings (Appendix 6).
The study had initially been intended to span a six month time period during which the PAR process would be conducted. However, midway through the PAR process the participants chose to extend the study by adding a two and a half month ‘follow-up’ phase to further test, reflect and discuss the strategies they had chosen. Therefore the whole PAR process lasted 8½ months.

Participatory Action Research has previously been found to empower the end user. The process has helped to identify attitudes and barriers to problem areas (McKernan, 1996; McNiff et al., 2003) and in this case by choosing to extend the study term the participants aimed to identify strategies to aid continued weight maintenance after weight loss.

Twenty one volunteers attended the initial assessment meeting. Unfortunately three women did not meet the inclusion criteria, two due to medical history and one because she was not clinically overweight. The final eighteen volunteers were then allotted to one of three groups: two evening groups, Group 1 (n=8) and Group 2 (n=6) and one day time Group 3 (n=4). However, three volunteers dropped out of the study right at the beginning reducing Group 1 (n=7) and Group 2 (n=4). None of the volunteers explained their reasons for dropping out of the study.

4.4.10 Rationale for Group Size

It was intended that each group would consist of around ten stakeholders. This number of participants per group was chosen to increase the opportunity of group knowledge and expertise (Littlepage & Silbiger, 1992) and to reduce the chance of group failure through participant drop out. After the initial assessments group sizes were smaller than previously targeted but large enough to contend with participant drop out.
Participatory Action Research has been conducted with groups as small as three members.

During the first eight weeks, three further women dropped out of the study. The reasons given were pregnancy, one woman broke her arm falling down the stairs at her home and the final woman withdrew due to a relationship breakdown with her partner. For the remainder of the study the group numbers were Group 1 = 7 participants – mixed gender group, Group 2 = 2 females and Group 3 = 3 females.

4.4.11 Rationale for Running More than One Group

There were several reasons for running more than one group. Firstly, a single group could experience problems ‘forming’, which could prevent the group from developing or achieving a common goal (Tuckman, 1965). Having more than one research group could protect the study from failing to achieve its research objectives.

Secondly, to counteract the possibility of groupthink or group polarization occurring. Groupthink and group polarization occurs when decisions and behaviours as a group are riskier than the behaviours and decisions that individuals would make alone. If the groups in my study made such decisions it could result in the production of a Weight Management Programme that was riskier or less attractive to the programme's targeted audience (Baron, 2005; Brauer, Judd, & Gliner, 1995; McCauley, 1998; Zuber, Crott, & Werner, 1992).

The effect of group dynamics has been found to affect each individual differently dependant on personality and how greatly that individual values their peers and the subject matter of the group (Grawitch, Block, & Jennifer, 2005; Lewin, 1947; Mcleod & Kettner-Polley, 2004). It has been reported that the group situation can increase the
need for some individuals to ‘fit in’ with the group, while other individuals can effectively be ‘silenced’. A ‘silenced’ individual’s ideas, attitudes, views and beliefs may not come to light because that person feels overwhelmed or overpowered by the extrovert, confident and dominant personalities within the group (van Stokkom, 2005).

Peer pressure within a group was found to influence participants to override their individual ideas, thoughts, attitudes and behaviours to conform to a group view (Dielman, Campanelli, Shope, & Butchart, 1987; Field et al., 2001) and non verbal social comparison judgements have been found to affect group cohesion. Cohesion or lack of cohesion within a group could stunt the stimulation of ideas, creativity and discussion. The composition of the group and the effect of group dynamics could affect discussions and ultimately programme design outcomes (Reason & Bradbury, 2001).

Social scientists who have investigated the cultural and social expectations within society found that human behaviour can change depending on what the individual feels is expected of them. For example, people were found to act in one way when on public view and in a different way when not on view, ‘backstage’. Social researchers describe the scenario as actors performing for the expectations of ‘the audience’ and retiring ‘backstage’ when the performance had finished (Innes, 2003).

Having two or more groups to compare in the study could reduce researcher or group bias and provide a greater diversity of results, strategies and methods. Finally, running more than one group could indicate whether different groups made the same or different programme design decisions and could highlight popular and unpopular strategies.

After reviewing the phenomenon of how individuals behave within a group environment I believed that I should consider; 1) If participant input could be tainted by individual perception of within group social expectation and in what way? 2) Would participants describe their own weight loss and weight management beliefs and
behaviours in a manner that put them in a more favourable light with their audience (the group and the facilitator)? 3) Would the participants be telling the whole truth?

During each meeting I interjected with different observations and opinions made by participants in the other two groups. I also used brainstorming and mind mapping sessions, in which the main group was divided into twos and threes. These actions allowed and encouraged different beliefs and experiences to be discussed and helped to reduce the group agreeing with whoever was the most dominant speaker.

4.4.12 Creating an Environment for Positive Group Interaction

I, as the facilitator of the PAR, endeavoured to create an environment conducive to positive group discussion and interaction. I had to make sure that I was aware of dominant and powerful personalities within the group. Nonverbal communication was used (a method in which non-linguistic signs in the form of eye and body movement are observed to deduce interaction) (Guba & Lincoln, 1981) to check how the participants felt about the topics discussed and each other.

I chaired the discussions to enable each of the members to have time and opportunity to speak and for the rest of the group to respond to thoughts and views. The aim was to provide a supportive, sympathetic and understanding environment, an environment of solidarity in which all participants felt safe to express their views (Burleson, Albrecht, & Sarason, 1994).

One of my roles was to operate as a moderator. I provided topic areas to begin group discussion and used provocative questions to probe further. I observed the groups and made sure that I introduced the more reserved members into discussions. My role included providing other information and ideas in text and visual medians to stimulate greater discussion.
4.4.13 Organisation of the Action Research Meetings

The study was performed over a thirty four week time period. I had initially planned for the study to be performed over twenty six weeks but as with the nature of action research the time frame needed to be changed to fit the strategy plans of the groups involved. The first two to three meetings focussed on the construction of the weight loss and maintenance programme. The aim was to find, test and develop various weight management strategies. Topic areas discussed at these first meetings are described in Tables 4.3 and 4.4. These topics were chosen purposefully with the aim of designing the initial programme.

During these first meetings I gave each group various questions to brainstorm (Tables 4.3 and 4.4). Each group was given flip charts and pens to record responses. I also introduced different group discussion methods during these weeks, such as mind-mapping and brainstorming (Hunt & Buzan, 1999).

At other meetings I asked the groups to accomplish different tasks to create variety and to increase interaction between group members. After each discussion session I would gather the whole group together once more to discuss the flip chart records. At this point the whole group would discuss the different charted responses.

Subsequent meetings were programmed weekly for the first three months and bi-weekly for the remaining three months of the study term. All three groups were asked after the first three months if they would prefer to meet weekly for the remaining three months or to meet bi-weekly as originally programmed, all three groups chose bi-weekly. Meetings were anticipated to be approximately one to two hours in length.

Over the weeks, the participants followed the cyclic pattern that action research investigation takes (Checkland & Holwell, 1998). The stakeholders tested and discussed
weight loss and maintenance problems and the strategies that they had chosen to include in their individual group's programme design during each meeting.

At meetings each group would decide on which strategies they believed were working and which they believed were unproductive. The group then voted on the strategies that they wished to continue to include in the programme and dropped the strategies that were perceived unpopular or unsuccessful. It was at this point that members of the group also introduced new ideas and strategies that could be included and tested. This process was repeated until each group believed they had completed the design of a usable and effective weight loss and maintenance programme.

After each meeting I dedicated thirty minutes to one hour to write up my reflections. I would ponder on the direction the group was taking, interaction between group members and my interaction with the group (Mortensen, 1997). With each entry I made notes on how I would organise the next meeting and how I would broach topics that may have been deemed controversial or were not resolved. In my reflective journal I wrote about the topics discussed and my observations on interactions and reactions of each individual to the topics. It helped me to reflect on what had occurred, what had been learnt and to highlight areas that required further investigation. Extracts from my journal have been included to demonstrate this process and my reflections (Appendix 7).

### 4.4.14 Rationale for Performing Anthropometric Measurements

Various anthropometric measurements have been found that indicate increased or reduced health risk. For example, to secure many health benefits from weight loss, it is recommended that weight loss is maintained at a minimum of 5%, but preferably 10% of initial body weight (Jakicic et al., 2001; Saris et al., 2003).
Table 4.3: Areas of Discussion for Early Group Meetings

- Physical activity - amount of physical activity performed, what type of PA performed, what PA happy to do, preferences and dislikes in PA exercises

- Diet – foods eaten, feelings about food, possible problems encountered, solutions used, which diets have been positive/negative

- Measurements – pros and cons of baseline and outcome measures, blood pressure, % body fat, body mass index, basal metabolic rate, fat free mass, weight, waist to hip ratio, girth measures, clothing size and mirrors. Positive/negative motivators will be discussed.

- Support – family, friends, work colleagues, slimming clubs. The aim will be to discuss positive and negatives effects of various support structures.

- Behaviour – to discuss their own positive and negative feelings and behaviour in relation to size

- The internal voice – discuss reality and how they feel/deal with this

- The body – feelings to size, fitting into society, treatment of others, establishing relationships, do they want these to change?
### Table 4.4: Potential Weight Loss & Maintenance Approaches to Initiate Discussion

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>- intensity and duration</td>
<td>- low calorie diet</td>
</tr>
<tr>
<td>- lifestyle</td>
<td>- very low calorie diet</td>
</tr>
<tr>
<td>- centre based</td>
<td>- low fat diet</td>
</tr>
<tr>
<td>- home based</td>
<td>- low sugar</td>
</tr>
<tr>
<td>- community based</td>
<td>- diet diaries</td>
</tr>
<tr>
<td>- pedometers/heart rate monitors</td>
<td>- water consumption</td>
</tr>
<tr>
<td>- activity log</td>
<td>- juice/soda consumption</td>
</tr>
<tr>
<td></td>
<td>- breakfast, lunch, dinner</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behaviour Strategies</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>- avoidance of trigger foods</td>
<td>- telephone</td>
</tr>
<tr>
<td>- reduction of fats</td>
<td>- internet</td>
</tr>
<tr>
<td>- reduction of sugars</td>
<td>- buddies</td>
</tr>
<tr>
<td>- using a mirror</td>
<td>- group</td>
</tr>
<tr>
<td>- regular weighing</td>
<td>- family</td>
</tr>
<tr>
<td>- checking tightness of clothes</td>
<td>- friends</td>
</tr>
<tr>
<td>- programming physical activity</td>
<td>- colleagues</td>
</tr>
<tr>
<td></td>
<td>- face to face</td>
</tr>
</tbody>
</table>
It has also been found that a waist circumference (WC) of ≤88 cm (35 inches) for women and ≤102 cm (40 inches) for men decreases the risk of metabolic complications of obesity (Hamilton, 2002). Furthermore, a waist circumference of ≤80 cm (32 inches) for women and ≤90 cm (36 inches) for men reduces the risk of type 2 diabetes (Muller-Weiland & Goldstein, 2002; National Diabetes Support Team (NDST), 2007). Simply communicated a WC of <32 inches for women and a WC of <36 inches for men can provide multiple health benefits and protection against obesity related co-morbidities.

The Waist to Hip Ratio (WHR) has also been found to identify health risk status. A WHR ≤0.8 for women has been found to reduce susceptibility to a variety of health disorders including cardiovascular disease, diabetes and ovarian cancer (Dobbelsteyn, Joffres, MacLean, & Flowerdew, 2001; Picon et al., 2007; Yusuf et al., 2005). A WHR of ≤0.9 for men was found to reduce susceptibility to a variety of health disorders including heart disease, prostate cancer and testicular cancer (Dobbelsteyn et al., 2001; Picon et al., 2007; Yusuf et al., 2005).

Due to the importance of these measurements at identifying health risk, it was decided to take a variety of anthropometric measurements throughout the PAR study to assess any changes to weight and health risk status.

4.5 Data Collection

4.5.1 Triangulation of Data Collection Methods

This study was designed to include different modes of inquiry at different times during the Action Research process. The different data collection tools included log books, questionnaires and digital recording of exit interviews. Data were also continually collected from group meetings during the Action Research Process itself and from
anthropometric measurements. I chose to combine qualitative and quantitative data to provide a triangulation approach to validate the study findings (McKeman, 1996). Triangulated data collection is an investigative method whereby more than one data collection method is used. All of the research methods are then cross-checked against each other to assess findings. A triangulation approach can help to increase confidence in research studies that consist of qualitative and quantitative research (Bryman, 2004).

The amount of data collected was large and much time was required to complete the data reduction and analysis. However various benefits were derived from the data collection design including; if any lines of inquiry were missed at any point during the study they could be investigated through another method of inquiry. It provided an opportunity for evolving questions to be answered. The holistic nature and triangulation process of inquiry in this study created a rounder, clearer picture, helping to strengthen internal validity (Denzin & Lincoln, 1998).

The triangulation of qualitative data collection included; conducting focus group meetings, exit interviews, participant diaries, mind maps, participant flip chart lists, observational, field and reflective notes. Analysis of the data was continuous and occurred during the data collection phase and after data collection. The participants in the study were involved in all phases of the research and were regularly asked to corroborate interpretation. The data sources were assessed for convergence. To ensure credibility and trustworthiness, regular checks and discussions took place with my critical friends and peer evaluation (with Dr Trish Gorely) of procedures and interpretation of data were conducted. The emergence of key themes and weight management strategies was assessed, checked and agreement confirmed (Thomas & Nelson, 2001).
4.5.2 Anthropometric Measurements

Anthropometric tests were performed to assess the effect of strategies on weight loss and weight maintenance. The measurements included Height and Weight from which Body Mass Index (BMI: formula) was calculated, Waist Circumference (WC), Hip Circumference (HC) and Waist to Hip Ratio (WHR). The waist circumference, hip circumference and body mass index were chosen as body assessment measures to identify health risk status (Diabetes UK, 2007; United States Department of Health and Human Studies, 2008. These measures were carried out at baseline, three months, six months and eight and a half months to assess the effectiveness of the strategies for possibilities of long term weight loss and weight maintenance for programme followers.

The Seca weighing scale was used to measure each individual’s body weight. The scales were placed on a solid, flat floor and the same floor area was used for each assessment to increase reliability. The height of participants was measured using the Seca Leicester Height Measure which was positioned on a flat, solid floor and aligned to a wall. Each individual was measured in stocking feet in accordance with the Frankfurt Plane method (Cameron, 1984). Body weight and BMI has been found to indicate increased and reduced health risk and was recorded to assess health risk status.

A fibre glass, non-stretch Bodycare tape measure was used to record waist and hip circumferences. All of the anthropometric measurements were taken in accordance with current guidelines - each measurement was taken twice and then averaged to produce the final measure (Cameron, 1984).
4.5.3 Exit Interviews, Questionnaires and Follow-Up Meetings

At the six month measurement meetings all of the participants were asked to complete an exit questionnaire. The questionnaire provided each individual an opportunity to look retrospectively and critically at the whole weight management strategy forming process and gave them the opportunity to write down their observations (Appendix 8).

The questionnaire gave participants who were more reserved and less vocal during meetings another opportunity to voice their opinions on the programme devised by their group. The exit questionnaire process gave all of the participants a final opportunity to write down any ideas or suggestions that they had not volunteered previously.

Exit interviews with four participant volunteers were also conducted with two members from Group 1, one from Group 2 and one from Group 3 (one man and three women). The in-depth, semi-structured interviews provided the opportunity to ask questions that delve deeper into the opinions and attitudes of interviewees. Interviews were a maximum of thirty minutes in length. The questions used in the exit interviews were initially based on the responses that each of the four interviewee participants had given in their exit questionnaires. Further questions were devised to expand on the answers vocalised by the interviewees.

Question themes included: individual thoughts about the strategies chosen during the study term, what strategies they would include in a weight management programme, what advice they would give to future weight management programme clients, what effect they believed 'the group' had on strategy choice, how they believed ‘the group’ would affect individual outcomes and further ideas that could be added as weight management strategies.
The 'follow up' meeting at the eight and a half month time point provided further data with the opportunity for the groups to draw up the final weight management programme design. I provided each group with data from their strategy plans and anthropometric results gathered throughout the study. This information was used by each group as discussion material. It was at this point that each group made their final additions and amendments to their weight loss and weight management programme.

4.6 Data Analysis

Data were collated and extracted continuously throughout the study. The information gathered was analysed and reflected on by group members and myself as part of the participatory action research process. This data helped to fuel idea formation, aided the design and confirmation of weight management strategies and finally the Weight Management Programme. During the study term I assessed and reflected on the data gathered from each meeting while writing my reflective journal. If any questions or ambiguity had arisen from a meeting, I asked the group to discuss and reflect on the questions that had materialised or answer the ambiguity at the following meeting. This process was used to confirm each group's programme of strategies. During this process I conversed with my critical friends by email, phone and face to face to determine their thoughts, reflections and ideas on the data unfolding and on methods that would continue to produce discussion, reflection and debate within groups. Some of the ideas suggested by my critical friends included brainstorming, role play and using mind maps.

After the final meeting the data were collated from the meetings, exit interviews, exit questionnaires, measurements and log books. All of the data were transcribed and then a process of editing and coding took place. I immersed myself in the data by comparing
and contrasting the findings and ordering the themes. This was followed by a process of reflection over the data. I focussed on the frequency of occurrence of themes to chart and determine topics within themes. The data were placed into categories so that patterns could be established and coding frames could be set. I used two methods to help me to code the data: 1) the deductive method, in which categories chosen from my theoretical knowledge and then relevant data were searched for and 2) the inductive method, whereby categories were chosen during and after checking the collated data, categories were derived from unexpected and interesting data in relation to the research question. Themes emerged by looking at the collated data, analysing the results and piecing the results together (Stringer, 2007; McKernan, 1996).

4.7 Participant List

**Group One**

Dan – business man in 60’s, married and father of one boy. Dan was a larger than life character both physically and through his personality. He appeared strong, able to cope with what life threw at him. Externally he would be deemed an extrovert. However, during the study he showed a soft, vulnerable side to his character. He was a sensitive soul, who appeared to be hiding behind his large body and brusque personality. During the meetings he had a tendency to hijack discussions. It felt as if the meetings were his only opportunity to express his feelings, to open up in an environment that he felt safe in. Dan appeared to be loud but was sensitive to the other members’ feelings and regularly thanked people sincerely for their help and for listening to him.
Ally – a full time mother in her 40’s, married with a school aged son and baby. Ally took pride in her appearance and would be perfumed and groomed for each meeting. She had many weight loss experiences and had attended Weight Watchers’ meetings in the past. Ally was a gentle, warm and kind soul, who was very thoughtful and quiet. She appeared to be a person who could be easily hurt. She was empathic to the feelings of others around her, I wondered if she regularly put others before herself. She was a family woman who focussed her attentions on her husband and children. Ally was more comfortable to sit back and listen to the others. She had to be invited to interject her feelings and experiences. She found it easier to voice her opinions in smaller groups during brainstorming rather than the larger discussion group.

Paul – a retired man in his 60’s, single. Paul was another gentle soul, kind and slightly shy, he was always courteous. During the meetings he would enter into conversation easily and was confident to do so. However, he appeared to be happier to listen to the other group members. He was thoughtful to others’ feelings and was happy to initiate and join in with the fun and laughter in meetings.

Luke – full time employed in his 20’s living with partner and baby daughter. He was confident and knew his own mind. Luke was determined to make the programme and his experience within the group a success. He appeared to be someone who would make ‘things happen!’ He would take the meetings seriously but was also a fun member in the group. Luke appeared to grow in confidence during the study and showed both strong and vulnerable sides of his personality.

Kate – full time teacher trainee in her 40’s, married and a mother. Kate had previously been a Weight Watcher’s leader, so she had previous experience of losing weight and
keeping it off for a period of time. Kate appeared defensive and guarded, she was quite sensitive. She had been battling with her weight issues for many years. Kate was also supportive to other group members during meetings. However, during meetings she exuded an aura of solitude, it felt like she was holding herself back, perhaps protecting herself.

**Jade** – full-time employed in her late 20’s living with partner, no children. Jade was very at ease with herself. She held a positive outlook on life and brought this cheerful disposition to group meetings. She was confident and regularly participated in the group discussions without the need for prompting. She seemed determined to implement the strategies and stated the difficulties encountered as the mother of a baby.

**Holly** – full-time employee in her mid 20’s with young baby daughter (was on maternity leave during the first part of this study and returned to work at midpoint). Holly was a gentle, quieter soul but at the same time she could be cheery and friendly. She had the confidence to participate in group discussions and state her true feelings in a democratic way to not offend the rest of the group.

**Group Two**

**Eve** – full-time employee in her early 20’s living with fiancé, no children. Eve was a bubbly, attractive and vibrant young woman who had a passion for chocolate and a difficulty organising her meals. She entered into discussions enthusiastically. She was confident and knew her own mind. She got on well with others and appeared to be someone who would be popular and have many friends. Eve worked long hours in a stressful community focussed job that she loved.
**Tess** – full-time employee in her early 40’s, she was married with two secondary school aged children. Tess appeared to be a calm, confident and capable woman. She was communicative and a listener in group meetings. She came across as a person you could trust. Tess was very open about her own vulnerability with emotionally led eating and was empathic with others. During the study term Tess was attending a part time course in counselling.

**Jane** – full-time employee in her 20’s living with fiancé, no children. Jane’s personality was intense and extrovert. While she attended her group’s meetings she was the most vocal participant. She appeared confident and in charge of her life. However, she had attempted weight loss previously and didn’t appear to have much confidence in the process. Jane had only attended a few meetings before she broke her arm and couldn’t continue attending. However, I had a feeling that she wasn’t truly committed to the project.

**Mary** – part-time employee married and mother. Mary only attended the first group meeting, so was only involved in the initial strategy formation. She appeared serious and committed at the time. She participated fully in the group discussion with confidence. Over the Christmas holidays, she and her partner separated so was unable to continue as a participant due to lack of childcare.

**Group Three**

**Liz** – part-time worker in her later 30’s and mother of three young children. Liz was a friendly, approachable, extrovert woman who got on easily with the other members of the group. She was a common sense, down to earth sort who got on with living her life. She
appeared to be focussed on community and people. At the last meeting she presented each member and I with a gift wrapped box of strawberries and low fat cream.

Di – part-time worker in her 40’s with no children. Di was quite an emotionally charged woman. She was kind, thoughtful and friendly to the other women in the group. But she came across as a pessimist and unhappy with her life. After Cathy left the group Di tried to dominate discussions with her mixed message positive/negative slant on weight management. She would suggest different strategies to test at most meetings but had difficulty implementing most of them.

Sue – full-time entrepreneur and mother of two school aged children in her mid 30’s. Sue was a doer. She seemed full of energy and positivity. She was happy to discuss and test strategies. She was the most successful member of her group at implementing strategies and experienced weight losses. However, she began to join in with the group speak orchestrated by Di, probably to fit in. Sue appeared to be a confident woman, however she tended to prefer to listen and empathise with the other woman rather than rock the boat.

Cathy – part-time worker and mother of one pre-school aged child in her late 20’s. Cathy was confident, chatty and she was comfortable with brainstorming strategies. She was the slimmest and youngest person in group 3 and this appeared to affect how she interacted with the other women. She was forthright and the most vocal member of the group during the time that she attended. She had to withdraw during the early stages of the study when she became pregnant.
4.8 Findings/Results

The following results have been compiled from data collected from group meetings, flip charts (Diagram 4.1 and Appendix 6), log books, exit questionnaires and exit interviews during the eight and a half month study period. The names of participants have been changed to protect their identity.

4.8.1 Tested, Accepted and Rejected Strategies

During the study term a number of different weight loss and maintenance concepts were tried and tested. Some of the concepts were found to be successful at providing weight loss and maintenance outcomes and were user friendly. The strategies included implementing changes to diet and/or exercise, measurement recording, various forms of support, use of therapy, record keeping, education, information and using rewards. The process of choice, strategy trialling and decision making is reflected in Tables 4.3, 4.4 and Diagram 4.1.

4.8.2 Dietary Strategies

All three groups chose to implement some form of dietary change at the beginning of the programme design process. Dietary strategies chosen by the three groups included planning meals, eating slowly, increased water consumption, portion control, eating five portions of fruit and vegetables a day, reducing snacking, cutting out trigger foods, substituting healthier foods for previous snacked upon foods, eating healthily, eating three meals a day and trying new food and recipes.
Diagram 4.1 Flip Chart Table for Group Two
4.8.2.1 Planning

Planning of dietary intake was chosen by all three groups. Planning incorporated a number of different organisational strategies which included: planning to shop for food, planning which meals and lunches would be made during the coming week, making a shopping list, purchasing a small amount of snack/junk food or not buying any snack/junk food to avoid temptation. Other planning changes included: eating something before going out to a social event to reduce the temptation to pick on high fat/ high calorie foods, sitting away from calorie loaded foods at social events, and taking healthy food and water into work.

Planning was a popular strategy with all three groups. The groups believed that planning was one of the key strategies required to aid weight loss and weight maintenance. However most of the participants agreed that they found that it could be difficult to stick to the planning strategy at particular times such as: during holidays, when working long hours, during changes to their children’s routines, when there was illness in the household, and when spontaneous social events occurred.

At one meeting Amanda (Group 3) stated how important planning was and how if she didn't plan her food shopping and meals for the week her eating behaviour could be negatively affected. She described how she had planned her family’s food for Monday to Friday during one week but had not planned any meals for the weekend. She highlighted how this error had had a knock on effect to her eating behaviour during the consecutive week. She described her behaviour as ‘out of control’. Liz (Group 3) confirmed that she too believed planning to be important stating that ‘just ten minutes (a week) food planning helped to control eating’.

Jade (Group 1) expressed that she found that planning food was crucial to aiding weight loss and maintenance. Planning, she explained, made eating healthily easier to
Figure 4.1: Flow Chart of Strategy Selection for Group One
Figure 4.2: Flow Chart of Strategy Selection for Group Two

Abbreviations - GI = glycaemic index
Figure 4.3: Flow Chart of Strategy Selection for Group Three

Abbreviations - BMR = Basal Metabolic Rate, Info = Information, EI = Energy Intake, EE = Energy Expenditure
CBT = Cognitive Behaviour Therapy
achieve; such as eating fruit and vegetables and drinking water. Luke and Holly agreed that planning food to eat healthily, to drink water and to maintain these activities, were indeed important strategies to promote positive weight management outcomes.

Caroline (Group 2) confirmed that the planning of dietary intake had helped her to cut out snacks, eat more healthily, drink water and maintain a running programme. Liz from Group 3 highlighted the positive psychological effects that planning could achieve, by stating that when she ‘stuck to planning’ she felt ‘up beat and positive’ and that having a planned week made her feel in control. She added that when she didn't implement planning ‘everything goes wrong.’ Jade (Group 1) confirmed the same belief that planning was vital ‘otherwise everything else goes out of the window!’ Ally and Kate (Group 1) agreed, adding that planning was important and could have a massive affect on weight loss outcomes.

Liz (Group 3) explained during the early meetings that she didn't really eat meals and generally grabbed food while on the go. She didn’t really think too much about what she was eating. Liz added that she ate most of her food intake snacking on what was in the cupboards during the evening while her kids were in bed and her husband was at work. Planning, Liz informed the group helped her to eat regular meals.

Dan (Group 1) expressed that with regard to food planning he was lucky because he didn’t have to think about it. He elaborated further by stating that his wife organised food shopping and cooking in their home. As soon as he began the study, Dan explained, he had informed his wife about the strategies he would be following and she organised the rest. Dan did believe that planning was important and confirmed that he personally planned his weekly exercise and implemented plans to reduce his consumption of alcohol.

Eleven out of the twelve participants in this study used their log book as a planning or record keeping tool. In their log books, participants recorded foods eaten and
exercise completed. They also wrote about their ideas on how to achieve strategy targets and reflections on the success of strategies tested.

All members of the groups were given a variety of planning forms and tables to aid planning during the study but not all of the participants used them. Dan (Group 1), Eve, Tess (Group 2) and Liz (Group 3) did use some of the forms provided and a couple of the participants devised their own planning sheets. On the whole however, planning forms and tables were not used consistently and were not chosen as specific strategies to aid planning at the end of the study. Instead participants preferred to plan dietary intake by making personalised weekly meal plans or shopping lists.

In general planning of food shopping and organisation of meals and snacks was found to be easy and to fit successfully into their lives. Group members had used different methods of planning that suited their own individual lifestyle. Some shopped daily, some shopped every three to four days, others weekly and some used internet shopping. Some individuals planned what meals they would eat each day and others said they were versatile. The groups confirmed that planning shopping meant that there was food in the home to make healthy meals instead of grabbing for the quickest option, which often contained higher calories and was less healthy.

4.8.2.2 Slow Eating

Eating slowly was introduced and implemented solely by Group 1. The group introduced the concept during their first meeting - they then tested and reflected on the method as a weight loss and maintenance tool.

The strategy was self-explanatory and involved remembering to think about eating slowly before commencing and when consuming food. Slow eating was deemed to be a simple thing to do but was found to be relatively difficult to remember. Even so
the group kept this strategy because they believed it helped them to successfully reduce the quantities of food that they ate.

The group highlighted that slow eating helped them to realise when their stomach was full and so helped them to reduce overeating. Slow eating was found by the group to be an effective weight management method to use when eating in social situations, at celebrations and during festive times of year such as Christmas and Easter.

Paul stated that slow eating had stopped him from eating 'seconds' when he would have previously accepted them when eating in a social setting. Holly commented that 'eating slowly was one of the more effective ones (weight management strategies) for me' and added on her exit questionnaire that 'I wouldn't have thought of eating slowly (as a weight loss and management strategy) and this was one of the more effective ones for me.'

Jade found that 'slow eating had lead to eating smaller portion sizes'. She described how she had left food on her plate because she had eaten slowly, while Ally explained that because she had focussed on eating slowly, she had eaten slower than her husband at various times. This factor made her feel good about herself and more in control.

Although slow eating worked in some capacity for most of the group, Luke and Helen confirmed that they had found remembering to eat slowly difficult to achieve. Luke highlighted that 'he hadn't really got the hang of it during the programme so he was unlikely to change.' Luke explained that he found the strategy of slow eating difficult to achieve at home because he was 'eating faster to deal with my daughter' who was a baby at the time that this study took place.

Jade and Luke added that they found slow eating to be a difficult strategy to implement at the workplace. They explained that even though they were taking their lunch break, colleagues would disturb them with problems and that this resulted in them
to cramming their food’ and ‘eating as quickly as possible’. Jade stated that she had to eat at her desk because there was nowhere else in her work building to go for lunch. The alternative was sitting in her car in the car park.

Slow eating was found to be easier to achieve when sitting at a table, when eating at home and when using a knife and fork. A number of the participants used these strategies to help to remind them to eat slowly. A couple of the women also stated that they found slow eating to be successful when eating socially because they believed slow eating made them look more attractive.

Previous research studies have found that pace of eating can significantly affect the amount of food consumed. One study found that slow eaters consumed significantly smaller amounts of food than faster eaters (Takaki & Aoyaman, 2008), while other studies have linked pace of eating to prevalence of overweight and obesity (Drabman, Cordua, Hammer, Jarvie & Horton 1979; Stunkard, 1958).

The eating behaviour modifications tested by the participants in this study also found that by fully focussing on eating and not engaging in other activities at the same time helped to avoid over eating. The Handbook of Obesity also recommends avoiding engaging in other activities while eating so that full focus remains on eating to avoid over consumption (Wadden & Stunkard 2002).

4.8.2.3 Increased Fluid and Water Consumption

Increased water consumption was a strategy chosen by all three groups. Group discussions acknowledged that members had acquired prior information about water consumption. It was believed that dehydration could be confused with hunger and that this confusion could result in increased food intake. Participants felt that increasing water intake would reduce dehydration and in turn would help to reduce calorific intake.
Some of the volunteers already drank a lot of water so they continued to do so. Other group members admitted to drinking very little fluid at all so for them to increase water consumption or fluid intake involved organisation.

During the first few weeks of testing most participants confirmed that they found increasing water consumption was relatively easy to accomplish. It was believed that drinking more fluid did indeed help to reduce overeating.

However, as the weeks went by individuals began to vocalise problems. A few participants had found that they had forgotten to drink water when they were out and about and had not established a method to help them to remember. Through group discussion other members of each group were happy to share the strategies they used to remember to drink water. Stakeholders from all three groups who had found solutions to increase and maintain water consumption offered their tips.

Jade recommended drinking a glass of water with a meal. Ally suggested drinking a glass of water while boiling the kettle for a hot drink and drinking water first thing upon waking up. Holly offered the idea to take a glass of water to bed. Kate said she kept a bottle of water in the fridge and Luke explained that he put a bottle of water on his desk at work so that he could see the amount of water he was drinking. Tess confirmed that she was happy to increase her fluid intake but preferred hot drinks, so she drank caffeine-free herbal and fruit teas instead. Liz said that she carried a bottle of water when out and about.

All three groups expressed a problem with the increased need to urinate, attributed to the uptake of fluid. Liz from Group 3 explained that she was waking up during the night to go to the toilet which disturbed her sleep. Two fellow participants from Group 1 also broached the topic of increased urination due to greater water intake. Paul and Dan found that they were urinating more regularly and confirmed that prior to drinking greater quantities of water they had only urinated a few times a day. Paul stated
that since increasing his consumption of water the first thing he would do when driving to a destination was to find the toilet!

However with every negative a positive can often be found. Luke joked that the increased need to urinate had provided him with 'extra breaks' at work and Kate added with humour that walking to the toilet more regularly would increase everyone's physical activity!

It became apparent that the groups believed that this strategy should stay in the programme. They advised that future users of the programme should be aware that urination would increase and that this may be a problem for some people.

4.8.2.4 Portion control

All three groups chose to test portion control as a weight management strategy. Groups 1 and 2 and some members of Group 3 confirmed the strategy a success to implement. These groups confirmed that although their portion sizes were smaller they still felt satisfied. Also, these participants stated that they didn't feel like they were 'missing out' or being 'deprived', feelings that many of the participants admitted to experiencing during previous 'diets' and weight loss programmes. The two groups (Group 1 and Group 2) believed that they felt differently about changes to diet in this programme because they were eating foods that they liked and enjoyed and because no foods were banned.

Participants from both groups added that during previous weight loss attempts they had felt like they were 'in prison'. They expanded stating that when foods were banned they would want to eat them and that generally they would eat more of the banned food because it was banned. Luke described the feeling as a 'kind of rebellion.'
Luke believed that his eating behaviour had changed and that he now took more time and enjoyed preparing the evening meal. He also believed that he was happy to eat a smaller meal because he was being sensory satisfied during food preparation. Dan reported that he too was equally satisfied with the smaller portion meals that his wife prepared for him. Sue (Group 3) believed that portion control was a vital tool to use to aid weight management.

Individual methods used to reduce portion sizes were discussed by the groups. Tess (Group 2) reduced her portion sizes by splitting up the foods that she had previously eaten for breakfast (porridge, yogurt, nuts and dried fruit) and eating some of the foods during the day as snacks and only eating the porridge for breakfast. Helen informed the group that she ‘used a smaller plate to dish up meals’ and Dan stated that he now ate the same size meals as his ‘8 stone wife’.

Portion control was believed by members from all three groups to be an easy strategy to implement. It was also deemed a successful strategy to use to aid weight loss and weight maintenance. However Liz (Group 3) wasn’t convinced. Liz stated that she had great difficulty changing the habits of a lifetime. Liz’s eating behaviour was different to the other participants in this study as, instead of decreasing portion sizes she had to change her eating behaviour from snacking on the go, to eating three meals a day. She had existed on snack food for many years and found sorting out her own meals to be an extra burden. She was fully capable of making meals and provided meals for the rest of her family. The problem appeared to be that she was accommodating all of their shift patterns and needs and had little time or energy left to focus on her own.
4.8.2.5 Five Portions of Fruit and Vegetables a Day

All three groups chose to test eating five fruit and vegetables a day and found it to be an easy strategy to incorporate into their weight management plan. A few of the volunteers were already eating the government recommended five a day or more. However Kate, Liz and Di confessed that they didn't really like fruit or vegetables and stressed that during the winter months it was difficult to find any fruit and vegetables that they liked.

The problems found maintaining this strategy included forgetting to buy fruit and vegetables when shopping and being too tired or too busy to prepare them. Another problem voiced was forgetting to take fruit to work to eat. Even though a number of the participants had difficulties with this strategy, most of the participants reported that they were eating more fruit and vegetables than before including the strategy into their programme.

Dan and Michael (Group 1) found eating five fruit and vegetables a day easy because they were used to it. Dan added that he had increased his fruit intake further by substituting his usual sandwich when hungry with fruit instead. He expressed that he was really satisfied with the alternative.

Liz, Di and Amanda (Group 3) found that making smoothies and soups, and using frozen and canned produce helped to increase their fruit and vegetable intake during the winter months. They also stated that smoothies were enjoyed by the whole family. Although the consumption of fruit and vegetables was increased by using recipes for smoothies and soups, the women regularly added cream, ice cream and high fat/sugar ingredients to the recipes which made the strategy counterproductive for weight loss and weight management for health. The women's behaviour indicated that dietary education may be required.
Participants from all three groups agreed that eating five a day should be included in a Weight Management Programme because they believed that this strategy aided weight management and helped them to eat more healthily.

4.8.2.6 Three Meals a Day and the Reduction of or Substitution of Snacks

Groups 2 and 3 incorporated eating three meals a day into the programme because some of the participants did not eat regular meals. When implemented Eve (Group 2) found that she wasn’t as hungry as she used to be and eating regular meals reduced her impulse buying and stopped her ‘pigging out’ on snacks. Eve added that she felt that eating three meals a day also increased her willpower. Liz, who (Group 3) had habitually existed on impulse snacking, found that she snacked less when she ate three meals a day.

Group 1 did not choose to implement eating three meals a day as a strategy to test; this was probably because they were already doing so. However Luke disclosed midway through the study that he believed he was eating more than he needed to and believed this was caused by not eating breakfast. He began eating breakfast cereal and found that including breakfast helped to control his food portions during the rest of the day.

Groups 2 and 3 also chose to focus on the reduction of snacking and finding substitutes for fattening or unhealthy snacks. Group 1 didn’t specifically choose to tackle snacking but during group meetings reported that they believed their consumption of fattening and unhealthy snacks was reduced when they followed their own group’s dietary strategies of planning, eating five fruit and vegetables a day, water consumption and portion control.
Trigger Foods, Calorie Control, New Food and Recipes

Trigger foods were believed by the participants to be addictive foods that could increase the likelihood of overeating or binge eating behaviour. Bread was the trigger food chosen to cut out by Group 3. Two of the women disclosed that in the first instance, they had not missed bread and had found the strategy relatively easy to implement. They chose alternative foods to replace bread. Both women confirmed that they were also feeling better psychologically about food. For example, they felt more in control of their eating and believed they were eating more healthily. One of the women also added that she had not felt bloated during the time frame she wasn't eating bread. It wasn't all good news however, for example, Liz found that she felt deprived and explained that her feelings had led her to eat chaotically, due, she believed to the food ban.

However, over time the participants explained that they found it difficult to cut out bread and in fact were eating more bread than they usually did. Di stated that she knew she had a problem when her husband teased her about her 'toast addiction' in the company of friends. During the study the women continued to trade recipes irregularly and found using the recipes helped weekly food planning and shopping.

Group 1 and Group 2 had both discussed cutting out foods and agreed that they would not ban any foods because they didn't wish to feel that they were on a 'diet'. Members wanted to be able to eat all foods without guilt and believed that a balanced attitude towards all foods would prevent them from feeling the need to blow out. Groups 1 and 2 believed that purchasing small amounts of junk food resulted in them feeling that they weren't being deprived and hence that they were less likely to crave the food. Jade described on her exit questionnaire that 'I wouldn't ban any food or food type as I think that makes you want it more and this can't be maintained for a long period.' Holly commented that she believed it was 'Good not to have a restricted diet.'
During the study, three women from Groups 1 and 2 chose to speak with me individually after the rest of the group had left. Each woman spoke to me about how involvement in the programme had helped to change her psychological response to food and her individual eating behaviour. Two of the women informed me that they believed that they had had a problem with emotionally led eating for many years and that weight loss attempts prior to this study had not changed their behaviour. They both wanted to tell me that they believed that following their group's programme made them feel more in control.

The third woman confessed to me that she had followed many diets and had been a Weight Watcher's leader for a number of years. However, she had never been able to eat puddings in front of her husband. In fact, she was living a lie as he believed that she just didn't eat them, but she was secretly eating them alone. Now she explained she was able to eat puddings in front of her husband. She was jubilant about her increased confidence and changes in psychological response to food and believed that the strategy of eating all foods and not talking about 'good' and 'bad' foods had assisted her behaviour.

One of the women from Group 3 also highlighted her issues with food, stating that although she didn't believe she had totally conquered them 'It has helped me (being involved in the study) look at all the issues surrounding my eating habits. It is not just about food but also emotions and life in general'.

In the end banning of trigger foods was not chosen as a strategy to be entered into a final Weight Management programme by any of the three groups. However, Group 3 couldn't make up their minds whether the strategy had been tested by them sufficiently to completely discount it. Liz stated in her exit questionnaire that 'I would have liked to find my 'trigger' foods by eliminating different things each week to see if this made a difference'.
Group 2 and Group 3 explored calorie intake (energy intake) and experimenting with new recipes. Group 2 looked into using GI recipes, food pyramids and knowledge about food calories. Group 3 set up a group recipe swap shop and learnt about energy intake and energy expenditure. None of these methods were officially included as strategies by either group however the increased knowledge appeared to empower participants in their dietary choices.

4.8.3 Physical Activity Strategies

All three groups chose exercise as a weight management strategy. During the early stages of the study the groups admitted to having problems achieving the physical activity targets that they had set for themselves. Initial physical activity targets ranged from 60 to 90 minutes per week.

4.8.3.1 Planning and Accumulated Bouts of Exercise

Luke, Jade and Holly (Group 1), Eve and Tess (Group 2) all found that planning for exercise increased their participation in physical activity. Holly added that she found planning was necessary when aiming to exercise with others. Accumulated exercise, short bouts of exercise and the setting of large and small exercise targets were discussed by each group. During one meeting Dan (Group 1) described how his wife, who he deemed to be of normal weight, jogged on the spot for 15 minutes every morning while waiting for the kettle to boil. This concept inspired his fellow group members into realising that they could achieve much of their targeted exercise if they used similar methods — exercising for small amounts of time, in short bouts. Over the following weeks members of Group 1 described setting themselves smaller exercise targets and how
they found that this strategy had aided the maintenance and increase of their weekly physical activity.

Jade spoke about how she had previously set herself the target of rowing for 20 minutes at a time, but often found she didn't achieve her exercise target. She described how not hitting her target had made her feel de-motivated. After the group talk she changed her rowing exercise target from twenty minutes to five minutes instead. She found that the new, shorter target was easier to achieve and that in fact she was continuing to exercise until she was fatigued. She was achieving fifteen minutes rowing at a time.

Jade stated that the lower target was more achievable and hence she found it easy to go beyond the target of five minutes and was achieving more exercise with the new target. Because she was exercising for a greater duration than her five minute target she also felt more motivated. Ally told the group that she had used the same method as Jade when she was swimming and that she too found setting a lower exercise target helped to get her started. As a result she was swimming for a longer duration.

The women in Group 2 also tested using small bouts of accumulated physical activity to achieve their exercise targets. Both women found that small targets made getting started easier. Tess and Eve both incorporated small amounts of alternate walking and running to begin. Tess began by alternating between a couple of minutes running and a couple of minutes walking to achieve her exercise target. She also used a book dedicated to running to guide, educate and motivate her. The smaller targets of exercise were actually helping the participants in Groups 1 and 2 to do more exercise as well as 'getting them started'.

Group 3’s reactions to physical activity were different to Groups 1 and 2. Although the three women believed physical activity to be important in a weight
management programme, they stated that time constraints made it difficult to incorporate exercise into their everyday lives. When opportunities to be active had arisen or when the women had planned to do exercise, they had not. Liz confirmed that she had had opportunities to walk but she had accepted lifts from friends when out because it was easier than saying 'no'. Also she had driven at various times instead of walking because 'it was cold and icy.' Group 3 had set a lower weekly exercise target than the other two groups and discussed implementing the accumulated bouts strategy, however none of the women tested the strategies when they left the group meetings. This group appeared to understand the benefits that they could achieve through exercising and hence discussed that strategy, one woman even joined a gym, but they never really tested the strategy of physical activity to lose weight.

At the outset Groups 1 and 2 chose to increase physical activity by 90 minutes per week. Group 3 chose to increase their physical activity by 30 minutes a week. During the study term Groups 1 and 2 achieved their weekly exercise targets regularly, weekly exercise ranged between 60 minutes to two and half hours per week for members of both groups. During one week Holly achieved eight hours extra walking. As the study progressed, Groups 1 and 2 increased their weekly physical activity targets to >110 minutes per week to help to increase weight loss and to deal with weight plateau. However, physical activity was not embraced by everyone. Group 3 never achieved their target of 30 minutes a week. These findings indicated that some individuals may require support when introducing physical activity into their life, such as exercising with others or may require more information about how to incorporate physical activity into their lives. They are likely to benefit from planning physical activity and setting low, accumulative physical activity targets as practised by Groups 1 and 2.
4.8.3.2 Physical Activity as Transport

The majority of participants in Group 1 increased their weekly physical activity through walking or cycling instead of using the car. Luke described that he believed we live in a car society and that it was just habit. Jade agreed with Luke's comments adding how she believed peer and social pressure in certain locations appeared to have an affect on physical activity. She informed the group that when she lived in Kingston she used to walk everywhere and that everyone did it. But when she returned to Kenilworth she would jump in the car to travel to places because that's what people in Kenilworth do. Paul (Group 1) confirmed that he had adopted the strategy of parking his car further away when out and about so that he increased his walking.

However transportation activity was not problem-free. Dan (Group 1) described how he had chosen to increase his transportation activity by using his bike, but found cycling on the roads in Warwickshire to be dangerous and often made the decision to ride on the pavement because he felt safer. The rest of the group agreed that cycling in Britain was dangerous and they understood his reasons for using the pavement, adding that Britain should follow the lead of Germany and Amsterdam on cycling policy.

4.8.3.3 Choosing Enjoyable Physical Activity

On the whole, members of Groups 1 and 2 were very positive about using exercise as a weight management strategy. Eve and Tess described how physical activity gave them a buzz and increased positive mindset. They both began to thoroughly enjoy exercise, walking and running for its own sake rather than for weight loss and maintenance. They also described how they used the exercise to unwind, de-stress and feel good. During the study Tess entered a few 10km runs and Eve entered a
Triathlon. Participants believed that the key to maintaining physical activity was to find activities that you enjoyed doing for their own sake as a hobby, to socialise and for pleasure.

Physical activities chosen by the groups included walking (for pleasure and as a transportation method), swimming, house renovating, cycling, football, rowing (at home using a rowing machine), yoga, gym, Fartlek, stair climbing and jogging.

Groups 1 and 2 believed that physical activity was fundamental to aid successful weight loss and weight maintenance and helped to improve mental positivity. However although Group 3 aimed to test physical activity none of the women were committed to the strategy. The three women also believed that they did not have the time to include physical activity into their lives.

Not everyone in Group 1 found the exercise strategy easy to achieve. Kate (Group 1) described how she found it difficult to fit exercise into her daily life due to family, work and study commitments. To counter these problems she decided to use a pedometer to prompt her to walk more often. She was pleased to relay that she was surprised to find that she was walking over 8000 steps per day at work.

During the study, half of the participants' physical activity maintenance was negatively affected by the arrival of good weather. They explained that good weather increased the desire for spontaneous activities such as having barbeques or going out to eat, while increased socialising increased activities such as eating and drinking. However, half of the participants explained that their exercise participation actually increased when the weather was good and/or during holidays because they could get outside and had more leisure time to be active.
4.8.4 Behavioural Strategies

4.8.4.1 Support from Family, Friends and Colleagues

Participants in all three groups believed that support was a vital component of a successful weight management programme. At the first meeting in December Group 1 chose to include telling family, friends and work colleagues about their weight management plans. Groups 2 and 3 did not discuss this strategy, however some of the women in these groups did tell family, friends and colleagues about their involvement.

In subsequent meetings male and female stakeholders from Groups 1, 2 and 3 vocalised the positive and negative responses they had experienced from friends, family and colleagues towards their weight loss participation. Kate (Group 1) shared with the group that she had informed her friends that she was aiming to lose weight so required less food. She confirmed her belief that ‘you have to be careful who you tell because some people try to sabotage your plans’. She explained that even close friends can do this and described how one friend started to bring out cake when she visited and that previously her friend had never offered cake.

Sabotage of weight management was experienced by at least one member from each group. Liz (Group 3) described an event in which her mother had laid temptation at her door. Her mother had asked Liz if she and her three year old daughter fancied going to McDonalds. Liz suggested another café so that she could order soup, a food she believed to be a better weight management option. The café was chosen and the soup ordered, however when the soup arrived it came with bread and cheese. Liz explained how she had given the cheese to her daughter and eaten the ‘forbidden trigger food’ bread. She enjoyed the meal and felt mentally and physically satisfied but then her
mother returned with three scones, one for herself, one for her daughter and one for her grand daughter.

Liz explained how her mother 'wasn’t that big' but was unsuccessfully trying to lose weight and during that week her mother had been having a ‘bad week’. Her mother had bought the scones as a ‘treat’ but also her mother had bought the scones because she was in a ‘what the hell’ mood due to her lack of weight loss. Liz said that if her mother had only bought two scones she could have shared her scone with her daughter, but instead Liz had eaten the scone that was bought for her to pacify and to please her mother. Eve in Group 2 had had similar problems and explained that even though her fiancé knew that she was attempting to lose weight he would bring home bags of chocolate for Eve, which Eve duly ate.

Di and Sue (Group 3) both confirmed that their husbands brought home food treats for them even though their husbands knew that their wives were attempting to lose weight. The problem appeared to be that these women felt that their families weren’t supporting but hindering them. None of individuals in Group 1 felt that family and friends were purposefully sabotaging their weight management goals but even if they weren’t planning to do so they were. Jade (Group 1) stated that her partner gave her larger meal portions than she needed but that she didn’t believe it was malicious, just habit. She explained that she dealt with this problem by serving out their meals and giving herself a smaller portion. Di and Sue solved their problem by giving the treats to their children.

However Ally and Dan from Group 1 confirmed that their partners were very supportive. Ally explained that her husband went out walking with her and helped to organise family swimming. Dan said that his wife organised his dietary reduction by cutting his portion sizes and was very supportive with his exercise uptake. Although some of participants found ways to reduce dietary sabotage from friends, family and colleagues, such as declining offers of food by saying they were full, accepting small
portions of ‘treats’ or not telling others they were following a weight management programme, others were unable to resolve the problem. Members of all three groups believed that their ‘group’ provided support and solutions to aid the reduction of dietary sabotage from others.

4.8.4.2 Group Meetings

Participants in all three groups believed that group meetings were vital for providing support to aid weight management. Both male and female volunteers valued the support and empathy of other members of the group. Participants in the study felt that it was important to have regular meetings with people who were ‘going through the same thing’. The groups acknowledged the benefits of group discussion and how it could increase morale, motivation and friendly competition.

Holly (Group 1) expressed ‘I think the group was good to concentrate on remembering and competing to make strategies work.’ She explained that she found the group meetings to be a social occasion that provided support, ideas, solutions and motivation. She added though that ‘Too many opinions, counter productive competition and overbearing people could create pressure or prevent people putting opinions/ideas forward.’ Liz highlighted that ‘sometimes individual problems couldn't be covered if other issues took over.’

Eve (Group 2) stated that the group made a difference because she believed that if she had been in a group that hadn't chosen exercise as a strategy she wouldn't have began running. Participants from all three groups agreed that group meetings were a great opportunity to trade ideas and tips in a supportive environment.

Dan (Group 1) claimed that he believed the opportunity to talk with others in the same situation really helped and was one of the most fundamental factors in helping
weight management. Luke, Dan, Paul, Eve, Di, Eve, Sue, Tess, Ally and Jade all spoke about the benefits they experienced from being part of a group. They described how they felt ‘group understanding’, how they could ‘learn from each other,’ how the group was ‘encouraging, and provided ‘focus’ and ‘fresh ideas.’

Liz (Group 3) found that her group was friendly but not particularly good at supporting one another to stick to their programme of strategies. The three women had become friends and contacted each other between meetings. However, she described how her group focussed their attention on their lack of ability, dooming the strategies before they began rather than focussing on what they could achieve. Liz believed that if their group had been larger, with a greater mix of personalities and people with different experiences, then their group may have had greater success at choosing and implementing strategies.

‘Um, because you think ‘oh well nobody’s doing that well’ and I’m sure we all feed off each other. I had bad weeks, I had loads of bad weeks and I never really got to do all of the things every week. The size of the group needs to be large (in smaller groups) you tend to follow with them, what everybody else is doing. But if I had seen a lot of people losing weight just from little strategies that they had put in place, I think I would have then really knuckled down to sticking to those strategies. I had quite a lame group who didn’t really want to try anything and I just followed suit. And because I didn’t put anything in each week it wasn’t really working for me.’ (Liz)

At the outset I had planned for the groups to meet weekly during the first three months of the study and fortnightly during the following three months. I chose to hold weekly meetings followed by fortnightly meetings to assess whether the reduction of
group meetings could have an effect on weight loss and weight maintenance. However, in a Participatory Action Research study all are equal, so I asked each group if they wished to change the planned meeting format by continuing with weekly meetings instead of fortnightly meetings. All three groups chose to remain with the meeting plan I had designed. The groups confirmed the belief that they felt that weekly meetings were appropriate at the beginning of the programme and that in fact fortnightly meetings in the second part of the study would fit in well with their busy lives.

At the six months and eight and a half month meetings participants' views were mixed about whether group meetings should be weekly or fortnightly. Most of the members of Groups 1 and 2 believed that the Weight Management Programme should run weekly meetings for the first six to eight weeks and then fortnightly for the major length of the programme. Members did feel that the programme should continue for longer than six months and that the programme should taper from weekly to fortnightly to every three weeks, monthly and so on.

Although Group 1 chose to include weekly then fortnightly meetings in the programme, three of the women in Group 1 believed that future users of the programme may benefit from weekly meetings. Kate, Ally and Holly (Group 1) felt that weekly meetings could provide greater support.

The women in Group 3 confirmed that they believed that group meetings should be weekly and explained that fortnightly meetings could easily become monthly meetings if a participant missed any. The women believed that if this situation were to happen then there wouldn't be sufficient contact with the group, which could result in difficulty for an individual to maintain the programme. This group believed that weekly meetings kept them on track by making them accountable for their actions.

After analysing measurement data it appeared that the weekly meetings correlated with weight loss and fortnightly meetings correlated with reduced weight loss.
and increased weight gain for six of the women in this study. It was confirmed by various group members that they followed the strategies more when they met weekly and less so when they met fortnightly.

All of the groups stated that they believed that there should be a group meeting tailing off phase for people who had reached their targeted weight. They believed that these meetings would help individuals to further build or strengthen skills in weight management.

During the final meetings I broached the subject of group support. I asked the groups if they had considered staying in contact with group members between meetings. Group 1 appeared a little reticent about the idea. They did discuss methods such as text, email and phone contact but were hesitant about trading their personal details. I asked the group to think about the strategy and confirmed that we would discuss the strategy further during the following meeting. In the following meeting the group traded mobile phone numbers but did not contact each other between meetings during the remainder of the study.

Group 2 and 3 discussed the same strategy and responded very differently to Group 1. Both groups’ members were eager to swap mobile numbers. During the remainder of the study members from both groups contacted each other with information, tips, friendship and support. Groups 2 and 3 were women only groups and Group 1 was mixed gender which may explain the different responses.

4.8.4.3 Therapy and Counselling

Groups 2 and 3 both believed that counselling, therapy, Neuro-linguistic programming (NLP) and Cognitive Behaviour Therapy (CBT) could be beneficial strategies to include in a weight management programme. Both groups discussed the
topic within group meetings and each group tested CBT in some form during the study. The women in both groups believed that this type of support could be important to individuals who needed help in changing behaviour and thought patterns.

The women in Group 3 described how they believed that their eating was emotionally led and how their own mood and the moods of others could negatively affect their eating behaviour. Di went further stating in her log book that she felt ‘scared of food’ and ‘vulnerable around food.’

The women (Group 3) talked about crisis eating and how when bad things happened in their lives they reacted by overeating. All three women also reported responding to the needs and moods of other people in their lives to the detriment of their own needs and requirements.

Amanda, Liz and Di (Group 3) described how focus on weight management would be redirected to focus on the needs of their kids and/or husbands. Amanda and Liz, who both had children, also explained how they found time with their children stressful and how they would respond with emotionally led eating.

At one of the group meetings, after the Easter holidays, Amanda and Liz described how easily they forgot to implement their weight management strategies of planning food and exercise when they had to juggle the requirements of others. They both explained that they would choose the easy option which would mean following what everyone else in the family wanted to do. Often this would entail ordering take away food and going out to eat. Eve and Tess (Group 2) also spoke about the difficulties encountered trying to stick to the programme strategies when they had to consider others in the household.

Women from all three groups confirmed that their eating patterns and mood were negatively affected by their menstrual cycle. All of the women experienced some form of premenstrual tension which increased cravings for specific foods such as chocolate and
biscuits. Several of the women confessed to binge style eating at this time of their menstrual cycle. The psychological and physiological effects of the menstrual cycle were discussed in group meetings and during weigh-ins. The women in all three groups confirmed that they appreciated recognition of the effect of the menstrual cycle on body weight and mood within a weight management programme. During group meetings they commented on how recognition of weight gain during the menstrual cycle improved their mood and reduced susceptibility to binge eating and emotionally led eating. Di regularly commented in her log that she felt 'uplifted and positive' after meeting with her group especially when her mood had previously been negative.

The log books also appeared to provide a cathartic process for some participants in the study, especially the women. Individuals from the various groups would express their positive and negative moods and reactions to relationships with others.

To conquer emotionally led eating Tess (Group 2) shared her knowledge about CBT. She suggested testing the use of mantras to reduce emotionally led eating. Group 3 also tested the use of mantra to change behaviour. Neither group chose to include the use of mantra long term but believed that CBT could be a beneficial aid.

'I think once you get to the goal weight then you should go to a different class and it would be more of a counselling. To make you aware that you are actually - that you are there! You've done it. And also then after any weight loss programme once you've got to your weight and then you've got to learn to maintain because you can't keep losing it for ever. And a lot of people do that, they lose and because they stop, they put it all back on. So it would be helpful to go onto that with counselling - more of a maintenance thing to show you what you have to do to maintain that.' (Liz)
During the study Group 1 also discussed counselling, NLP and CBT but did not choose to test or include any of these methods in their strategy plan. However, during exit interviews and follow up meetings all of the groups believed that future participants on the Weight Management Programme should be provided with information about CBT, NLP and counselling. All three groups stated that they felt the individual should choose if they wished to use any of the aforementioned methods and for the methods to be available to them if they required the support of the strategies.

During the study term seven of the participants changed from the perception of weight losers to weight maintainers. They believed that they now had the tools in place to manage their weight and had faith that they would achieve their target weight by continuing to follow the strategies. The other five participants still perceived themselves to be weight losers. They believed that the strategy plans devised during the study could work but they had not committed to them.

4.8.4.4 Recording Methods

At the first meeting I gave each of the participants a log book to record individual reflections and ideas. I suggested that the log book be used for writing about the methods and tips that they individually employed and to record personal strategies achieved, such as exercise, slow eating, water consumed, etc.

During the research period the groups were introduced to a variety of other recording methods such as goal/target forms, record tables and exercise and diet diary tables. All of the groups tried and tested logs, forms, tables and diaries as methods to support their other strategies.

During the study Amanda and Liz from Group 3 commented that they found that using charts and trackers helped take away the stress they experienced when dealing
with food. Both women had used the charts to tick off water, fruit and vegetable consumption and to plan meals. Using tick off charts they stated, had worked well for them. However, none of the groups decided to include any of the aforementioned methods in their final Weight Management Programmes.

I found at the end of the study that the logs had been used by the participants to plan, record diet and exercise, express their feelings and to reflect on the strategies. Ten of the participants had regularly used the log book, while two of the men rarely made entries.

4.8.4.5 Information and Education

During the study all three groups sought information about some form of diet, exercise, cooking or therapy. When Group 1 decided to include five portions of fruit and vegetables a day in their strategy plan, some of the members were unsure about what constituted a portion. Group 2 decided that they needed to understand more about the food pyramid, low Glycemic Index and CBT. Group 3 chose to find out more about calorie counting, exercise energy expenditure, cooking and CBT.

All three groups believed that the availability of information and education on diet, nutrition, cooking and exercise would be beneficial for future programme users. They believed that the information should be available for the participants, in the same way as therapy, requested either by the individual or the group.

4.8.4.6 Being Kind to Self

Group 3 were the only group to choose a weight management strategy that was focussed on making them feel good about themselves through 'Me Time'. They believed
that this strategy could aid maintenance of their other weight management strategies. The three women chose body brushing as their ‘Me Time’ strategy. This is a method of skin exfoliation and body invigorating recommended in the ‘28 day Carol Vorderman diet book’. Two of the women had tried body brushing previously and liked it because it made them feel good physically. The act of body brushing also meant that they were consciously focussing on themselves. All three women believed that they spent very little time looking after their own needs because they focussed on everyone else’s needs. This belief was highlighted when I asked the women to list their ‘order of priorities’. Di listed her husband’s Mum and ‘the puppies’ before her own weight management needs. The other two women prioritized work and family before their weight management needs. They felt that the lack of focus on themselves was the main reason for their weight problems.

However, during this study only one of the three women in the group actually tested the body brushing strategy. The other two women confirmed that they just didn’t get around to buying a body brush to test the strategy; hence the group rejected body brushing. The women’s response suggested that they were not committed to the concept of ‘Me Time’ or their particular version of it, because other areas of their lives; family, friends, pets, work were more important to them.

Groups 1 and 2 included the strategy to be kind to self. This strategy involved changing, reducing and stopping negative thought processes (Cognitive Behaviour Therapy) and was implemented by group members if and when individuals had not followed strategies; for example when they had eaten more than they had planned or not implemented their exercise targets; when weight plateau occurred and when weight was regained. The participants employed a mantra style strategy, which involved continuing to commit to their programme of strategies and not letting individual blips derail their weight management goals.
decreases in clothes size motivational. Group 1 suggested that individuals following the weight management programme should be given the option to choose to be inch measured as a strategy to aid weight loss and maintenance.

All three groups chose to receive information about Body Mass Index (BMI) and Weight Classification but the information was met with some controversy by Group 1. During a meeting with Group 1 members' responses to the BMI results were mixed. Dan was adamant that he wanted to know his BMI and believed that his increased knowledge would motivate and spur him on towards his weight loss goals. However upon receiving the BMI information he responded negatively and vocalised that he believed the BMI measurement to be outdated, unreliable and unrealistic. He was visibly upset by the information and also appeared to be insulted.

As the atmosphere changed in the room Kate decided that she didn't want to know her BMI result because she believed that to know the information would affect her negatively. She did not wish her increased knowledge about her weight status to de-motivate her. Jade had little weight to lose to reach her personal 'normal' weight classification status, but she too declined to receive the BMI information. However the rest of the group chose to know their individual weight status.

The BMI and Weight Classification results were met with such disillusionment by Group 1 that they confirmed that they believed that knowledge about personal BMI could be de-motivating and so decided not to include the strategy in their programme. The group also felt that BMI information would probably focus weight managers towards dieting. They stressed that they didn't think this sort of information should be given to people at the beginning of a weight management programme because they believed individuals would feel that the weight loss target was impossible to achieve. Members of Group 1 also believed that BMI information should only be made available to the individual when the individual sought it.
During the following meeting various anthropometric measurements were discussed as measures that could inform and/or aid motivation. BMI, bio-impedance and skinfold were rejected by Group 1 who believed that all of these measures could be de-motivating. Measurement methods deemed to be motivational tools, by Group 1, for weight loss and maintenance were weekly or fortnightly weigh-ins, clothes size changes, health, fitness and appearance.

The stakeholders in Groups 2 and 3 (all female) responded very differently when they received the requested anthropometric measurement information. All of the women accepted the information without strong emotional reaction. Eve in Group 2 did state that she was surprised to discover that she was ‘clinically obese’. She explained that she was presently a size 14 and wanted to be a size 12 but that her family and friends told her that she wasn’t fat. She described how she would compare herself against other people in her social circle and at work to determine how large she was. After comparison she believed that she wasn’t really that big. She expressed how she had been shocked to find out that in fact she was clinically obese. She believed that the people on the telly were obese not her. Even with the knowledge that she was clinically obese Eve did not appear to be de-motivated by knowing her BMI classification. She continued to follow her group’s strategies and to lose weight during the rest of the study.

Di (Group 3) informed the group that she believed that it was just as important to know when to stop losing weight as to know how much weight to lose. She recounted her weight loss experience with Weight Watchers. She explained that she had got down to 9st 2lbs but could not get below this weight. She described how the Weight Watcher leader did not suggest to her that perhaps Di should change her targeted maintenance weight to 9st 2lbs (Di’s target weight had been lower). Because she had not reached her target Di believed that she was still fat. Di added that overtime she regained the weight she had lost, believing the whole time that she was fat, when in fact she was slim. Di
who was 5ft 4 inches tall, would have had a BMI of 22.1 (normal weight classification) when she weighed 9st 2lbs.

Some forms of measurements such as body weight, inch measuring and clothing size were found to be motivational tools and helped many of the participants on the road to achieving their weight loss objectives. However BMI and other weight/body assessment classifications were found to be stressful, upsetting, insulting and demotivational for at least a third of the participants.

Although the group members wanted to receive measurement information together, I believe this information should be given individually in private. I believe that some of the negative responses occurred because individuals were embarrassed to receive their results in front of the other group members. It is possible that some individuals may also accept the information more readily and less emotionally if it were given to them as a computer print out or displayed on a screen.

4.8.6 Rejected Strategies

Strategies that were tested and rejected during the study term are shown in Tables 4.9, 4.10, 4.11, flipcharts in Appendix 2 and included: Group 1 - group phone support between meetings (week six) and BMI information (week ten), for Group 2 - GI recipes (week five) and for Group 3 - cutting trigger foods (week four) and eating home made soup daily (week eight).

The reasons given for rejecting these strategies were as follows. Group 1 chose not to contact each other between meetings because they felt confident and were happier to follow the strategies on their own. Group 1 also rejected knowledge on BMI. They believed that individuals should request the information, if and when, they were ready to receive it rather than to be told it. The group believed that the information could
be de-motivating and put individuals off attempting weight loss. This group had experienced the bad reaction of a fellow participant to BMI information hence believed that it was possible that future programme followers could be insulted or de-motivated when they received their personal BMI. However, over the term of the study, the affected participant was one of the most successful at losing and maintaining body weight loss.

Group 2 investigated recipe books with GI recipes but rejected a structured dietary plan because they believed focus on diet increased rather than reduced consumption of foods. The women had found that dieting and cutting out foods had not been successful strategies in diets they had followed because they had regained the lost weight. The women believed that they had to find weight loss and maintenance strategies that they could implement for the rest of their lives and they believed that following diets or dietary recipes was not the answer.

'Normal diets for me, for eight weeks I lose a couple of stone and then I finish and then it all goes back on. (Without focus on dieting or recipes) you change your thinking patterns.' (Tess)

Group 3 tested cutting out trigger foods and eating home made soup every day and like Group 2, found that focus on diet and denial of foods made them want the foods they couldn't have. The result was that they desired and ate more of the banned food. They also found the strategies too time consuming.
4.9 Weight Loss and Weight Maintenance Outcomes

I had planned to take anthropometric measurements at three time points during this study, at baseline, midterm (three months) and at the end (six months). However the study term was changed to eight and a half months, on the request of the participants, so that a follow up meeting could be included. This decision was made by all three groups taking part and was chosen to assess and discuss how successful the chosen strategies were, when implemented by the stakeholders alone without the support of the group meetings. The three groups also chose to have their weight measurements taken and recorded every two weeks.

4.9.1 Weight Loss and Weight Maintenance

Participants in this study experienced weight losses over the Christmas season. Individual weight losses then continued for the first three months of the study coinciding with the weekly weigh-ins and group meetings. Weight losses at the three month time period ranged from 1lb (0.45kg) to 1stone 6lbs (2.7kg) (Table 4.5).

During the three to six month time period four of the women and all three men in the study continued to lose weight. However, three of the women from Group 1 and two women from Group 3 had regained small amounts of weight during the three month to six month phase – 1lb (0.45kg) to 4lbs (1.8kg).

The weight measurements from baseline to six months found that from the twelve participants, three people had lost >5% of their baseline body weight and a further three individuals had lost >10% of their baseline body weight.

At the eight and a half month follow up meetings eleven participants attended their group meeting where individual body measurements were taken. Two individuals,
one man and one woman had continued to lose weight during the two and a half month follow up phase. The remaining men and women had regained 1lb (0.45g) to 7lbs (3.15kg) between the six month and eight and a half month assessments.

Of the nine individuals who had gained weight during the follow up phase it was found that two women had regained all of the weight they had lost during the study period and weighed more than their original baseline weight. Another woman had regained the weight she had lost during the study and had returned to her original baseline weight.

The final participants, two men and four women, had gained weight during the follow up phase but had still maintained some weight lost during the overall study. One of the female participants from Group 1 was unable to attend the follow-up meeting so her anthropometric measurements at eight and a half months could not be recorded and evaluated.

When analysing each group’s anthropometric measurements against their group’s Weight Management Programme, I found that the members of Group 1 and Group 2 experienced weight loss during baseline to six months. There appeared to be no negative weight management response to meetings and weigh-ins changing from weekly to fortnightly. It was only during the follow up time period that weight gain was observed for members of both groups.
Table 4.5: Body Weight Measurements

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>3 months</th>
<th>6 months</th>
<th>8½ month Follow Up</th>
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<td></td>
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<td></td>
</tr>
<tr>
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<td>19st 4lbs</td>
<td>17st 12lbs</td>
<td>17st 4lbs</td>
<td>17st 5lbs</td>
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<tr>
<td>Female</td>
<td>17st 13lbs</td>
<td>17st 4lbs</td>
<td>17st 7lbs</td>
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<tr>
<td>Male</td>
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</tr>
<tr>
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<td>13st</td>
<td>12st 7.5lbs</td>
<td>12st 10lbs</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>17st</td>
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<td>15st 1lb</td>
<td>14st 8lbs</td>
</tr>
<tr>
<td>Female</td>
<td>14st 10lb</td>
<td>13st 9lbs</td>
<td>13st 4lbs</td>
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</tr>
<tr>
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Group 3 responded differently, acquiring their most significant weight losses during the first three months of the study, the weekly meeting phase. Weight losses in this group reduced during the fortnightly meeting and weigh-in phase. This group also experienced greater weight gain during the follow up phase. One woman gained all of her lost weight and another woman gained more than her original baseline weight.

4.9.2 Waist Circumference

At the beginning of the study, all twelve individuals had baseline waist circumference measurements that were above current health guideline recommendations. At the midway measurement phase, eleven out of the twelve participants were recorded to have achieved inch loses and one woman had maintained her original baseline waist circumference measurement (Table 4.6).

At the six month measurement phase Jade and Eve had reduced their individual waist circumference to below 35 inches, the current waist circumference measurement guideline recommended for health. Six further participants had reduced or maintained their midway (three months) waist circumference losses.

At the eight and a half months (follow up) meeting Luke, Holly and Tess were found to have achieved further waist circumference (WC) inch losses. Dan and Liz had maintained their six month WC measures. Eve's final waist circumference was below 31.5 inches, the current recommended inch measurement to reduce the risk of developing Type 2 diabetes. The remaining participants were found to have increased their individual waist circumference. Only one participant was found to have a greater WC than their baseline assessment.
<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
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<th>6 months</th>
<th>81/2 month Follow Up</th>
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</tbody>
</table>
4.9.3 Waist to Hip Ratio

Ideally women should have a WHR of 0.85 or less and men should have a WHR of 0.95 or less to avoid increased risk of myocardial infarction (Yusuf et al., 2005). At baseline five female participants' WHR measures were in the ideal recommendation range (Table 4.7). At the midway measurement phase seven of the women were in the ideal WHR measurement range. At the six month measurement phase five of the women were in the ideal WHR range for health.

At the eight and a half month (follow up) meetings five of the women's measurements were within the WHR ideal range. During the study none of the men's measurements taken met the WHR recommendations for health. One woman did not attend the follow up meeting so her final measurements could not be assessed.

4.9.4 Body Mass Index

During the baseline to midway measurement phase, all of the participants in the study achieved a reduction in BMI. At the midway measurements it was found that four of the twelve participants had reduced their body mass index (BMI) classification (Table 4.8 and Table 4.9). Three participants had reduced their BMI from obese to overweight and another participant from overweight to normal.

At the six month measurement phase further BMI reductions were found with one woman moving from obese to overweight and another woman moving from overweight to normal BMI classification. At the follow-up meeting it was affirmed that two participants had achieved further BMI losses since the last measurement meeting. The remaining participants' BMI measurements had either been maintained or increased.
Table 4.7: Waist to Hip Circumference Ratio

<table>
<thead>
<tr>
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<th>6 months</th>
<th>81/2 month Follow Up</th>
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<td>Healthy Weight</td>
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<td>Obese</td>
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<td>Morbidly Obese</td>
<td>&gt;40.0</td>
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United States Department of Health & Human Studies, 2008
### Table 4.9: Body Mass Indicator Measurements

<table>
<thead>
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<th></th>
<th>Baseline</th>
<th>3 months</th>
<th>6 months</th>
<th>8½ month Follow-Up</th>
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</tr>
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<td>24.3</td>
<td>24.2</td>
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<td><strong>Group 2</strong></td>
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<td></td>
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</tr>
<tr>
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</table>
Liz, Di, Amanda, Holly, Ally and Dan maintained their original baseline BMI of either obese or morbidly obese throughout the study. Dan and Holly did not change BMI classification during the study term, however both experienced significant body weight losses.

At the baseline measurement meeting Dan and Holly were recorded at the higher end of the obesity scale and at the follow up meeting they were recorded at the lower end of the obesity scale. Dan confirmed that his doctor was very happy with the positive changes to Dan's health. At the beginning of the study Dan had taken medication for high blood pressure. However during the second phase of the study Dan's blood pressure reduced to normal and his doctor informed him that he no longer required medication.

These results indicated that the strategies chosen and implemented by the participants could produce weight losses sufficient to produce health benefits. However weight regain was observed during the two and a half month follow up phase which indicated that further strategies may be required to aid weight maintenance.

**4.9.5 Group Meeting Attendance**

I found that group meeting attendance was negatively affected by work and family commitments. Adults who worked missed occasional sessions due to heavy workloads. Parents of school aged children missed sessions to attend parents’ evenings and activities that their children were involved in. Illness, accident and holidays were the other reasons given for absence. On average participants attended 75.5% of meetings. Average attendance for Group 1 was 82.14%, for Group 2 was 75% and for Group 3 was 60.42%.
4.10 The Final Programme

During the initial telephone interview most of the participants had expected to be given a programme to follow and then to discuss the strengths and weaknesses of the strategies employed. However, from the outset most of the participants rose to the challenge to develop a weight loss and weight maintenance programme and appeared to be empowered by being allowed the opportunity to air their ideas.

As the weeks went on it emerged that Groups 1 and 2 were more comfortable choosing and testing their strategies than Group 3. Participants in these groups appeared to be open-minded and confident to test strategies suggested by fellow members. Stakeholders showed respect for each other and each others' input. At no point did any member of Group 1 or 2 disrespect or undermine another member's suggestions. At the six month meeting Holly expressed that 'it was empowering to think that we (Group 1) had come up with the ideas and that they worked and made a difference'.

Group 3 were found to respond differently to Groups 1 and 2. Over the weeks, it became apparent that Group 3 did not have confidence in the choices made by themselves or by other members of the group. None of the women appeared to believe that they could address their weight management problem. This may have been why the women in this group tested and implemented very few of the strategies set by themselves.

As the end of the study drew closer the women in Group 3 confessed that originally they believed that a lack of autonomy in their past slimming experiences had lead to failed weight management. However, in retrospect they felt that, in fact, they had little
confidence in their own decisions and believed they needed an experienced and knowledgeable leader to tell them what to do.

Over the eight and a half month study term, each of the groups followed the circular pattern of PAR to choose, test, discuss, reflect, include and reject weight loss and weight maintenance strategies. Discussion topics and strategies chosen and tested can be found in Appendix 9. Each phase of the Action Research helped to pull together the final framework for the Weight Management Programme Design.

At the six month meeting I asked each group to compile a list of strategies they believed aided the production of successful weight loss and weight maintenance. The list of strategies I confirmed to the groups would be used to produce the Weight Management Programme. I advised each group that the plan that their group devised should aim to help other overweight and obese people to lose weight and maintain lost weight. Each group was given a flip chart to list their chosen strategies for their group’s Weight Management Programme.

At the follow-up group meetings each group made their final amendments and decisions on the strategies to be committed to their group’s programme. The final Weight Management Programme designs are as follows:

4.10.1 Group One

Group 1 recommended that two or three strategies should be chosen at the beginning of the programme rather than beginning with all of the strategies. The group suggested beginning small to prevent individuals being stressed and being ‘put off’ from the outset. They added that further strategies could be included ‘along the way’.
Group 1 believed that group support was vital, but added that some people may require time with the group leader on a one to one basis, to talk about any private issues that they did not wish to discuss with or in front of the group. Luke suggested a regular ‘clinic time’ could be useful and the group agreed that they believed it to be a good idea.

This group recommended that individuals should be allowed to ask for information such as BMI, when they were individually ready to receive the information. They felt that anthropometric information should not be forced upon individuals. The group believed, from their group experiences, that weight classification information could be de-motivating.

Although Group 1 did not choose to include any therapies such as Cognitive Behaviour Therapy or counselling in their Weight Management Strategy plan, they believed that information and courses should be made available for individuals who wanted them. Again the group confirmed that individuals should choose to access these forms of support, rather than be told that they required them. The group believed that people could feel insulted and upset if told to attend.

Group 1 wished to stress that future users of the programme need not feel guilty if they were unable to achieve all of the strategies all of the time. They confirmed that as long as at least four or five of the strategies were followed weight loss and weight maintenance would be achievable.

Group 1 gave their programme two different titles to describe the ease with which weight loss and maintenance could be achieved when the user follows the strategies. Dan offered the first name for the Weight Management Programme which was ‘The Prat Proof Programme’. He wished to convey the belief that anyone who followed the strategies would be rewarded with positive weight loss and maintenance results.
Jade offered the programme name 'Choose, Lose, Bemuse' — with the by line — 'choose your strategies, lose weight and bemuse your friends with how easy it is!' It could safely be said that Group 1 had a sense of humour.

**Group 1 Weight Management Programme**

- **Exercise** - 90 minutes accumulated per week for the first couple of months increasing to 110 minutes and eventually aiming for 150 minutes or more accumulated per week

- **Planning food and exercise**

- **Portion Control**

- **Slow Eating**

- **Eating five fruit and vegetables a day**

- **Group Support** – 8-12 people - keeping meetings light hearted

- **Regular meetings with a group facilitator**, weekly for the first six to eight weeks followed by fortnightly meetings and to taper meetings during the Weight Maintenance e.g. monthly, six weeks, two months and so on to increase self-reliance

- **Measurements** - Bi-weekly weigh-ins and three monthly inch measurements
4.10.2 Group Two

Group 2's final Weight Management Programme was very similar to Group 1's programme. In fact Group 1 and Group 2's Weight Management Programmes could easily be combined together. Like Group 1, Eve and Tess confirmed that exercise and planning were the key important weight loss and weight maintenance strategies. Both women especially promoted exercise which they both fell in love with. They highlighted the needed to start gently by exercising for small amounts of time and lower intensity to begin with. They recommended gradually increasing the duration and intensity of the physical activity as ability improved. Both women wanted to highlight that the programme was easy for them to follow and should be easy to adapt and personalise for different people's lives.

Tess and Eve added that women should acknowledge that the menstrual cycle could affect eating behaviour, psychological mood and weight losses. They believed that recognising the individual effect of the menstrual cycle on oneself helped to control against negative behaviour such as eating chocolate, binge eating, cessation of strategy implementation and negative psychological thought.
Group 2  Weight Management Programme

- Exercise – 90 minutes or more accumulated exercise a week
- Portion Control
- Planning meals
- Do not wait too late to eat meals
- Increased fluid intake - for example water, herbal and fruit teas not sodas
- Group meetings – initially weekly then fortnightly, then tapering into three weeks, monthly, bi-monthly and so on
- Measurements – scales weigh-in every meeting and tape inch measurements every three months
- Healthy Snacking
- Do not ban food
- Be kind to self during PMT

4.10.3  Group Three

At the follow up meeting Group 3 did not feel that they had the capacity to design a Weight Management Programme. This may have been due to the fact that they didn’t believe that any of their strategies had been successful at achieving weight loss. They did humorously observe that their strategies had prevented them from gaining weight.
over the study term (although Di did gain 4 lb (1.8 kg) more than her baseline weight at
the follow up meeting). Nevertheless, the women highlighted factors that they believed
were important to aid successful weight loss and maintenance. These strategies were as
follows:

- Increased water consumption to prevent dehydration and overeating
- Recipe exchange – aided weekly food and shopping planning
- Women only weight management groups
- Choice of weekly or fortnightly group meetings
- Slim, healthy looking, friendly group leader = good role model
- Guidance on how to achieve strategies
- To be given weight management strategies rather than create them
- Provision of group support during the weight loss and weight maintenance
  phases
- For group leader to tell them when they should focus on weight management to
  prevent them from feeling unsuccessful at weight loss and prevent regain of lost
  weight

Most of the strategies that Group 3 recommended had previously been included in the
Weight Management Programmes designed by Group 1 and Group 2. The only
differences were to provide single gender groups to join, focus on the requirements of a
leader, the need for greater guidance, support during the programme and the need for
focus on successes.
4.10.4 Combination of Weight Management Strategies

The following plan incorporates strategies recommended by all three groups to aid weight loss and weight maintenance.

1. Exercise – 90-150 minutes a week extra to existing PA introduced as accumulated exercise beginning with 5 minutes at a time. Choose activities that are fun and/or transportation activity.

2. Planning – shopping, meals, exercise

3. Reduction of portion sizes and portion control

4. Eat five fruit and vegetables a day

5. Drink one to two litres of water a day (fruit or herbal teas)

6. Group meetings with 8-12 participants – initially weekly then fortnightly, then tapering into three weeks, monthly, bi-monthly and so on

7. Fun, supportive, slim role model leader

8. Fortnightly weigh-in and three monthly inch measurements

9. Don’t ban any foods

10. Do not wait too late to eat meals
4.10.5 **Recommended Support and Information**

Participants in this study concluded that some individuals may require more support and information than others hence they recommended making the following forms of support and information available.

a. CBT and counselling

b. Nutritional and physical activity information

c. Record sheets

d. Inch measurements taken

e. Recipe exchange with education on recipes that would aid weight loss and weight maintenance

f. Role model leader who provides strong guidance, support and helps participants to recognise their weight management success

4.10.6 **Stakeholder Tips to deal with Weight Plateau**

The strategies recommended by Groups 1 and 2 to increase weight loss if weight plateau occurs before an individual's targeted weight had been reached were:- increasing duration of physical activity and to further reduce portion sizes of food. Small tweaks at a time were recommended to prevent the individual feeling like they were on a diet or feeling deprived. Group members agreed that the plan shouldn't feel painful or hard but be easy to fit into everyday life. Groups 1 and 2 stressed the concept that the
strategies should be as pain free as possible because they believed they would need to be implemented for life. The following tips were suggested to deal with weight plateau:

- Learn to be kind to yourself - don't punish yourself during the weeks you gain weight or don't lose weight.
- Increase exercise and decrease portion size.
- When hungry drink water or have a piece of fruit – healthy snacks.
- Do exercise that you enjoy.
- Arrange to do exercise with friends or family if they are supportive.
- If the weather is bad and prevents you from doing physical activity outside choose an indoor physical activity instead such as stair climbing, jogging on the spot, aerobic video or indoor exercise equipment.
- Try on clothes as a psychological reward to acknowledge weight losses.

The strategies chosen by the participants that were included in the final weight management programme included lifestyle strategies presently being advocated by the World Health Organisation and various health-related charities and commercial slimming organisations (British Heart Foundation, 2007; Diabetes UK, 2007; Lighter Life, 2007; Weight Watchers, 2007; World Health Organisation, 2007). I found that none of the groups' participants were advocates of the quick fix solution to losing weight. Stakeholders explained that through their own experiences and through the experiences of their friends and family using quick fix diets, they had found that weight lost quickly rarely remained lost.
Individuals in Groups 1 and 2 also stated that quick fix commercial diets regularly focussed on banning certain foods. Both groups stated that they wanted a pain-free weight loss plan which enabled them to eat all foods so that they didn’t feel like they were on a ‘diet’.

It appeared that although the stakeholders from all three groups would love to lose weight quickly, they believed that long term weight management could only be achieved by implementing lifelong changes to their lifestyle and behaviour.

A number of the participants commented on how the research process was positive for them personally. They felt that the programme that they had devised involved ‘easy’ strategies that they could implement into their lifestyles. Some of the participants also highlighted that although they believed the strategies would work and that the strategies were easy to implement into life, they were also easy to forget. Attending group meetings and contact with other group members between meetings were ideas suggested to help stick to the strategies. Below are a variety of stakeholder comments from meetings, questionnaires and exit interviews.

‘I shall endeavour to continue with all of the strategies. I feel it will be as easy as it has been so far. My participation has given me the confidence to carry on with the weight loss I have achieved so far.’ (Paul)

‘At first I was slightly sceptical about designing the plan ourselves, however it worked really well. Working as a group to come up with the strategies was very beneficial.’ (Jade)
'Very effective, but easy to ignore! I enjoyed the experience. It doesn't feel like we have designed a weight management programme, as the impact to my life has not been great. I have learnt to relax which is the best part of it.' (Kate)

'They (the strategies) were achievable, some more than others. It was empowering to think that we had come up with the ideas and that they worked and made a difference.' (Ally)

'They were easily implemented (the strategies) in my lifestyle and each had an obvious benefit.' (Luke)

'Easy to follow (the programme designed by the group), I have learnt a lot even though I was a 'expert' dieter and thought I knew everything there was to know about losing weight. I feel much more in control.' (Tess)

'The process allows for you to 'own' weight loss ideas, making them easier to implement and maintain than a structured 'ready-made' diet.' (Eve)

'(I was) totally surprised that a moderate change of lifestyle could have such a significant effect.' (Dan)

'I think that they are easily implemented and can be adapted to suit most lifestyles. Easy to do and won't be off putting. I also think the results show this (the programme) is effective.' (Holly)
'I think it was really good and useful. Very good ideas if they are put into practice. This was good because we tried different things and you only find out if you try things.' (Sue)

'An excellent way of reaching a lot of different people and learning lots of people's views on helpful weight loss strategies.' However, she felt that 'Giving out set plans to stick to! And actual guidelines of eating, exercise, etc.' were necessary. (Liz)

'They were good but I felt something was missing – i.e. I often lost my way and did not stick to the strategies chosen.' (Di)

I would recommend that future programme users are informed about the strategies that this study's participants found to be detrimental as well as successful to weight loss and weight maintenance. The dietary strategies of cutting trigger foods, following recipes and eating daily home made soup were rejected because these strategies were found to focus attention on food and lead to increased food consumption in the participants who tested the strategies. The strategies were also found to be difficult to incorporate into continual everyday life. Participants from all three groups confirmed that for weight loss to be maintained, then the strategies would need to be maintained for life, hence the strategies had to be easy to fit into everyday life. The strategies in the chosen programmes were believed by the stakeholders to be sustainable.

Participants from Group 1 also stated that group contact was not necessary between meetings and that knowledge of personal BMI could be de-motivational. These strategies were not rejected by Groups 2 or 3 who were found to contact each other between meetings and who did not vocalise that knowledge of personal BMI could be
negatively received. However, Group 3, whose participants did contact each other between meetings had difficulty sticking to their strategies hence between meeting support was not found to help their strategy maintenance. With regard to BMI information the participants of Groups 2 and 3 received the information with interest and did not appear to be negatively affected by it.

It appeared that group contact between meetings can have positive and negative effects on strategy adherence. Hence this study would conclude that further research would need to be conducted to ascertain the effect of group contact between meetings. After analyzing the effect of giving BMI information to individuals, it was found that some individuals could respond negatively. However, the information did not appear to have an adverse effect on weight loss or weight maintenance.

To conclude on a positive note, Groups 1 and 2 confirmed that not all of the strategies in the programme need to followed all of the time to produce successful weight loss and weight maintenance. As Luke explained:

'You don’t have to be 100% proficient in every single one of the strategies. If you are doing three or four of them it’s likely to be coming off (body weight) if your weaker on the others. It’s important to know that being brilliant at all of them isn’t necessarily the important thing it’s keeping a focus on the bigger picture.' (Luke)

4.11 How to Use These Programmes in the Future

During the exit interviews and the follow up meetings the participants were asked whether they believed future participants would benefit from following the programme that their group had designed or whether they believed future participants should go
through the same process of choosing and testing strategies. The responses were mixed. Autonomy within a weight management setting was deemed to aid personal empowerment. Autonomy and empowerment were believed to promote adherence and the implementation of chosen strategies.

Jade believed following the strategy programme designed by the 'group' was the best course of action for future overweight and obese men and women looking to manage their weight:

'Because if you went down the road of choosing things that are not realistic they are not going to work even if you have empowered yourself to do that thing. I think it is more the fact that we chose these things which on paper are so simple, like 'that's not going to work' and did work. I think the whole point is the group talking about it and to see that they (the strategies) do work. I think the strategies, because I kind of walked in thinking that we were going to have a programme set out, this is what we do, blah, blah, blah and then it was 'oh my God, there isn't anything' we've got to choose stuff and it's not going to be right and we're not going to lose anything.' (Jade)

Tess commented that she believed that giving the strategies to others in the form of a flexible programme could work. However, she felt that it was the autonomy within the programme design that was fundamental for participant and group weight management success.

'I think it was quite nice to choose your own strategies, you felt more of a team and you worked together with it because you had chosen them. I don't know how we
would have felt if you had come in and said 'This is what we are going to do'. That might have seemed too much, like too regimented, too much like a diet procedure. I suppose it depends how it was introduced – if it was say 'this is what we are going to do' but then again if you said 'Previous groups have tried these, would you like to have a go at these or would you like to try something else?' So the decision is still theirs.' (Tess)

'One size isn't going to fit all here, you know it's an inexact science. My perspective is by empowering the people to actually get into a discussion and have an active process, by choosing their own strategies. I think you are more likely to get people to buy in, because they feel they've contributed. They've spent time and effort and from that perspective, if you've spent time and effort, I think you're more likely to follow them. You know it would be almost self-loathing possibly to go in there and choose your strategies to have active participation and then to ignore it. You know to me that is, why did you waste your time in the first place. To get people to buy in, it's very important to sit there and have an active process rather than be told 'This is what you need to do' you know. Certainly from my perspective, if I was put in that straight jacket, if I had walked in and you had said to me 'This is what you are going to do for the next six months' I'm not sure I would have reacted in the same way. You know I tend to rebel against things that I have no say or control over. Then again every individual is different, some people need to be told what to do rather than come up with their own agenda.' (Luke)

Liz stated that she personally would be happier to use the strategies devised by the other groups in a group environment as a weight loss and weight maintenance programme.
'Because if you are going each week over 6 months you would find that strategy that would make the difference for you and because you don't want to be doing them all every week. But once you've found something that worked for you then you would more likely keep up with it. I think immediately it would be good for someone to say to us 'you've got to do this, this week, you've got to do that next week and then if you have any ideas then. I mean you know your own body and you know the things that are working for you. I think at the beginning I would have preferred 'you've got to this, you've got to do that.' (Liz)

As facilitator and researcher, I observed that participant autonomy appeared to empower all of the stakeholders in this study from the outset. To be allowed to design the programme seemed to compliment the participants and confirm a belief that they were capable of achieving the goals that they had set. The show of confidence in allowing the participants to choose and adapt their own strategies appeared to work by increasing positive mental attitude.

However, confidence in decision making did not continue for all of the participants. This indicated that the facilitator may need to focus time on building confidence in some individuals.

4.12 General Discussion

4.12.1 The Key Issues

Several key issues emerged that were found to positively or negatively affect weight loss and weight maintenance. These issues included; empowerment through freedom of choice, small lifestyle changes, planning, dietary and exercise behaviour
change, banning of foods, group support, regular weigh-ins, recognition of cognitive changes and support saboteurs.

4.12.1.1 Empowerment through freedom of choice

Over the time span of the study I observed that the stakeholders in Groups 1 and 2 grew in confidence with regard to their belief in the strategies they had chosen to produce weight loss and weight maintenance. The stakeholders were at first shocked that strategies that made relatively small changes to their lifestyle could produce weight losses, however continued weight loss confirmed to them that their strategies worked. Participants stated that they were empowered by making their own choices. However, the same reactions were not so clearly defined in Group 3. Freedom of choice for these women resulted in loss of direction and decreased confidence in their own abilities. The women agreed that although they did like choice, in fact they preferred it if another person told them what to do.

These observations indicated that autonomy within a weight management programme may increase self-efficacy, self-esteem, self-motivation and self-determination in some individuals, while partial autonomy, freedom of choice with guideline strategies and group support may be more suitable for individuals who do not feel confident or sufficiently knowledgeable to make decisions.

Acknowledging the stakeholders' feelings and allowing them to choose the strategies that they could relate to and felt competent to achieve could be argued to promote internalization and self-regulating behaviour. These findings link theoretically with the Self Determination Theory which is underpinned by the belief that people are happiest and achieve the best outcomes when they feel in control of their own lives (Ryan & Deci, 2000; Deci et al, 1994).
4.12.1.2 Planning

Planning of dietary and exercise behaviour was deemed to be the fundamental control and organisational strategy to aid weight loss and weight maintenance. Previous weight loss and weight maintenance studies have also found dietary and exercise planning to aid successful weight management (Cowburn, Hillsdon, & Hankey, 1997; Dishman, 1994; Ogden, 2000; Truby et al., 2006; Weiss, Galuska, Khan, & Serdula, 2006). However, some of the participants' partners, took control of planning, which was supportive but could lead to problems in the future if their spouses were unable to continue to plan for them. For longevity of weight management to occur it would be ideal for the individual to adapt and learn how to plan their own diet and exercise with support from their spouses and friends.

All of the participants were given record sheets and logs that they could use if they wished to plan. All of the participants used the log book in some form, however many devised their own record forms to use. It appeared that personalisation of record sheets/logs rather than using the original templates, aided individual adherence. When implementing future weight management programmes the facilitator could give out forms and logs as examples to work from and highlight that record sheets and logs can be personalised to aid adherence to the programme.

4.12.1.3 Dietary Behaviour and Banning of Foods

The strategy to increase water and fruit tea consumption helped participants to eat less by reducing appetite. The implementation of eating fruit and vegetables also reduced calorific intake by substituting for high calorific foods. However, the recipe
exchange and Smoothie drinking strategies chosen by Group 3 could impede weight loss and weight maintenance because high calorie ingredients were used.

Stakeholders from Groups 1 and 2 believed that foods should not be banned in a weight management programme and specifically chose not to 'diet' or to use 'diet language' such as terming foods 'good' or 'bad'. The universal belief was that banning foods could cause psychological craving for the 'forbidden' food. However, participants from Group 3 believed differently and did ban 'trigger' foods during their strategy formation phase. In the end Group 3 eventually dropped this strategy because they reacted in the manner that Group 1 and 2 forecast, the women ate and craved the banned trigger food. Previous research has found that banning particular foods, the perception of 'going on a diet' and labelling foods as 'good' and 'bad' increased the risk of failure to adhere to dietary strategies in weight management programmes (Rogers, 1997; Swinburn & Egger, 2004; Young, Gittelsohn, Charleston, Felix-Aron, & Appel, 2001).

A recent study examining the changes in obesity-related attitudes in a sample of 123 obese women analysed the possible negative effect of dieting on self-esteem and body image. The participating sample was assigned to either a dietary or non-dietary intervention. The non-dieting programme was found to produce greater reductions in negativity towards obesity than the dieting intervention (Crerand et al., 2007). These findings were consistent with the beliefs of Groups 1 and 2 that 'dieting' could produce negative psychological responses. A further study of the effect of calorie restricted diets on long term weight management found that one to two thirds of dieters regained more weight than they had lost on their diets. In addition, the studies did not provide consistent evidence that dieting resulted in significant health improvements (Mann et al., 2007).
Considering the findings in these studies, it could be advisable for future facilitators of weight loss and weight maintenance programmes to inform participants of the risk to long term weight management from 'dieting' and banning foods. Focus on portion control, planning, eating five fruit and vegetables a day, water consumption and education about healthy foods and energy dense foods may be more appropriate to aid weight loss and weight maintenance.

Group 1 implemented the strategy of slow eating from the study outset. The group found that slow eating helped to reduce the amount of food they ate. This result indicated that changes to eating behaviour through the reduction of eating speed may aid weight loss and weight maintenance in the overweight and obese.

Previous research studies have found that the overweight and obese have a slower response to fullness when eating, than normal weight individuals. It was reported that the overweight and obese eat more than they physically require. Overeating has been found to occur in the overweight and obese through impulsivity, changes in mood state, life event disruption, situational cues, environment and not being able to recognise physiological cues of satiety (Ackard, Neumark-Sztainer, Story, & Perry, 2003; Canetti, Bachar, & Berry, 2002; Holm et al., 2001; Mela, 2001; Nederkoorn, Smulders, Havermans, Roefs, & Jansen, 2006; Throsby, 2007). Stakeholders believed slow eating could be a successful tool to reduce food consumption. However, difficulties in remembering to implement the strategy were encountered.

4.12.1.4 Cognitive Change

Although CBT, BT and counselling were not trialled or included in any of the three groups' programmes participants believed that these methods could help change eating behaviour, improve weight loss and weight maintenance outcomes and should be
made available to future programme users. All of the groups believed that being 'kind to oneself' by changing thought processes from negative thoughts to positive ones also aided strategy adherence.

It was found that most of the women believed that they required psychological help to deal with self-esteem issues, mood control or emotionally led and binge style eating. None of the men voiced these needs. These findings highlight possible gender differences that need to be considered for future group interventions and weight management programmes.

CBT and other behaviour change methods have been found to increase success in modifying eating behaviour and reducing binge eating in the overweight and obese (Brownley, Berkman, Sedway, Lohr, & Bulik, 2007; Shaw, O'Rourke, Del Mar, & Kenardy, 2005). Additionally, they have been shown to be effective in aiding weight loss and weight maintenance either alone or as part of a lifestyle intervention (Ash et al., 2006; Eichler, Zoller, Steurer, & Bachmann, 2007; Sharma, 2007; Wadden, Butryn, & Wilson, 2007).

This study recommends that future programmes provide information on and/or provision of behaviour change methods and to advise future participants to be 'kind to oneself' (as recommended by the participants in this study), during the weight loss, plateau and maintenance phases.

4.12.1.5 Physical Activity Behaviour

Groups 1 and 2 confirmed throughout the study how important they believed increased physical activity was in a weight loss and maintenance programme. Participants believed that physical activity participation not only provided weight management but improved their general health, energy and psychological well-being.
Previous research has found participation in physical activity to have positive physiological and psychological benefits (Biddle, Fox, & Boutcher, 2000; Biddle & Mutrie, 2001; Fox, 1999). All of the participants in Groups 1 and 2 found methods to increase or build regular physical activity into their lives. Group 3 believed exercise was important in a weight management programme but had difficulties introducing regular physical activity into their weekly lives.

Groups 1 and 2 dealt with the physical activity strategy differently to Group 3. Members of Groups 1 and 2 were very supportive and verbally rewarded and encouraged each other. Group 3 operated differently, they were supportive, but instead supported each other with reasons why they couldn’t achieve the physical activity targets that the group set. These groups confirmed that individuals should choose enjoyable exercise and set personal goals during the weight loss and maintenance process. They explained that choosing enjoyable exercise helped them to adhere to regular physical activity by increasing intrinsic exercise motivation and that setting personal goals motivated them to maintain the other strategies in the programme.

Lack of time, other commitments and the needs of others were found to hinder Group 3’s exercise participation. Previous research has highlighted that the overweight and obese perceived there to be more barriers to participating in physical activity than the normal weight (Deforche, De Bourdeaudhuij, & Tanghe, 2006). These findings indicate that greater physical and psychological support may be required by some overweight and obese individuals when introducing exercise as a strategy to promote weight loss and maintenance. It may also be beneficial for future programme participants to be provided with information about how to include physical activity into their lives, such as using the short bouts of accumulated exercise strategy employed by Groups 1 and 2 to help increase and maintain physical activity.
The targets of 90-110 minutes of weekly accumulated exercise were found to be easy to manage by Groups 1 and 2 but Group 3 found it difficult to achieve their target of 30 minutes a week. The physical activity targets of 90-110 minutes per week recommended by Group 1 and 2 are significantly less than the present physical activity dose recommendations for weight loss and weight maintenance (see chapter 2). However, when the participants in Groups 1 and 2 achieved their targeted physical activity dose with the other weight loss and maintenance strategies, positive weight loss and maintenance effects were recorded. A study on low-income overweight and obese women also found that low levels of physical activity (an increase of 2,000 steps a day which is less than the current guidelines) could lead to significant weight loss (Miles & Panton, 2006). To empower future overweight and obese individuals looking to use physical activity as a strategy for weight loss or maintenance, it would be recommended to educate them on the current physical activity dose recommendations to produce weight loss and weight maintenance at the outset.

After analysis of the results I believed it may be advisable for emphasis to be placed on small, attainable amounts of accumulated weekly physical activity at the beginning of a programme before building to more, to initiate individuals in future interventions. Focus at group meetings could be placed on discussing the forms of exercise that individuals have enjoyed in their past. This study recommends that future weight management programme facilitators educate individuals to choose enjoyable, personalised physical activity that can become a hobby, increasing transportation activity (walking or cycling instead of using motorised transport), doing exercise at home or making exercise an enjoyable social activity. Past research studies on health, sport and exercise behaviour also recommend choosing enjoyable physical activity and using targets and goals to help promote self-efficacy and long-term health behaviour.
adherence (Biddle & Mutrie, 2001; Jessup & Stahelski, 1999; Teixeira et al., 2006; Wing & Jakicic, 2000).

Within the framework of the weight loss and weight maintenance programme, I would also suggest that facilitators could organise exercise sessions such as walking groups, aerobics and swimming. Alliances could also be created between locally run GP referral programmes and the weight management programme. Alternatively, the programme facilitator could provide information on locally organised physical activity that individuals could access alone. Group meetings could also provide time for members to discuss and share exercising tips, in-group 'buddying' may also help the less motivated.

Holidays and weather (good and bad) were found to positively and negatively affect physical activity participation. It would be advisable for individuals participating on the weight management programme to think about and be prepared for these events and to anticipate how they would and could incorporate physical activity into their lives during these times.

The participants who had the greatest difficulties including physical activity into their lives were parents of young and school aged children. Child care or exercise that can be enjoyed with children could help parents to increase their own activity. The provision of different physical activity solutions and opinions could help individuals who have difficulty including PA into their lives. These overweight and obese individuals may also require extra support from the programme facilitator or group to devise coping methods and time management methods to successfully follow a plan. Skills training in assertiveness techniques, Cognitive Behaviour Therapy, Neuro-Linguistic Programming and other behaviour change/positive mental outlook methods could also benefit these individuals.
4.12.1.6 Measurements and Regular Weigh-Ins

The measurements deemed to be informative and motivational by participants were weight measurements, inch measurements and clothing size. Other measures such as BMI and waist circumference which indicate health risk status were found by some participants to be insulting and de-motivating. Some recipients of the information found being told that they were 'overweight and fat' too difficult to deal with. It appeared that they had difficulty with accepting their true size and perceived themselves to be slimmer than they actually were. The inaccuracy in assessment of their own size may have occurred through social comparison, whereby participants determined that their size wasn't a problem because the others around them in their social and working environments were also overweight or obese (Maximova et al., 2008).

Individuals in this study responded differently; some used the anthropometric information as a motivational tool while some found the information to be overwhelming and upsetting. It was highlighted that individuals also need to know when they have reached their weight target, so that the focus can be placed on weight maintenance. It would be advisable for future weight management facilitators to remember to be sensitive to the overweight, obese and morbidly obese individuals' feelings when giving health and weight classification information to prevent de-motivation and weight yo-yoing. Perhaps weight and health status data could be given in a one to one situation, rather than in a group environment to prevent embarrassment. Also weight loss planning and programming ideas could be discussed so that the process feels manageable.

During weigh-ins it was found that female weight increased during menstruation and that the weight increases had negative psychological effects on the women. The women confirmed that weight management strategy adoption decreased during menstruation because their weight increased at this time. The women felt de-motivated...
because they had worked hard following the strategies but had still gained weight. To promote adherence to the weight loss and maintenance programme it may be advisable to provide different forms of emotional/psychological support such as counselling and cognitive behaviour therapy. Acknowledgement of body weight changes during the menstrual cycle may also help women adhere to the strategies.

4.12.1.7 Group support

Group support was deemed an important weight management strategy. It was felt that meeting up with other people 'in the same boat' was beneficial for individuals to trade tips and ideas, empathise with each other about negative situations, support each other during weight plateau and encourage each other to succeed through friendly competition, rather than doing it alone. After studying the weight loss and maintenance results, regularity of group meetings and weekly weigh-ins were found to correlate with greater weight loss and weight maintenance. However, because weekly weighing occurred during the first three months of the study it was difficult to assess whether weekly weighing itself, the 'group' effect or participant enthusiasm increased the weight loss effect. Previous weight loss studies have observed the same weight loss effect, greater weight losses during the first 3 months, with losses decreasing thereafter (Saris et al., 2003).

Group support has previously been reported as an important strategy to aid weight loss and maintenance (Young et al., 2001). However, research has highlighted that historically a small percentage of men attend weight loss groups (Bye, Avery, & Lavin, 2005). The men in this study were found to achieve weight loss and weight maintenance which would suggest that the group environment can work well for men as
well as women. Future group orientated programmes may need to consider how to promote themselves to men.

The mixed sex group environment appeared to operate successfully and was popular with both men and women in Group 1. Group 2 also responded positively to the concept of the mixed sex group. Group 3 however, believed that women only groups should be run for participants who did not want to discuss sensitive topics with men. This study found that individuals did not appear to be disadvantaged in their weight management attempts by attending a mixed sex group. In fact the attendance of both sexes at meetings may have aided weight management outcomes. The men may have been spurred on to achieve greater weight management success because they were attending a mixed sex group. However, when considering issues of race, religion and individual preference it may be wise to offer the opportunity for future clients to join either a single sex or mixed gender weight management group.

Participants believed that the optimum group size was eight to twelve members and believed that this number would provide sufficient candidates to converse with and provide support. Participants indicated that a group size of eight to twelve could protect the group from the possible negative effect of participant absence. Twelve people were believed to be the greatest number to be permitted in a group to prevent feelings of intimidation for introverted individuals. It was felt that too many people in a group would create difficulties in equal group discussion. Although all of the participants liked the concept of the 'closed meeting group', meeting with the same group of people each week, the 'drop in' style group meeting operated by commercial organisations like Weight Watchers and Slimming World may reduce the negative weight management behaviour experienced by the members of Group 3. However, it is also feasible that meeting in a larger group, as Liz believed, could also reduce negative weight
management behaviour and help to increase the numbers of participants 'buying in' to strategies.

This study highlighted that the participants believed tapering of group meetings at the end of a weight management programme would aid individual success (i.e. bi-weekly to every three weeks to monthly to bi-monthly). Participants explained that administering support during the weight management phase would gradually help an individual to be weaned off 'group support' so that they would be able to manage their weight alone throughout the rest of their life.

The empowerment of being part of a group and using the action research process to work together on a common goal worked well. Support, positive competition, friendship, listening to others, being listened to, personal autonomy, feeling understood and feeling part of something bigger, were all factors that made participants believe that being part of a group was a positive weight loss and weight maintenance strategy. It has previously been highlighted that meeting in groups to solve common problems, such as weight loss can have positive outcomes (Kayman, Bruvold & Stern, 1990; Rippe et al., 1998).

After analysing the combined data collected in this study it appeared that the weight management programme would require a long term plan of group meetings over a one to two year time period. The length of the time required to attend group meetings would be dependant on a variety of factors; individual weight loss targets, strategies chosen and psychological adjustment to weight loss. It was highlighted that individuals could require different forms of support during the weight maintenance phase. Perhaps experienced weight maintainers could 'buddy' the overweight and obese and through role modelling teach them the skills to maintain weight.
4.12.1.8 Supporters or Saboteurs?

Although being a member of a weight management group was found to be a positive strategy to implement, seeking the support of family, friends and colleagues had mixed results. Several of the participants stated that their spouses and friends were supportive. However, five of the twelve participants (all women) stated that they had experienced weight loss and weight management sabotage attempts from family, partners, friends and colleagues.

Research findings indicate that one to one, group support and social support can significantly aid weight management attempts (Hill, 2007). However, concerns vocalised in this study indicated that men and women seeking support during their weight loss attempts may seriously need to consider who they tell about their weight management plans. In-group discussion on how to develop skills and strategies to deal with sabotage and empathy from other members of the weight management group appeared to be the most positive support strategies.

4.12.1.9 Knowledge and Education

Dietary, cooking and exercise education were not chosen as strategies for the final WM programme by any of the groups. However Groups 2 and 3 did seek information about one or more of these areas during the programme. For some participants the information was found to aid individual weight loss outcomes. During the study participants exhibited lack of knowledge and skills that could aid weight management. There were a number of examples in which education could have aided strategy adherence; 1) when Group 3’s fruit smoothie strategy became counterproductive after members added extra sugar and fat to their ‘healthy’ food. 2)
When Group 3 introduced portion control as a strategy and Liz needed to determine what a meal would look like after living on snacks for years and 3) the introduction of physical activity.

Although not chosen as a strategy, the provision of information on diet, cooking and exercise may benefit future programme users. Information about diet, cooking and exercise could perhaps be used as a tool to initiate group talk and highlight any individual educational needs.

4.12.1.10 Multiple Strategy Choices

Participants confirmed that if they followed at least three or four of their groups' strategies, they would lose weight, but if they didn't that their weight would plateau or be regained. It was found that if and when participants gained weight, they generally expected weight gain. Each individual could explain what they had done differently during a weight gain week and which strategies they hadn't implemented.

The measurements taken throughout the study indicated that the strategies accepted by Groups 1 and 2 could produce positive weight loss, psychological health, eating behaviour and physiological health outcomes. During the six month to eight and a half month follow up phase (when there was no group contact) weight regain was observed. These results tallied with findings from previous studies that revealed weight regain during the follow up phase (Fogelholm & Kukkonen-Harjula, 2000; Ross & Janssen, 2001; Tsai & Wadden, 2005).

Participants believed that the reduction of meetings and weigh-ins during the later stages of the study also negatively affected weight management. To continue the
positive motivational effect that weighing appeared to provide, individuals could be taught how and when to self weigh to aid weight management.

A previous review of the factors associated with weight loss maintenance and weight regain (Elfhag & Rossner, 2005) reported that successful weight maintenance was associated with a number of the strategies chosen by the participants in this study. The factors associated with weight maintenance included having a physically active lifestyle, regular meals, healthy eating, control over eating; self-monitoring, a self-determined goal and more initial weight loss. All of these strategies were chosen by the stakeholders in this study which could indicate that future overweight and obese individuals are likely to be happy to follow the strategies as well as increasing their weight management success.

I had initially been concerned about starting the study in December. However, I found that participants starting a weight management programme at Christmas were not disadvantaged and incurred the same weight loss effect observed in previous studies. In fact, the participants may have actually benefited from beginning in December by avoiding the weight gain usually experienced during the Christmas period.

During the study term some of the participants in groups 2 and 3 withdrew, which resulted in group 2 effectively not being a true group (only two women remained). It has been recommended that groups should consist of three or more participants because groups of this size are deemed to be better able to solve problems than individuals or groups of two people (Laughlin, Hatch, Silver & Boh, 2006). It was decided however, to include the data from both groups even though they were small, to determine any similarities or differences in the decisions made by Group 1 in comparison to Groups 2 and 3. The inclusion of these groups is recognised as a limitation.
4.12.1.11 Summary/Conclusion

After considering all of the findings, this study was able to produce a weight loss programme and could provide ideas that may aid weight maintenance. Three slightly different programmes were designed by the groups but common strategies were found to produce one complete programme. The programme of strategies can be personalised, allowing individual autonomy. So where do we go from here?

This study's aims were to determine what a weight loss and weight maintenance programme designed by the overweight and obese would look like and what strategies the overweight and obese would choose. After analysing the findings it was found that the groups designed a multi-faceted programme of strategies that they were happy to implement into their lives that produced healthy weight losses without having a negative effect on their lifestyles. The final programme of strategies included: planning food and exercise, participating in enjoyable physical activity, slow eating, increased water consumption, portion control, eating five fruit and vegetables a day, regular weighing and group supportive meetings. The participants also believed that continuation of the group meetings and weigh-ins would have prevented the weight regain effect experienced during the follow up phase. Hence, it is recommended that future group weight management programmes should consider maintaining meetings and weigh-ins until after participants have achieved their personal target weight. Some commercial weight loss groups presently offer this.

I felt that most of the ideas and strategies that the participants came up with were considered and non-faddy. I was interested to find that the participants did not want quick fix solutions because they did not believe that 'quick fix' methods would solve their weight loss problems in the long term. In fact, I felt that the participants chose usable ideas that were realistic and could easily be included into the lives of busy people. I also
felt that the concept of having different strategies to choose and alternate between, dependant on what was happening in an individuals' life, allowed the programme to be flexible and more useable.

The strategy programme produced was recommended by the stakeholders to be used within a group meeting framework. This raises some interesting questions: how would these groups be organised? Who would organise the groups? Who would finance group meetings; the individual, the NHS or another source? And how much would the service cost?

To roll out the programme through the NHS could be costly due to the numbers within the population likely to access it. Problems could also be foreseen with regard to who would facilitate the programmes. Great numbers of staff and specific training to implement the programme may be required. This could be both costly and time consuming. However these financial and logistical problems could be overcome by implementing the GP referral scheme model (Taylor, Doust & Webborn, 1998). This scheme involves the collaboration of private sector and NHS working together, whereby doctors refer individuals to programmes run by skilled professionals already specifically trained in health, exercise and diet at gyms, health and leisure clubs. Patients/clients pay either no fee or a nominal fee for each session attended.

Presently commercial organisations charge between £5 - £45 for individuals to attend a single weight management session (for example Weight Watchers, Slimming World, Rosemary Conley, Lighterlife, SureSlim), which some people are happy to pay. Financially the NHS could collaborate with a commercial venture to provide a group programme service that would be financed partially or fully by the participant. Lottery funding or health charities may also be interested in partially or fully financing the service. Whether the programme is provided through the NHS, commercially or as a
collaboration, to encourage overweight and obese individuals to use the service the cost per session would need to be around £5 (Chapter 3).

For individuals who would prefer not to or could not attend a group programme, an educational weight loss and weight maintenance strategies health promotion booklet could be produced that included tips and ideas on how to achieve the strategies. Contacts for support could also be listed. Financially the booklet could possibly be sponsored by the NHS, commercial organisations or one of the health charities. The booklet could be positioned in supermarkets, libraries and GP surgeries to make accessibility easy for all.

**List of strategy tools**

- **Plan food and exercise** – this includes writing a list of meal ideas for the coming week, writing shopping lists, setting time aside to exercise, walking instead of using the car and organising physical activity with others.

- **Increase physical activity** – set small targets such as three to five minutes of exercise at a time and accumulate during the week. Aim to achieve 90 to 110 minutes of extra physical activity a week.

- **Portion Control** – reduce meal and snack portion sizes.

- **Increase consumption of water** – aim to drink one to two litres of water a day.

- **Eat 5 fruit and vegetables a day** – aim to eat one to two fruit and three to four vegetables with meals, as snacks or as drinks.
• Weigh yourself on the same set of scales once a week to once a fortnight. Make sure that you weigh yourself at the same time of day and that you are wearing light clothing.

• Check that your weight management knowledge is up to date. If in doubt seek out the most up to date information from reliable sources such as Diabetes UK, British Heart Foundation, World Health Organisation or NHS.

• Seek out the right type of support to help to aid weight management – either by joining a weight management group or enlist the support of a friend, family member or colleague. Make sure that you are in charge of your strategies and know how to implement them and that you are not reliant on someone else.

**Tips and Ideas to Maintain Strategies**

• Plan and prepare to participate in different types of physical activity for different situations - during holidays, changes of weather, if the children are at home, time is limited or you need motivation. For example walking and swimming while on holiday, home-based activities if the weather is bad, doing exercise with friends, joining a class or booking a personal trainer if lacking motivation.

• If and when weight plateau occurs before achieving the weight loss goal, tweak each of the strategies i.e. reduce portion sizes, increase physical activity and so on to produce further weight loss

• For women – prepare for the effects of the menstrual cycle on weight and adherence to strategies.
4.12.2 The Pros & Cons of Using Action Research Methodology

The Participatory Action Research Process worked well as a method of investigation and problem solving with regard to devising the Weight Management programme. The process appeared to empower the participants giving each person a voice. The method allowed the stakeholders to make their own choices, investigations and changes - when they were ready to do so and as problems arose. The benefits of using PAR with a group of overweight and obese individuals was that the group members all understood the problem that they were trying to solve because they were living it.

The circular process of testing strategies, brainstorming and group discussion appeared to aid group bonding which in turn seemed to give the members courage to voice their thoughts and opinions in an environment where they felt safe and understood. It appeared that the process aided loyalty and empathy between participants in each group. It also provided the opportunity for group members to voice their own opinions.

However, the participatory action research methodology itself was time consuming and required continuous focus, dedication and reflection from me as the facilitator/researcher and from all of the group members operating as joint investigators. Therefore it is not considered appropriate as a weight loss strategy in its own right. My workload was substantial and included general topic formulation, room and meeting organisation, meeting reflection and typing up, accessing information for groups and regular communication with participants by phone and e-mail between meetings. Although the study was time consuming and at times emotionally charged, the use of participatory action research helped to answer a number of questions during the study.
term. The depth and richness of the combined data helped to provide a clear and rounded understanding of what the stakeholders required from a Weight Management Programme.

I would recommend for future action researchers to have regular contact with critical friends to discuss the structure, reflections and organisation of the research. Also conversations with others can aid the well being of the facilitator/researcher which is crucial when conducting research that can be emotive (McNiff & Whitehead, 2002; McNiff et al., 2003).

4.13 Study Limitations

Critical analysis of this study found the following limitations. Firstly, participants were sourced from three towns and a city to increase opportunity for cultural and ethnic difference however the final sample was entirely Caucasian. Secondly, there was a limited response by editors in the media to publish or air press releases. I was informed by a number of editors that they preferred to publish local interest stories. However, after a number of attempts different recruitment methods were achieved, these included the airing of radio advertising, the publication of news stories and a leaflet and poster campaign.

Initially the volunteer response appeared adequate (n= 46) and it was envisaged that three groups of 8-10 participants could be formed. However during initial telephone contact with respondents a number (63%) were found not to meet the inclusion criteria. For example, some volunteers were unable to or did not wish to commit to such a long term study, some volunteers were already attending slimming groups or following a dietary or exercise programme, some of the volunteers could not participate on medical
grounds and some volunteers did not return calls after initial contact. In addition, during the face to face interview and assessment phase a further four women either withdrew or did not meet the inclusion criteria. This meant that after the screening process there were only 17 participants remaining. Although this sample size was small, it was decided to proceed as it was thought that asking these volunteers to wait while further recruitment took place could result in a loss of momentum meaning that the study lost rather than gained participants.

The small sample of participants for this study was further impacted by dropout resulting in two groups being smaller than desired. However, they were retained because they continued to contribute to the study process. While their continued inclusion could be viewed as a limitation, group size for this type of research is only a recommendation and the PAR process allows contributions from groups of all sizes large or small (Carr & Kemmis, 1986; Forsyth, 2005; Reason & Bradbury, 2006).

Thirdly, this study could not determine how successful the chosen strategies would be in the greater population. Some of the participants may not have been completely truthful during group work discussion. Some individuals may have remained quiet and not expressed their true feelings for fear of going against the ‘group’, e.g., they may portray themselves in a manner that they believed to be more acceptable to the majority of the group. The omission of information could mean that some aspects of weight management may not be considered, tested or discussed. Also, in group situations the participants may be more prone to express cultural, gender and society expected views than they would express individually. However, exit questionnaires, diary entries and individual interviews were used to validate data from the group process.

Finally, the results might have differed if different methodology had been employed. For example, if individual interviews or questionnaires had been used alone instead of
using action research to answer the research aims, the participants may have suggested ideas and strategies that were more safe, risky or personal to them.

4.14 Conclusion

This study aimed to answer the following questions:

- What would a weight loss and weight maintenance programme designed by the overweight and obese look like?
- What strategies would the overweight and obese choose?

This study was able to find out what a weight loss and weight maintenance programme designed by the overweight and obese looked like and what strategies they chose. The stakeholders had every faith that their programme of strategies with user autonomy could and would deliver success. They believed that regular group meetings and weigh-ins would motivate participants and keep them on track to reduce and prevent the regain effect. The groups' anthropometric measurement results highlighted a potential relationship between continued group support and weigh-ins with successful weight management. The programmes' strategies, when implemented, were also found to produce positive psychological, physical health and health classification change benefits. The results highlighted the importance of choice and personalisation of strategies and that programme followers need to be selective with regard to their chosen support forms, as friends, family and colleagues may intentionally or unintentionally sabotage weight loss attempts. It was also highlighted that although physical activity was found to be a productive weight loss and maintenance strategy when tested by group
members, greater focus was placed on making changes to diet. Group members believed that physical activity was a good idea as a weight loss strategy, however dietary strategies were more readily chosen, preferred and implemented by a larger number of participants.

This study found that the effect of empowerment and autonomy on weight loss and weight maintenance was positive for some but not for all of the stakeholders. All of the stakeholders initially believed that autonomy would aid weight management. However, by the end of the study it was apparent that choice left some participants unconfident and directionless. After analysing the collective data, this study would recommend that future programme users are allowed to make choices to increase individual empowerment, however, support and guidance should be provided for programme users who feel less confident about their decision making abilities.

To conclude, a weight management programme was devised by a cohort of overweight and obese adults. The programme of strategies devised were recommended to be used in a weight loss group environment but could also be used as weight management educational material for individuals to use alone. This study could not determine the effectiveness of the weight maintenance strategies because some of the strategies suggested by the stakeholders at the follow up meeting were not tested. Hence the successfulness of the weight maintenance strategies is unknown. This study would recommend future testing of the weight maintenance strategies.

4.15 Future Research Recommendations

This study provided an insight into the weight management strategy requirements of a sample of overweight and obese adults. However, it could not confirm whether the
programme of strategies could provide long term weight management or whether they would be popular within the larger population. It would be advisable to conduct a two to three year randomised controlled trial testing the effect of the Weight Management programme designed in this study on a broader sample of adults including those from different race and ethnic groups.

Further considerations may need to be addressed with regard to the potential impact of this study’s recommendations for individuals and the wider population. Single sex group intervention may be more appropriate for some individuals, dependant on religion and ethnic requirements. Some women or men may also feel more comfortable attending a single sex group. Also sub sections, for example the morbidly obese, may feel more at ease and achieve greater weight management success if they attend a group specifically targeted for their weight classification. Individuals with known health disorders, learning difficulties, physical disabilities or the elderly may require specific physical activity, dietary and emotional support.

To ensure that the programme was assessable to the wider population, information materials and group meeting environments would also need to address the requirements of the physical impaired.

In this study a sample of overweight and obese adults designed a programme of strategies to promote weight loss and weight maintenance. In chapter five, all three studies in this thesis will be discussed and conclusions made in chapter six.
5.0 Discussion

5.1 The Research Objectives

The primary objective of this thesis was to investigate if and how physical activity could be used effectively within a healthy weight loss and weight maintenance programme for the overweight and obese (Table 5.1). Study 1 (Chapter 2) began by investigating the dose of physical activity required to achieve healthy weight loss and weight maintenance in the overweight and obese. The objective of the systematic review was to determine if the recommended physical activity treatment dosage required updating. The results demonstrated that that significant weight loss and weight maintenance effects could be achieved from lesser durations. These findings have subsequently been supported in a published paper on the role of physical activity in producing and maintaining weight loss (Catenacci & Wyatt, 2007) and the new CDC physical activity guidelines for weight loss which recommend >150 minutes of moderate intensity physical activity per week (which equates to 22 minutes/day, 7 days a week) and for weight maintenance which recommend >250 minutes of moderate intensity physical activity per week (which equates to 36 minutes/day, 7 days a week) (Centers for Disease Control and Prevention, 2009).

While investigating the dose of physical activity for weight loss and weight maintenance it was found that multi-strategy interventions appeared to aid adherence to physical activity participation. However, the weight management outcomes were regularly the same, significant weight loss could be produced but over time weight lost was partially or fully regained. It appeared that a solution to weight maintenance had not been found and that little was understood about the overweight and obese attitudes...
towards physical activity or other strategies to produce a weight loss, weight
maintenance or health effect.

In Study 2 (Chapter 3), 10 overweight or obese adults were interviewed using a
semi-structured interview process. The men and women were asked about their
thoughts on weight loss and health. The study explored with each individual their weight
loss and health experiences, knowledge sources, understanding and beliefs. Analysis of
the findings indicated that the participants preferred the ability to tailor proven weight
loss and health strategies to fit their individual circumstances and that autonomy was
important to them.

Many of the participants’ health and weight loss knowledge was based on
outdated, confused and ambiguous information hence obtaining their individual weight
loss, weight maintenance and health targets was hindered. These findings indicated that
the overweight and obese need clear and usable information on physical activity and
other weight management strategies to achieve their goals.

To date weight management programmes have been designed for the
overweight and obese to follow, and I could find no evidence that this population had
been asked what they required from a programme or what they believed would work. It
was possible that the overweight and obese could provide the solutions to producing
long term weight loss and weight maintenance.

Study 3 (Chapter 4) investigated what a weight management programme
designed by the overweight and obese would look like and what strategies they would
incorporate into a programme. Using a Participatory Action Research process
stakeholder/participants were given autonomy in strategy choice and programme design.
During the study process, I had the opportunity to observe a number of participant
reactions and weight management effects during my role as facilitator/researcher. It
became apparent that many of the strategies that had been used within previous weight
loss and weight maintenance interventions were popular with the overweight and obese participants, however it was the way in which the strategies were used that was vitally important. For example, many of the participants were against the use of dietary language such as 'trigger' food, 'bad' food or 'sinful' food. They were also against using the term 'dieting' and did not wish to be on a diet because this would make them want to 'rebel'. They did implement dietary changes as weight management strategies but used different language terms.

5.2 Physical Activity as a Weight Management Tool

Physical activity dose recommendations for weight loss and weight maintenance have been available for several years (Chapter 2). However, after conducting investigations into the overweight and obese participants' knowledge base about physical activity (Chapters 3) it was found that the participants were not aware of these specific recommendations to produce weight loss and weight maintenance outcomes.

Previous studies into physical activity participation have found that the overweight and obese do not participate in sufficient physical activity to provide weight loss or weight maintenance (Health Survey for England 2004, 2005; The National Diet and Nutrition Survey, 2004). Others have opined that this population are unlikely to carry out the treatment dose of physical activity sufficient for weight loss and weight maintenance (Pate et al., 1995). However, there has been no conclusive evidence to confirm that the overweight and obese would react negatively towards incorporating the new CDC physical activity guidelines into their lifestyles to aid weight loss and weight maintenance. The current research found that physical activity was a strategy that the majority of the participants were happy to include into their lives for health and weight
management but they were unsure how much activity would achieve their aims and had difficulty in getting started.

After analysing the results across the three studies, opportunities and barriers were identified regarding physical activity as a weight management tool. It was found that the overweight and obese believed physical activity was an important tool for weight loss and for positive weight and health maintenance. It was also highlighted that most of the participants were happy to be physically active and had enjoyed various forms of organised exercise, dance or sport in the past. However, barriers such as lack of time due to work commitments, puberty, childcare, environmental change, the needs of others and increased socialising had resulted in the suspension or reduction of previous physical activity pursuits. These barriers to physical activity participation have also been reported by normal, overweight and obese adults in previous research (Berrigan & Troiano, 2002; Frank & Engelke, 2001; Frank, Schmid, Sallis, Chapman, & Saelens, 2005; Sherwood & Jeffery, 2000; Strong et al., 2005).

Although physical activity or the thought of physical activity as a weight loss, weight maintenance and health strategy was popular with most of the individuals participating in this project, there were a few women in studies 2 and 3 who just didn't like participating in any form of physical activity. Also, gyms and exercise classes were not popular with a number of individuals who stated that they were not a 'gym' or 'group' person. Some participants explained that they felt intimidated by these types of exercise environments (studies 2 and 3). Previous studies have also reported that some sedentary, overweight and obese adults do not enjoy physical activity and find it difficult to incorporate into their lives. Reasons given were that they feel self-consciousness about their size, shape and performance when participating in physical activity (Liebman et al., 2003; Slattery et al., 2006; Trost, Kerr, Ward & Pate, 2001).
The barriers encountered by participants in studies 1, 2 and 3 and previous literature did not necessarily indicate that the overweight and obese would not use physical activity as a weight loss and weight maintenance method, but that they may require targeted approaches to overcome barriers and clear information to get them started.

In study 3 (Chapter 4), when participants explored physical activity as a weight loss tool, they found difficulty in achieving the targeted amounts of physical activity that their individual group had set. The largest volume of exercise set at the outset was 3 x 30 minutes per week. These targets were found to be difficult to introduce into previously sedentary lifestyles and participants expressed feelings of guilt and demotivation at not achieving their targets. This resulted in the stakeholders deciding to introduce accumulated bouts of physical activity to achieve their weekly exercise targets. It was observed that accumulated bouts of small amounts of exercise, five minute targets at a time, increased physical activity participation and appeared to reduce participants' psychological block to exercise. The participants actually achieved more physical activity than they had set themselves.

Research into the use of short bouts of accumulated versus long bouts of physical activity has found that short and long bouts of activity produce the same weight loss effects and that there are no significant differences with regard to exercise adherence over the long term (Jakicic et al., 1999; Schachter, Busch, Peloso, & Sheppard, 2003; Schmidt et al., 2001).

However, short bouts of accumulated exercise have been found to improve mood in previously sedentary individuals (Murphy, Nevill, Neville, Biddle, & Hardman, 2002). It appears that short bouts of physical activity could be used as a motivational tool to get sedentary individuals 'started' and to help them to gradually increase their physical activity. These findings indicate that sedentary individuals may require different methods...
### Table 5.1: Summary of Results

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Aims</th>
<th>Participants</th>
<th>Methodology &amp; Data Analysis</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter Two</td>
<td>To determine the physical activity treatment dose required to promote weight loss and weight maintenance</td>
<td>Systematic review</td>
<td>The recommended treatment dose of physical activity for weight loss and weight loss maintenance = 33-90 minutes of vigorous or moderate intensity activity per day. To prevent weight regain = 20-60 minutes of vigorous or moderate activity per day.</td>
<td></td>
</tr>
<tr>
<td>Chapter Three</td>
<td>To explore the attitudes, experiences and perspectives of overweight and obese adults towards physical activity and diet for weight loss and health</td>
<td>10 overweight and obese men and women</td>
<td>Semi-structured interviews and content analysis Naturalistic Inquiry</td>
<td>Participants were happy to increase their physical activity but required information on duration and intensity. Knowledge to achieve goals appeared out dated and confused. Interviewees highlighted a preference for autonomy in decision making.</td>
</tr>
<tr>
<td>Chapter Four</td>
<td>To determine if a sample of overweight and obese adults could design a successful WL &amp; WM programme</td>
<td>15 overweight and obese women and men</td>
<td>Participatory Action Research, exit interviews and questionnaires</td>
<td>The importance of autonomy, supportive group meetings and weigh-ins to aid habitual multi-strategy behaviours to incur weight loss and weight maintenance.</td>
</tr>
</tbody>
</table>

**Abbreviations**  
WL = weight loss, WM = weight management
to introduce physical activity into their lives. Small bouts of accumulated physical activity could help during the early stages of a weight loss programme.

Enjoyment of physical activity was found to increase participation in studies 1, 2 and 3 (Chapters 2, 3 and 4). Individual enjoyment of exercise performed was found to positively change participants’ outlook towards physical activity. In study 3, it was found that the physical activity strategies that had initially been chosen as weight loss and maintenance tools soon became enjoyable hobbies for participants and some individual’s physical activity choices became part of their social lives. These activities included playing weekly football, social walking, competing in 10k runs and triathlons, and swimming with friends and family.

Previous research has found that initially sedentary individuals experienced greater exercise adherence, increased self-efficacy and reduced perception of barriers if they participated in exercise forms that they enjoyed (Castro, Sallis, Hickmann, Lee, & Chen, 1999; Sorensen, 2005). Lifestyle, walking, transportation and home based forms of exercise have all been found to produce better compliance in previous research and were popular choices with the overweight and obese adults in this project. All of the aforementioned physical activities involved autonomy, personalisation and tailoring to individual lifestyle and have been found to increase self-efficacy and adherence to physical activity (Borg et al., 2002; Edmunds, Ntoumanis & Duda, 2007; Gieck & Olsen, 2007; Ruser, Fedeman, & Kashaf, 2005).

5.3 Support - as a Weight Management Tool

Results from this thesis demonstrated that various forms of support during the weight loss and weight maintenance processes aided strategy adherence. In previous studies support was found to aid physical activity, dietary and other weight management
strategies; these support strategies included Behaviour Therapy, social support and encouragement from friends (Jeffery et al., 2003; Schmidt et al., 2001). However, in study 3 of this project it was found that informing family, friends and colleagues about weight loss intentions did not guarantee positive support. In fact some participants found that family, friends and colleagues were intent on sabotaging their weight loss attempts. To my knowledge this is the first time this effect has been reported.

It appeared that individuals embarking on a long term weight loss and weight maintenance plan need to think carefully about which people they ask to support them. If the strategies were implemented by individuals alone rather than in a group situation they could access one of the slimming organisations on line internet support services. If individuals have joined a weight management group, support may best be sought from the individual's group and facilitator. It may be beneficial for the individuals to be taught methods to deal with possible sabotage to their weight loss and maintenance attempts, this form of information could be provided in leaflet form. Alternatively a group facilitator could initiate group discussion, empowering group members to devise coping methods.

Findings from this thesis indicated that women, especially morbidly obese women, may require greater support and extra strategies to maintain adherence to a weight loss and maintenance programme. Morbidly obese women could possibly benefit from cognitive behaviour therapy, behaviour therapy or neuro-linguistic programming (Cooper & Fairburn, 2001; Whitehouse, 2003).

In this thesis and in previous research women were found to have difficulties juggling home and work responsibilities (Yancey, Leslie, & Abel, 2006). Women also appeared to require psychological support and encouragement when dealing with the weight changing effects of menstruation. Some females may require assistance with building coping mechanisms and changing cognitions to deal with negative lifestyle situations and other people's negativity. Assertiveness training, emotion management
and training focussed on building and maintaining self-esteem, self-determination and self-worth could help people who are looking to lose weight but have lost confidence and self-belief (Bandura, 1997; Baranowski, Perry & Parcel, 2001; Ryan & Deci, 2000).

Previous research has focused on GPs and other medical staff to be the first point of contact, educators and programme facilitators in the arena of weight management (NICE, 2006). The overweight and obese participants in this project confirmed that they would be unlikely to consult with their GP because they deemed them to be authoritarian and non-empathic. A few participants had had negative experiences with doctors when they had previously sought advice and help. A couple of participants confirmed that they would be happy to consult with a nurse specially trained in dietary nutrition and physical activity for health and weight management or a Nutritionist/Dietitian. Previous research confirmed that some GPs, nurses and medical staff had prejudiced views, negative attitudes and beliefs with regard to weight management treatment and dealing with the overweight and obese (Brown, 2006; Douglas et al., 2006; Harvey, & Hill, 2001). These findings indicate that the current health policy (whereby doctors are the first point of contact) to tackle obesity may need to consider using other facilitators to get information to its target group.

It appears that commercial organisations such as Weight Watchers, Slimming World and so forth, were providing many of the strategies and approaches deemed desirable to the overweight and obese, at a price that people are happy to pay (around £5 a session). These organisations provide role model group leaders who have experienced the weight management process. Weekly group meetings provide a forum for discussing ideas and concerns and weekly weigh-ins are conducted, these were all popular strategies with stakeholders in study 3 (Chapter 4). However, present commercial weight loss programmes were criticised for their focus on dieting and for their lack of attention on physical activity (Chapters 3 and 4). Participants agreed with
the concept of group meetings but believed that they benefited from meeting with the same group members, rather than the drop in meeting system currently used by many commercial weight loss groups (Chapter 4). It was found however, that not all overweight and obese individuals enjoyed attending group or organised meetings hence other methods need to be employed to aid weight management for different individual requirements. Interactive technology (Svetkey et al., 2008), the internet or easy to use information booklets could provide guidance, strategies and tips on how to achieve weight objectives.

Previous studies have found that internet weight management interventions and printed educational information provision can help the overweight and obese successfully manage their weight (Harvey-Berino, Pintauro & Gold, 2002; Tate, Jackvony & Wing, 2006). Hence the weight management programme devised in Chapter 4 could be offered as a group intervention and also accessed on the internet or in printed form.

5.4 Multi-Strategy Weight Management

Results from this project found that greater weight loss and weight maintenance adherence and success was observed in overweight and obese subjects who participated in multi-strategy lifestyle interventions (Chapters 2, 3 and 4). Research studies prior to this project have also found that multi-strategy weight management interventions can aid weight loss and adherence to weight loss strategies (Curioni & Lourenco, 2005; Fogelholm & Kukkonen-Karjula, 2000; Mulvhill & Quigley, 2003; Ross & Janssen, 2001). However, they also reported that almost half of the initial weight loss was regained after one year.
Strategies in this project that were found to be effective for weight loss and believed to have a positive effect on weight maintenance were: weekly or fortnightly group meetings and weigh-ins, planning of food and exercise, portion control, physical activity, increasing water consumption, slow eating, eating five fruit and vegetables a day, changing mental cognitions to positive ones such as being kind to self, in group exchange of tips and support, tailored information and education, autonomy and personal tailoring of strategies. Many of these strategies have been found to have positive effects on weight loss and weight maintenance in previous research (Cioffi, 2002; Jakicic et al., 2002, Jakicic et al., 2003; Prochaska & Redding, 2002).

Findings in studies 1 and 2 found that various forms of diet could be effective at producing weight loss and short term weight maintenance. However, in study 3 participants believed dieting to be a negative weight management strategy. Medicare's search for effective obesity treatments supported the opinions of participants in study 3 by finding diets not to be the answer to lasting weight loss. Instead the Medicare study found that one to two thirds of dieters regained more weight than they had lost on their diets, indicating that dieting is counterproductive (Mann et al., 2007).

Participants were against dieting and the banning of food, and believed that no foods should be banned. Dieting and the banning of food were perceived negatively, because participants believed that too much focus on the foods that could not be eaten increased the desire for the banned foods and increased the possibility of emotionally led or binge eating. However, they did implement food change strategies such as portion control, planning of food, and eating five fruit and vegetables a day, which they found to be usable and positive.

When comparing diet and physical activity as weight loss and maintenance strategies in studies 2 and 3, it was found that more emphasis was placed on making changes to diet rather than engaging in or increasing physical activity. Hence, it
appeared that making changes to diet were either deemed to be a more attractive, simpler or preferred strategy option than engaging in or increasing physical activity participation. The participants appeared to need more support to be physically active.

Participants in study 3 stated that they believed information and education should be sought by future users, rather than being a compulsory element. However after analysing the results and as an observer, I believe that it would be beneficial for the overweight and obese to receive clear up to date information. Future facilitators could also provide clear up to date information and education in written form and in open discussable forums. Some individuals may not know that their knowledge base is out of date. Through the use of educational literature and/or group discussion their knowledge base could be updated, aiding future weight management.

5.5 Knowledge as a Weight Management Tool

It is probably difficult to govern the information provided by most media forms. However, regular, clear, updated information stating the latest research recommendations for total weight and health management would provide individuals with the knowledge to make lifestyle choices. This form of population education could empower individuals to make personalised lifestyle changes. Presently health and weight management information can be found in library, doctors’ surgeries and hospitals. However, this project found that these venues were not the most popular information access sites.

Supermarkets were deemed a popular information site because most of the population visit supermarkets. Yearly or bi-yearly information could be positioned in supermarkets as well as the current sites. Another option for on-line shoppers could be downloadable information advertised on supermarket websites. An Australian study on
patient views also highlighted the perceived usefulness of weight loss and weight maintenance information. It was found that over 80% of patients perceived advice on healthy eating and physical activity to be useful or very useful, and that they were likely to follow weight loss recommendations (Tan, Zwar, Dennis, & Vagholkar, 2006).

Tailoring information to individual circumstances and to personal choice was found to largely empower (studies 2 and 3) participants when dealing with weight loss and weight maintenance. Autonomy was also found to be important for many of the participants because they wanted to be in control of their own lives. However, the autonomous person can still fail to meet their objectives if temporary constraints, such as ignorance cause restriction (Beauchamp & Childress, 2001). It appears that clear, reliable information that is accessible and provided regularly may help individuals to tailor strategies to their personal requirements.

Previous studies highlighted that clear up to date information tailored to personal circumstances could aid uptake and continuation of positive health behaviours (Williams, Cox, Kouides & Deci, 1999), while autonomy in health behaviour decision making, such as informed and shared decision making was found to empower individuals and increase their involvement in their own health care (Rimer, Briss, Zeller, Chan & Woolf, 2004).

In a previous study, a health promotion campaign promoting 30 minutes of physical activity five days a week was found to increase population activity (Canoy & Buchan, 2007). The results from this paper and opinion conveyed by participants from my project suggest that a National Health Campaign educating the population on weight management strategies could help the population personalise and tailor weight management strategies that fit into their lifestyle. Education, tips and examples on how to gradually introduce strategies could all help sedentary individuals to 'get started.'

With regard to the education of the mass population on weight loss and health there are a number of methods that could be employed to transmit this information.
These include using advancing technology, such as text, email, social networking sites, and so forth, the use of various media forms and through the commercial and NHS sectors. However, although there are many methods available to promote weight loss and health information, this does not address the fact that acceptance of this information is largely down to the readiness of individuals to address their personal health behaviour (Becker, 1976).

5.6 Project Limitations

This project was able to: 1) Determine the dose of physical activity required to produce weight loss and weight maintenance in the overweight and obese. However, it could not determine if the dose should be different dependant on age, gender or ethnicity. 2) Learn about the attitudes, beliefs and experiences of Caucasian overweight and obese adults with regard to weight loss and health. However, it could not demonstrate whether these feelings and experiences could be generalised to a more diverse population. 3) Produce a weight management programme designed by overweight and obese adults. However, the effect of the final strategies chosen by the stakeholders to produce weight maintenance after weight loss could not be determined. Finally, relevant research literature was restricted to English language and published papers, foreign language and unpublished papers may have reported different findings.

5.7 Future Directions

This project highlighted that to achieve long-term successful weight loss and weight maintenance in the overweight and obese, information, empowerment, autonomy and multi-strategy interventions were positively perceived. So what impact do these
findings have on future weight loss and weight maintenance initiatives for the general population?

To increase the understanding of new weight loss and weight maintenance information, new information may need to be portrayed more clearly. For example, it may be helpful to state that the new information is being made available to replace the old information and that it is not extra information. It may also be useful for individuals to be told why these changes have been made. Also the overweight and obese may need to be involved in the whole weight loss and weight maintenance decision making process rather than being told what they should do (Rimer et al., 2004; Williams et al., 1999).

It was highlighted in this thesis and in previous research that weight maintenance success may be improved if continual facilitator or group support (Cioffi, 2002) is made available for as long as the individual needs it. To achieve long term weight maintenance individuals may benefit from attending weight management support and refresher meetings.

To increase the access to meetings by the wider population the following facilities are recommended: crèches, varied meeting times, gender specific groups, family and children meetings and disability access. For individuals who do not wish to attend or have difficulty in attending group meetings internet, mobile phone and hearing aid compatible phone support could be alternative methods of support, motivation and information provision.

This project highlighted that in the future, weight management through preventive health care and education could also be possible. For example, weight management drop-in meetings could be provided for normal weight adults to obtain information, guidance and support to prevent weight gain. Also, children and young adults could be educated as part of the school/college curriculum. They could be taught how to manage their long term weight and health and how to plan and choose personal weight
management and health strategies. Children and adults could also be informed how to adapt personal strategies to deal with gender, ethnicity, religion, disability and vulnerable time points throughout their lifespan such as puberty, work, college, marriage, pregnancy, aging and negative life experiences.

This project highlighted a need for the following forms of research to aid weight loss and weight maintenance in the overweight and obese:

- To conduct a RCT over a two year period testing the effect of the Multi Strategy Weight Management Programme that emerged in study 3. The aim would be to determine whether the programme of strategies could aid long term weight management.
- To conduct a qualitative investigation to determine if weight loss and weight maintenance strategy recommendations differ dependant on age, ethnicity and gender
- To conduct and ascertain the effect of a mass educational weight management strategy promotion

To conclude, this chapter highlighted that the overweight and obese appeared to favour a multi-strategy weight management intervention that could be incorporated, personalised and tailored to their everyday lives. Autonomy, dietary changes, education/improved knowledge base, support, weight monitoring and physical activity all appeared to be important factors to aid weight management. However, it was noticed that making changes to diet was considered and implemented by participants more regularly than increasing physical activity participation. In Chapter 6, the final conclusions are made.
6.0 Conclusion

This thesis found that physical activity was a popular weight loss and weight maintenance strategy with most, but not all, overweight and obese adults. It highlighted that initiating physical activity within a previously sedentary lifestyle could be troublesome. A variety of strategies were found to aid the gradual incorporation of physical activity into everyday lives, these included; short duration targets, accumulated bouts and choosing enjoyable exercise. It could not be ascertained whether the overweight and obese would follow physical activity dose recommendations for weight loss and weight maintenance. However, providing information to the overweight and obese population on the physical activity recommendations for weight loss and weight maintenance could empower individuals to make personal choices. Duration, intensity, activity suggestions and strategies on how to incorporate the physical activity recommendations into general living could all help to increase activity. Autonomy, empowerment through knowledge and personal tailoring were strong messages voiced by the overweight and obese participants in this project.

This thesis found that multi-strategy interventions that incorporated physical activity, dietary change (but did not use the word 'diet' or ban foods), planning, positive support, education, acknowledgement of the effect of the menstrual cycle on weight and behaviour, positive mental changes, group meetings, weigh-ins and allow personalisation and autonomy were popular with the targeted population. The thesis found that the multi-strategy intervention gave overweight and obese participants choice, so that they could personalise their weight management programme. The participants believed that not all of the strategies had to be followed all of the time to achieve weight management benefits. Hence, individuals could pick the strategies that they preferred to achieve their weight goals.
Information that is used to educate the population on the physical activity dose for weight loss and weight maintenance and on supporting strategies could be provided through a group weight management programme, however it could also be provided as clear, concise, up to date information in leaflet or booklet form that could be accessed in supermarkets (traditional or on-line), libraries, doctors surgeries and hospitals. This form of information would allow individuals to tailor information to their own needs. Alternatively a programme could be provided on-line with email support.

This project was able to confirm that a multi-strategy weight management programme was a popular concept and that it could produce weight loss in the overweight and obese. However the project was not able to confirm that it could produce weight maintenance. It did highlight that adherence to the weight loss strategies with regular support/group meetings and weigh-ins assisted weight management behaviour. The project also highlighted that the overweight and obese population sought and required clear, usable information to aid long term weight management success.
References


Colvin, R. H., & Olson, S. B. (1983). A descriptive analysis of men and women who have lost significant weight and are highly successful at maintaining the loss. Addictive Behaviour, 8(3), 287-295.


An introduction to content analysis. Retrieved 16/05/2007, from http://writing.colostate.edu/guides/research/content/pop2a.cfm


Appendix One
Participant Information Sheet

Current research indicates that physical activity is of great importance for overweight and obese people to maintain health and also to assist weight loss and weight maintenance. With the increasing incidence of overweight and obese people in wealthy countries and the surveyed decline physical activity, it is important to understand the attitudes of the overweight or obese and find out how they include physical activity in their lives. It is also important to understand other related health behaviours and beliefs to get some understanding of how these may affect one another.

This study will is being conducted to look at the views of interviewees

1) to find out what they truly want, to lose weight, to be healthy, a mix or something completely different.
2) to find out what knowledge they have about weight loss, maintenance and health issues and where they learnt this information.
3) what they believe works from personal experience or observation and what they believe hinders
4) to illicit ideas and concepts for a successful program/intervention possibly to be used for the implementation of a program designed by the overweight and obese for the overweight and obese for health and/or weight loss
5) what physical activity they enjoy, have previously and do currently participate in themselves

You will be asked to participate in two interviews. The first will be about 1-11/2 hours in length. The second will be about 30mins – 1 hour in length.

I will be recording interviews and then I will type them up into transcripts and destroy the recorded copies to preserve your identity. You will then have an opportunity to read the transcribed interviews to check content. If there are any parts of the interview that you wish to retract you may.

At any point you wish to stop the interview, not answer a question or withdraw from the study you may. You do not need to give reasons for this decision.

All information will be treated with privacy and confidentiality, and will be stored anonymously. Your identity will not be disclosed in any report or research publication.

If you have any further questions please contact Julie Alexander-Cooper on 01926 858416 or j.alexander-cooper@lboro.ac.uk or Dr. Trish Gorely on 01509 226321 or p.j.gorely@lboro.ac.uk
Informed Consent Form

(To be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.

I understand that all the information I provide will be treated in strict confidence.

I agree to participate in this study.

Your name

Your signature

Signature of investigator

Date
Interview Questions

As I discussed with you earlier I will be asking you some questions about your feelings on the issue of obesity and being overweight. Your responses today are fundamental for me to compile my research, so I am truly grateful.

I'd like you to respond with your own natural feelings, your gut feelings, your emotional feelings to these questions and if any questions do not seem clear just let me know. At any point if you do not wish to answer a question or stop the interview please let me know, you don't have to do anything you don't wish too.

The interview will be around 1-1 1/2 hour in length. I will be taping the interview for transcription. Everything discussed today will remain private and confidential.

I would just like to confirm that you are still happy to participate in this interview today?

Do you have any questions before we start?

Could you tell me about your weight history?

What methods have you used to lose weight?

What things would you do to lose weight?

What do you feel is a healthy diet for you?

Do you participate in any forms of physical activity at the present?

What sort and how often?

Are there any types of sport or exercise that you enjoy or have enjoyed in the past?

What do you feel has prevented you from losing weight?

Could you describe your feelings towards food?

When do you believe you started gaining weight?

How does this make you feel about your health?
What amount of exercise do you understand you need to do to be healthy?
Where have you learnt this information?
How successful do you think the weight loss world is right now?
If you were to recommend a method for healthy living or a way to lose weight what would you choose?
If you knew that doing 30 minutes of activity a day would look after your health, but you may not lose weight or weight lose would be slow, would you do it?
If you became more active and it improved your health, but you didn’t lose weight would you be happy with that?
When thinking about other people that are overweight and obese, what do you think they would want?
How do you think they feel about themselves?
How do you think society feels about the overweight and obese?
Do you think that crosses both sexes?
Do you think this is going to change in the future?
How do you believe the media portrays the overweight and obese?
How do you believe society treats the overweight and obese?
Who would you most like to see promoting health and activity?
Do you feel this information should come through the government, from the health minister or NHS?
If a weight loss or health programme or intervention ran by the NHS was offered to you, would you be interested?
What type of thing would you like to see?
What type of support would help you during a weight loss or health programme?
Which would you prefer telephone, internet, group or individual support?
Who or what would you use to provide weight loss or health information?
Would you pay for this information?
Where do you source information?
For example newspapers, specialist magazines, the television, health specialists, etc?
Who do you feel should promote weight loss and health campaigns?
What elements would you include into a weight loss and health programme?
Where would the programme take place?
Who would you like to run it? i.e. Commercial or health organisation?
How much would you pay for it?
Would you prefer a programme for the whole family or individual?
Thank you so much for your time today.
Were the questions clear or confusing?
Would it be OK if I contact you if I have any questions about the tape?
Would you like me to send you a copy of the transcript when it is typed up?
Clarification Questions, Probes and Prompts

Below are examples of the sorts of follow up questions that were employed to gain further detail, clarification or facilitate more comment from the participant. The list of questions were not delivered in the same order as listed for each participant, but were delivered flexibly dependant on participant responses.

You explained that you would like to cut down on food, what do you deem to be a healthy diet?

So how much walking would you say you do a day?

Has there been anything else that you have done, since then, any exercise or activity?

You've just described to me how you feel about yourself and your health, if there was anything you could change about either your weight or your health what would it be?

Do you feel there is anything that prevents you from actually doing exercise?

Can you think of anything that would give you time?

Do you feel that may be a problem for other people that are overweight and obese?

Could you expand on that?

Why?

You have spoken about walking what made you think about that?

How useful did you find that?

Do you believe you understand the information provided weight loss + health?

Do you feel confused by the information?

Do you believe that other people are confused?

What motivated you to want to lose weight?

How important a motivator has your appearance been to want to lose weight?

How important a motivator has your health been to lose weight?
Appendix 2
Questions – Conducting Action Research

1) Could you describe your experiences of using Action Research?

2) In what fields have you used Action Research?

3) How many people participated in each group?

4) How many participants would you recommend?

5) Why this number?

6) How did you organise the group? Seating style, room, tables/no tables?

7) Would you recommend mixed or single sex groups? Why? How may this have affect outcomes?

8) What form of planning/organisation was involved before each study?

9) What events/situations would you recommend that I prepare for?

10) What problems may I encounter?

11) Are there any particular authors of researchers of Action Research that you particularly respect and would recommend contacting or reading their work?

12) What have you learnt personally from your experience using Action Research?

13) Are you conducting an Action Research study at the moment? If yes could I possibly attend as an observer? Do you know anyone else conducting a study at the moment that I could observe?

14) Thank you. I will thank you in my paper
Appendix 3
Volunteers needed to shape new weight loss programme

Researchers at Loughborough University are looking for volunteers to take part in a study that will help to shape a new weight loss programme.

Around 30 overweight or obese men and women living in the Kenilworth, Leamington, Coventry and Warwick areas are being sought to participate in the six-month study.

Working in small groups, the participants will meet up once a week to develop their own bespoke weight loss programme. They will be able to discuss what they need from a programme and will choose which methods – such as keeping a log of their diet and exercise – they’d like to use to aid their weight loss.

Lead researcher Julie Alexander-Cooper explains: “There’s a bewildering array of weight loss and weight maintenance methods on the market. Through our study we’re going to find out which of them people like and which are most convenient. After all, if a weight loss programme is difficult to fit into your everyday life, you’re less likely to stick with it.”

"Ultimately our aim is to develop a new weight loss and weight maintenance programme, which, having been designed by users, will be appealing to others wishing to lose weight."

Participants in the Loughborough study will be provided with the most up to date information about successful weight loss and weight maintenance methods and will be offered all the necessary support throughout the six-month period.

To find out more about the study or to volunteer contact Julie Alexander-Cooper in the School of Sport and Exercise Sciences at Loughborough University, Tel: 01926 858416, E: j.alexander-cooper@lboro.ac.uk Pregnant women and those already participating in a weight loss programme will not be eligible.

For all media enquiries contact:

- Hannah Baldwin, Head of PR, Loughborough University, T: 01509 222239 E: H.E.Baldwin@lboro.ac.uk
Weight Loss
& Weight Maintenance

- Are you overweight or obese?
- Do you want to lose weight and keep it off?
- Are you available from October 2006 until April 2007?

I am a PhD student at Loughborough University and I am looking for 12 overweight or obese men and women to participate in a research study to design a successful weight loss and maintenance programme.

To apply or find out further details please contact Julie Alexander-Cooper on
01926-858416
email j.alexander-cooper@lboro.ac.uk
Free Weight Management Programme

Are you looking to lose weight and maintain weight loss? Men and women are sort to be part of a participatory action research weight management study.

All sessions and information are free of charge for participants.

For further details and to book your place please contact Loughborough University researcher Julie Alexander-Cooper MSc. 01926-858416 or j.alexander-cooper@lboro.ac.uk

Places are limited so please call ASAP

Free Weight Management Programme

Are you looking to lose weight and maintain weight loss? Men and women are sort to be part of a participatory action research weight management study.

All sessions and information are free of charge for participants.

For further details and to book your place please contact Loughborough University researcher Julie Alexander-Cooper MSc. 01926-858416 or j.alexander-cooper@lboro.ac.uk

Places are limited so please call ASAP
Participant Telephone Inclusion/Exclusion Checklist

1) How old are you?
2) How tall are you?
3) What do you presently weigh?
4) Do you have any medical disorders that would require a doctor's note for you to participate in the programme?
5) Are you pregnant?
6) Are you presently dieting or on a weight management programme?
7) Would you say that you are sedentary?
8) Are you available to participate for 6 months beginning in January?
9) Are you available during the daytime? When?
10) Are you available during the evening? When?
Newspapers and Radio Stations

The press release was sent to the following:

100.7 Heart FM

96.2 Touch FM

BBC Coventry & Warwickshire

BBC Coventry & Warwickshire, Where I Live

Classic Gold 1359

Coventry Citizen Series

Coventry Observer

Coventry Telegraph

Leamington Spa Courier & Review Series

Leamington Spa Observer

Mercia FM

Warwick gazette
Appendix 4
# PAR-Q & YOU

*(A Questionnaire for People Aged 15 to 69)*

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: check YES or NO.

### YES or NO

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?</td>
<td></td>
</tr>
<tr>
<td>2. Do you feel pain in your chest when you do physical activity?</td>
<td></td>
</tr>
<tr>
<td>3. In the past month, have you had chest pain when you were not doing physical activity?</td>
<td></td>
</tr>
<tr>
<td>4. Do you have your balance because of dizziness or do you ever lose consciousness?</td>
<td></td>
</tr>
<tr>
<td>5. Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity?</td>
<td></td>
</tr>
<tr>
<td>6. In your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?</td>
<td></td>
</tr>
<tr>
<td>7. Do you know of any other reason why you should not do physical activity?</td>
<td></td>
</tr>
</tbody>
</table>

### If you answered YES to one or more questions

Talk with your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may not be able to do any activity you want — as long as you start slowly and build up gradually. You may need to restrict your activities to those which are safe for you. Talk with your doctor about the limits of activities you wish to participate in and follow his/her advice.
- Find out which community programs are safe and helpful for you.

### NO to all questions

If you answered NO honestly to all PAR-Q questions, you can be reassured that you can: start becoming much more physically active — begin slowly and build up gradually. This is the safest and easiest way to go.

Take part in a fitness appraisal — this is an excellent way to determine your basic fitness so that you can plan the best way for you to be active. It is also highly recommended that you have your blood pressure evaluated. If your reading is over 144/94, talk with your doctor before you start becoming much more physically active.

### Delay becoming much more active:

- if you are not feeling well because of a temporary illness such as a cold or a fever — wait until you feel better;
- if you are or may be pregnant — talk to your doctor before you start becoming more active.

### Please note:

If your health changes so that you then answer YES to any of the above questions, tell your doctor or health professional. Ask whether you should change your physical activity plans.

### Important Use of PAR-Q

The Canadian Society for Exercise Physiology, Health Canada, and their agents assume no liability for persons who undertake physical activity, and if it is used after completing this questionnaire, consult your doctor prior to physical activity.

No changes permitted. You are encouraged to photocopy the PAR-Q but only if you use the entire form.

### Note:

If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.

*I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction.*

**Name:**

**Address:**

**Date:**

**Signature:**

**Month**

**Reason:**

**Number of months**

**Number of participants (to be signed by eight of them)**

**Note:** This physical activity clearance is valid for a maximum of 12 months from the date it is completed and because invalid if your condition changes or that you would answer YES to any of the seven questions.

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Supported by Health Canada

Saskatchewan

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Pre-Exercise Questionnaire

Please take 3 minutes to answer the following questions.
Just place a "Y" to indicate "Yes" or "N" for "No".

Name: ___________________________  Age: _______  Sex: __________
Address: ___________________________  P:Code: __________
Occupation/Employer: ___________________________  Phone W: (_____)  Phone H: (____)
Person to be contacted in case of accident: ___________________________  Phone W: (_____)  Phone H: (____)

Have you ever or do you have?
- Anyone in your family under 60 suffered Heart Disease, Stroke, raised Cholesterol or Sudden Death? [ ]
- Are you Male over 45 or Female over 60 of regular vigorous exercise? [ ]
- Are you on any prescribed medication? [ ]
- Have you been hospitalised recently? [ ]
- Have you given birth within the last 6 weeks? [ ]
- Are you pregnant? [ ]
- Do you have any infections or Infectious Diseases? [ ]
- Do you have or have you had:
  - Glue  [ ]
  - Gluteal Fever  [ ]
  - Any Heart Condition  [ ]
  - High Blood Pressure > 140-90  [ ]
  - Dizziness or Fainting  [ ]
  - Palpitations or Pain in the Chest  [ ]
  - Epilepsy  [ ]
  - Stroke or Duodenal Ulcer  [ ]
  - Liver or Kidney Condition  [ ]
  - Raised Cholesterol/Triglycerides  [ ]

Have you or do you have?
- Are you currently smoking? [ ]
- Are you dieting or fasting? [ ]
- Are you under any medical or surgical conditions which may be reason to modify your exercise programme? [ ]
- Are there any other conditions which may be reason to modify your exercise programme? [ ]

What exercise have you been doing recently? Exercise Type: ___________________________

Intensity (circle): [ ] Hard  [ ] Medium  [ ] Light  How Long: _______  How Often: _______

Please read the following exercise advice carefully.
Ask any staff member to guide you use on the most suitable class or programme. Work at a level on your first visit and concentrate on learning to do the exercises properly. On each visit you will be able to work a little harder. Be sure to limit yourself to a pace you can still talk comfortably.

Should you suffer any injury, illness or condition, please tell us by completing this form again.

Statement
I recognize that the instructor is not able to provide me with medical advice with regard to my medical fitness and that this information is used as a guideline to the limitations of my ability to exercise. I have answered the questions to the best of my ability and understand the advice above.

Signed: ___________________________  Date: __________

Staff: ___________________________  Class/Programme: ___________________________
Time: ___________________________  Instructor: ___________________________

Designed for members of Fitness Professionals
Appendix 5
Participant Participation Form

The objective of this study is for a group of overweight participants to design a successful weight loss and weight maintenance programme. The study will span a 6 month time period. Participants will meet regularly for focus group discussions to review and design all aspects of the weight loss and maintenance programme. The study investigator will provide up-to-date information on weight loss and maintenance practice to initiate group discussion. Decisions will be formed, tried, tested and discussed by the group during the study period.

A variety of non-invasive body measurements will be performed at the beginning of the study, at 3 months to assess weight loss and at the end of the study to assess weight maintenance. Measurements will include waist and hip tape measurements, height, body weight and body composition measures. A male researcher will perform all measurements on male participants and a female researcher will perform all measurements on female participants to aid participant comfort.

Focus group sessions will be recorded, transcribed and recordings will then be destroyed. Unique numbers will be given to participants to preserve identity. Participants will have the opportunity to read the transcripts and retract any statements they have made if they wish too. At any point during the study participants can withdraw and are not required to give a reason for this decision. All information will be treated as private and confidential.

If you have any further questions please contact Julie Alexander-Cooper on 01926-858416 or email j.alexander-cooper@lboro.ac.uk, Professor Stuart Biddle on 01509 226311 or email s.j.h.biddle@lboro.ac.uk or Dr. Trish Gorely on 01509 226321 or email p.j.gorely@lboro.ac.uk

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Informed Consent Form

(To be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.

I understand that all the information I provide will be treated in strict confidence.

I agree to participate in this study.

Your name --------------------------------------------------

Your signature -------------------------------------------------------------

Signature of investigator --------------------------------------------------

Date ------------------------------------------------------------------------
1. **Project Title**
   Designing a weight loss and maintenance programme using the Action Research Process

2. **Brief lay summary of the proposal for the benefit of non-expert members of the Committee**
   The main aim of this study is to determine whether a successful weight loss, maintenance and health programme can be designed by the target client group. The study aims to identify what the overweight and obese are looking for in a weight loss and weight maintenance programme.

3. **Details of responsible investigator (supervisor in case of student projects)**
   **Title** Dr Surname Gorely
   **Forename** Trish
   **Department** Sport and Exercise Science
   **Email address** p.j.gorely@lboro.ac.uk
   Personal experience of proposed procedures and/or methodologies.
   11 years experience of psychological and behavioural studies of physical activity. Expertise in design, administration and analysis, and qualitative methods in a number of previous projects. Experience with direct measures of physical activity in adolescents and older adults.

4. **Names, experience, department and email addresses of additional investigators**
   Pro SJH Biddle, SSES, s.j.h.biddle@lboro.ac.uk, 21 years experience in psychological studies on physical activity. Expertise: psychology, psychometric development and assessment, physical activity sciences.
   J. Alexander-Cooper, SSES j.alexander-cooper@lboro.ac.uk, 14 years experience in
fitness and lifestyle physical activity training for weight loss and health objectives for adults and children. Experienced lecturer in health and exercise psychology.

5. Proposed start and finish date and duration of project

Start date October 2006   Finish date April 2007   Duration 6 months

Start date for data-collection October 2006

NB. Data collection should not commence before EAC approval is granted.

6. Location(s) of project

Kenilworth, Warwickshire

7. Reasons for undertaking the study (eg contract, student research)

Student research

8. Do any of the investigators stand to gain from a particular conclusion of the research project?

No

9a. Is the project being sponsored? Yes □ No □

If yes, please state source of funds including contact name and address.

9b. Is the project covered by the sponsors insurance? Yes □ No □

If no, please confirm details of alternative cover (eg University cover).

University cover

10. Aims and objectives of project

Aims:
- To determine what a group of overweight and obese adults require from a weight loss and maintenance programme to increase long term success and adherence
- To investigate whether a programme aimed at weight loss and maintenance can be designed by a sample group of its targeted population
- To learn about the experiences, issues and beliefs of a group of overweight and obese people in relation to physical activity, weight loss/maintenance and health and how these issues can determine the success or failure of a programme
Objectives

- To structurally design a weight loss and maintenance programme for the overweight and obese
- To gain a greater understanding of the overweight and obese group's attitude towards weight loss, health, physical activity and diet.
- To disclose reactions and feeling towards being overweight or obese and how this impounds on daily life

11. Brief outline of project

A) STUDY DESIGN

The aims and objectives will be addressed via a repeated measures design, with measurements taken at baseline (pre-programme), midpoint and end of programme.

B) MEASUREMENTS TO BE TAKEN

Health Screening Questionnaires:

Prior to taking part in the study all participants will be asked to complete a health screening questionnaire. On testing days and regularly throughout the study participants will be asked to indicate that they are free of illness or injury. The Physical Activity Readiness Questionnaire (PAR-Q) will be used to assess a candidate’s current state of health and whether participation in physical activity could negatively exaggerate health (Chisholm et al. 1975).

Height and Weight:

Height will be measured (to the nearest 0.1cm) using a stadiometers. Weight will be measured (to the nearest 0.01kg) using a balance beam scale. From these the body mass index (BMI) will be calculated by dividing body weight in kilograms by height in meters squared (kg.m²). The BMI can be used to give an indication of the weight status of individual (i.e. normal weight, overweight or obese) by comparison with reference data that takes into account age and gender (Chinn and Rona 2001; Cole et al. 2000)

Body Composition:

Body composition will be measured using a Tanita Body Composition Analyzer to determine Body Fat %, Fat Mass and Basal Metabolic Rate. Basal Metabolic Rate measures will help to determine dietary energy requirements for each participant to assist weight loss and maintenance. Body Composition measures will be used to assess any changes during the study period.

Waist Circumference:

The waist circumference provides a simple method for assessing the amount of fat stored around the abdomen. This is important since excess abdominal fat is a more
potent disease risk factor than excess body fat per se. Waist circumference will be determined at the widest part of the torso between the xiphoid process of the sternum and the iliac crest. This measure will also assess health risk and will be used to assess changes, if any, during the weight loss and maintenance period.

**Hip Circumference:**
Hip circumference will be measured to determine the waist to hip ratio. This measure will also be used to assess physiological changes during the study period.

**Waist to Hip Ratio:**
Waist to Hip Ratio provides assessment of regional adipose tissue. This measure will be used to determine health risk and to assess changes during the weight loss and maintenance period.

Several anthropometric measurement methods have been chosen to provide the triangulation measurements to strengthen outcome results.

Participants will be fully dressed in light weight clothing for all anthropometric measurements for modesty.

**Other data sources:**
The evaluation will also be informed by data from the following sources: dietary and physical activity logs completed daily by participants during the study, focus group audio recordings, pedometers and questionnaires.

12. **Please indicate whether the proposed study:**

<table>
<thead>
<tr>
<th>Involves taking bodily samples</th>
<th>Yes</th>
<th>No</th>
<th>x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involves procedures which are physically invasive (including the collection of body secretions by physically invasive methods)</td>
<td>Yes</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td>Is designed to be challenging (physically or psychologically in any way), or involves procedures which are likely to cause physical, psychological, social or emotional distress to participants</td>
<td>Yes</td>
<td>x</td>
<td>No</td>
</tr>
<tr>
<td>Involves intake of compounds additional to daily diet, or other dietary manipulation / supplementation</td>
<td>Yes</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td>Involves pharmaceutical drugs (please refer to published guidelines)</td>
<td>Yes</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td>Involves testing new equipment</td>
<td>Yes</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td>Involves procedures which may cause embarrassment to participants</td>
<td>Yes</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td>Involves collection of personal and/or potentially sensitive data</td>
<td>Yes</td>
<td>No</td>
<td>x</td>
</tr>
<tr>
<td>Involves use of radiation (Please refer to published guidelines. Investigators</td>
<td>Yes</td>
<td>No</td>
<td>x</td>
</tr>
</tbody>
</table>
should contact the University's Radiological Protection Officer before commencing any research which exposes participants to ionising radiation—e.g. x-rays)

Involves use of hazardous materials (please refer to published guidelines)

Assists/alters the process of conception in any way

Involves methods of contraception

Involves genetic engineering

If Yes - please give specific details of the procedures to be used and arrangements to deal with adverse effects.

Participants will be verbally guided on intensity and duration of physical activity to prevent injury or ill health. Participants will be advised on how they should feel during and after physical activity. Telephone and email contact numbers will be given to participants if they require further guidance between group sessions. Physical activity will be predominantly lifestyle activity such as increasing levels of daily walking.

All participants will complete a PAR-Q before entry, to assess medical health status.

Julie Alexander-Cooper is qualified to MSc level and has taught adults and children physical activity for health and weight loss for 14 years. Full qualifications and work experience are listed with the prior ethical checklist application.

13. Participant Information
Details of participants (gender, age, special interests etc)
Male and female adults.

Number of participants to be recruited:

How will participants be selected? Please outline inclusion/exclusion criteria to be used.

Approximately 10

How will participants be recruited and approached?
Poster campaign

Please state demand on participants' time.

Approximately 1 hour for each anthropometric measurement session at baseline, midpoint and end of study.
Approximately 1-2 hours for each focus group session. It is estimated that there will be 14 focus group sessions during the study period.

Participants will determine as a group how much time they wish to commit to the weight loss and maintenance programme to optimise success.

14. **Control Participants**

Will control participants be used? **No**

If Yes; please answer the following:

Number of control participants to be recruited:

How will control participants be selected? Please outline inclusion/exclusion criteria to be used.

How will control participants be recruited and approached?

Please state demand on control participants' time.

15. **Procedures for chaperoning and supervision of participants during the investigation**

1 male and 1 female investigator will collect anthropometric data at baseline, midpoint and end of the study

16. **Possible risks, discomforts and/or distress to participants**

Mild physical discomfort in the form of muscular aches is expected during the transition from sedentary to lifestyle active.

17. **Details of any payments to be made to the participants**

None

18. **Is written consent to be obtained from participants?** **Yes**

If yes, please attach a copy of the consent form to be used.

If no, please justify.
19. Will any of the participants be from one of the following vulnerable groups?

<table>
<thead>
<tr>
<th>Category</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children under 18 years of age</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>People over 65 years of age</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>People with mental illness</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Prisoners/other detained persons</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Other vulnerable groups</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

If you have selected yes to any of the above, please answer the following questions:

a) what special arrangements have been made to deal with the issues of consent?

b) have investigators obtained necessary police registration/clearance? (please provide details or indicate the reasons why this is not applicable to your study)

20. How will participants be informed of their right to withdraw from the study?

In the form of a written consent form and orally at the start of the study and at each testing day.

21. Will the investigation include the use of any of the following?

<table>
<thead>
<tr>
<th>Method</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio recording</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Video recording</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Observation of participants</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

If yes to any, please provide detail of how the recording will be stored, when the recordings will be destroyed and how confidentiality of data will be ensured?

Focus group sessions with participants will be audio recorded. Anonymous, verbatim transcripts of the focus sessions will be made and then the audio recording destroyed.
22. **What steps will be taken to safeguard anonymity of participants/confidentiality of personal data?**

No names will be stored with data on the computer – each participant will be identified by a unique number. Only project staff will have access to the name-list.

23. **What steps have been taken to ensure that the collection and storage of data complies with the Data Protection Act 1998?** Please see University guidance on Data Collection and Storage and Compliance with the Data Protection Act.

1. All measurement instruments have been specifically chosen or modified to ensure that only relevant questions have been included.
2. Specific consent for the collection, storage and procession of sensitive personal information (e.g. ethnicity) shall be obtained as outlined in 18 & 19 above.
3. Within electronic data files participants will be identified by a unique reference number that will be assigned at initial data entry. All hard copy data will be stored in locked filing cabinets.
4. Data will be stored in accordance with the University guidelines.
5. Should an individual wish their data to be withdrawn from the study every attempt will be made to do this.

24. **INSURANCE COVER:**

It is the responsibility of investigators to ensure that there is appropriate insurance cover for the procedure/technique.

The University maintains in force a Public Liability Policy, which indemnifies it against its legal liability for accidental injury to persons (other than its employees) and for accidental damage to the property of others. Any unavoidable injury or damage therefore falls outside the scope of the policy.

Will any part of the investigation result in **unavoidable** injury or damage to participants or property?  
Yes [ ] No [x]

If yes, please detail the alternative insurance cover arrangements and attach supporting documentation to this form.

The University Insurance relates to claims arising out of all **normal** activities of the University, but Insurers require to be notified of anything of an unusual nature.

Is the investigation classed as **normal** activity?  
Yes [x] No [ ]
If no, please check with the University Insurers that the policy will cover the activity. If the activity falls outside the scope of the policy, please detail alternative insurance cover arrangements and attach supporting documentation to this form.

25. Declaration

I have read the University's Code of Practice on Investigations on Human Participants and have completed this application. I confirm that the above named investigation complies with published codes of conduct, ethical principles and guidelines of professional bodies associated with my research discipline.

I agree to provide the Ethical Advisory Committee with appropriate feedback upon completion of my investigation.

Signature of applicant:

Signature of Head of Department:

Date

PLEASE ENSURE THAT YOU HAVE ATTACHED COPIES OF THE FOLLOWING DOCUMENTS TO YOUR SUBMISSION.

- Participant Information Sheet
- Informed Consent Form
- Health Screen Questionnaire*
- Advertisement/Recruitment material*
- Evidence of consent from other Committees*

*where relevant
Ethical Clearance Checklist

Section A

Will junior researchers/students be under the direct supervision of an experienced member of staff?

Anthropometric measurements will be conducted on all participants. Weight, Height, Body Mass Index, Body Fat Percentage, Waist and Hip Circumferences will be measured.

To ensure that participants are put at ease, all measurements will be conducted with light clothing on. Male participants will be measured by a male tester and female participants by a female researcher, set out by research protocol.

Section C

To the best of your knowledge, please indicate whether the proposed study is designed to be challenging physically or psychologically in any way (includes any study involving physical exercise)

Physical activity to produce weight loss will be incorporated in this study. The physical activity carried out by participants will be of a moderate intensity, mainly consisting of lifestyle and leisure activity such as walking, stair climbing and play with children. The targeted amount of time for participation in lifestyle activity extra to existing physical activity will be 45 to 60 minutes a day, everyday of the week.

The 45 to 60 minutes a day targeted physical activity will be achieved through accumulated bouts of physical activity. Bouts of physical activity could be as little as 5 minutes at a time. To prevent injury and illness, physical activity guidance, recommendations and safety information will be provided to all participants.
All participants will undertake medical clearance before embarking on this research study. The PAR-Q form will be used to check for contraindicated medical conditions. Only participants that are physically and mentally fit to participate will be included in the study.

My Qualifications and Background

I have been working within the field of health and fitness for 14 years. During this time I have continued to manage my own company Physical Dynamics and I have worked as a consultant and lecturer for other commercial and non-commercial organisations.

I have gained a wealth of experience and knowledge during these years through my work, research, continual training and conference attendance.

Attached to this Ethical Clearance Checklist Form you will find information about my qualifications, work experience, client base history and current professional memberships.
Appendix 6
Check List of Action Research Participant Packs and Meeting Materials

- Log Book and Pens
- Name Badge
- Participant Participation Form
- Informed Consent Form
- PARQ
- Health Form
- Goal Setting Forms
- Action Plan Forms
- Portion Size Information
- Fat, Protein and Carbohydrate recommended daily consumption info.
- Information from studies on methods found to aid weight loss
- Exercise dose measure, type and how to include in lifestyle information for weight loss and maintenance
- Information from studies on methods found to aid weight maintenance
- Discussion topics

Big sheets of paper, pens, blue tack
Get groups to form for 10 minutes to write on sheet

- what methods have worked for them and which haven’t
- what they haven’t tried but would like to try
- what has hindered their weight loss
- what has aided weight management
- what methods they have tried already
1) Group discussion of information on sheets

2) Group planning of which methods the group would like to test

3) Individualise the methods and write up Action Plans and Goal Sheets

I need to bring:-

- Digital recorder x 2
- Pens and paper
- Packs for participants
- Coffee, tea, fruit teas, sugar, sweetener, milk, hot water, cold water
- Positivity

I need to organise:-

- Booking rooms
- Organising anthropometric testing and male tester
- Giving participants meeting information
### Monday Day Group Meeting Dates

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<th>Time</th>
<th>Notes</th>
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**Wednesday Evening Groups**

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2nd May 7.00-8.00pm Group 1
8.00-9.00pm Group 2

9th May NO MEETING

16th May 7.00-8.00pm Group 1
8.00-9.00pm Group 2

23rd May 6.00-8.00pm Group 1 Final meeting &
8.00-10.00pm Group 2 Measurements
Appendix 7
The Story from the Beginning

It was early December 2006, the chill of winter had arrived and the nights had drawn in. December would not be deemed the most appropriate time to begin a weight management programme, the New Year in January being the most obvious choice. However, in early December the meetings for this research began and there was a good reason why it had to be so.

The gathering of study participants had taken longer than anticipated and the study had begun a month later than originally planned. January may be the most traditional time to begin Weight Loss and Weight Management however to retain the participants and to be considerate to the volunteers needs it was more appropriate to begin the meetings as soon as possible.

December in the United Kingdom is traditionally a month of celebration, parties, feasting and indulgence, it is not traditionally a time for restraint. I believed, through my experience working within Weight Loss and Weight Management that many or most of the participants would probably gain weight over the Christmas and New Year holiday. Research has also found that the average person gains weight during the festive celebrations (Hull, Radley, Dinger, & Fields, 2006; Jeffery, McGuire, & French, 2002). So, again, the decision to begin an investigative Weight Management Study at Christmas instead of the New Year was possibly not the best time.

However, during the telephone conversations and my first induction meetings with the future participants, the stakeholders were enthusiastic and optimistic to commence as soon as possible. They did not appear to believe that starting at Christmas time would be a problem. I realised, that in fact, to reflect and analyse the effect of eating behaviour during the traditionally indulgent festive time could actually be beneficial.
Reflections

Group 1 Meeting on 13th December 2006

Today was my first meeting with the first weight management group. I was excited but I would be lying if I didn’t admit to feeling slightly nervous. I had planned a course of action for the first meeting, I had taken log books to distribute to the participants and paper and pens to record input from discussions. However, there was no way of knowing how the evening would pan out, that is the nature of Participatory Action Research. Fundamentally I was concerned about whether any of the volunteers would turn up! Would they have been put off participating in the study after finding out their true weight and body measurements the previous week? Would they change their minds after carefully considering the input required of them?

The meeting was due to begin at 7pm however only six of the eight volunteers had arrived. I allowed an extra ten minutes to wait for the other two women. During this time the 6 men and women that had arrived made themselves a hot drink and began chatting with each other. In fact the delay had provided an opportunity for most of the group to get to know each other. They popped on name badges, sat in a group and chatted away. The group were amiable and the atmosphere was warm and inclusive, welcoming.

By 7.10pm I asked the group if they were happy to start the meeting and to allow the late arrivals to join in when they arrived. In hindsight, it was
wise that we chose to start the meeting because in the end neither of the two women expected appeared that evening.

The group that evening incorporated 3 men and 3 women who gelled easily. They were happy to break into two mixed sex discussion groups to find answers to the evening's discussion topics. The two groups later came together as one group to discuss the questions posed in finer detail. All members of the group spoke and described their personal experiences, feelings and beliefs. The group members appeared to become comfortable with each other in a short span of time. Social banter, empathy, sincere discussion and listening skills were displayed by all in the group.

The discussions during the evening highlighted that the problems and solutions to weight loss seemed to be the same for both genders. The men and women all expressed similar feelings, experiences and beliefs - these were that being overweight negatively affected how they felt about themselves and that adjustments to physical activity and eating were required to lose weight. Individual incentives differed but these did not seem to be gender based. I had been concerned how and whether the mixed sex group would work together. The first evening's meeting was very positive and this boded well for future meetings.

The last section of the meeting involved goal setting. The group chose weight loss methods that they were all happy to test and reflect on during the coming week. I gave each member a log book to record their activities and reflections. The group all chose to write their own personal weight loss incentive on the first page for motivational reasons. They then listed the activities they would act on to aid weight loss during the coming week.
The group parted with a buzz of positivity, friendship and motivation. It truly felt as if they were all in it together and all wanted to produce a successful outcome.

The questions that I had chosen as our discussion topics for our first evening were:

What actions have you found that have helped weight loss in the past?
What have you found has hindered weight loss in the past?

What have you found helpful?

- Slimfast drink and fruit for lunch rather than sandwich
- Support from others
- Incentive
- Understanding
- Routine
- Not restricted (with regard to food choices)
- Walking
- Planning
- Wellbeing
- 3 meals a day

Hindrance to Weight Loss

- Social Life
- Lethargy/Laziness
• Snacking
• Slow Results - Disappointment
• Fit in with family
• Comfort - TV food
• Size of food portions
• Love of food
• Eating fast
• Temptation
• Injury - unable to exercise
• Demoralising

Group Two Meeting 13th December 2006

Four of the five volunteers arrived all at the same time. I showed them the facilities in the centre (where the toilets and kitchen were) and then they chatted while making drinks. The fifth member of the group was ill and had left a message on my answering machine, I later found out on returning home.

Group Two was an all female group and thankfully again they appeared to be getting on well. All of the women were happy to chat and share their experiences and thoughts. The group were given the same questions to discuss as Group One. This time the group work together because there were only 4 people. They discussed both areas and produced goal setting plans in their log books. I explained how to use the logs for the recording of actions and reflections.
The women decided that their first priority was to increase their weekly exercise. How to incorporate physical activity into short winter days was discussed. They mentioned the problems with short days and the lack of motivation that they had to go outside in the dark, wet and cold night to exercise after work. They decided in the end to increase their physical activity by 90 minutes a week. They were all left with options on the length of time a session would be for each individual i.e. 3 x 30 minute sessions and so forth.

This group like group one decided to increase their daily water consumption. Group two also chose to decrease calorie consumption through the reduction of drinking alcohol, fizzy drinks and eating of snacks.

The group would have been happy to continue talking but we had to vacate the building for the cleaners. This group parted amicably, with feelings of group support and in a spirit of camaraderie.

The questions that I had chosen as our discussion topics for our first evening were:

1) What actions have you found have helped weight loss in the past?
2) What have you found has hindered weight loss in the past?

What has helped us to lose weight?

- Knowing I am going to be weighed
- When I have lost weight it keeps me motivated
• Needs to be told what to do
• Books
• Calorie counting
• Logging what I've ate and showing it to someone
• Keeping it simple
• Interest in a sport
• Someone to keep me motivated
• Running
• Info about exercise
• Someone to support me
• Holidays - Before and After
• Stress
• Slimming pills

What has hindered us?
• Children
• Contentment
• Stress
• Money (lack of)
• Yo-Yo dieting
• Sugar cravings
• Portions sizes
• PMT
• Laziness
• Drinking (Alcohol and Pop)
• Seasons e.g. Christmas/Easter, etc.
• Other people's habits
• Fussy eater
• Allergies
• Time (8 weeks!)
• Commitment/Attention span
• Lack of variety in food and exercise
• Range of different diets
• Lack of support from others
• Temptation
• Willpower
• Time
• Time of eating dinner
• Work

Reflections 14th December 2006

Both groups gelled well yesterday. Better than anticipated fortunately. Men and women appeared to voice their views and experiences equally in group 1. In group 2 one of the women spoke more than the others, I will have to make sure that the others get 'air-time'. Making a drink and creating a circle seemed to aid talking so I will continue with these methods. During the meetings for group 1 and group 2 there were no awkward silences or pauses.

Learning Curve for Me
'I have to be careful what I add to the discussion'

One woman in the group began to speak about evening munchies. One of the men began to speak more dominantly about a different topic. To eventually bring the focus back to the first topic I needed to find a way to allow the more reserved woman to speak.

To do this I spoke about how my husband and I can habitually snack in the evenings when the children have gone to bed. My interjection did help the quieter woman to expand on her thoughts and feelings. However, the louder member then spoke about his slim 8 stone wife, comparing her against his larger frame. He explained how she ate the same size meal as him but still stayed slim. Indicating that it was unfair that he had a lower metabolic rate, he wondered why. I noted from his eye and body movements his comparison remarks had stemmed from his judgement call on my size 8 body. It appeared that he believed that like his wife I didn't have to do anything to keep slim and that I had no problems.

Group Three First Meeting Monday 1pm-2.15pm December 18th 2006

Only four of the expected 6 volunteers turned up for the group meeting. Two candidates left a message on my answering machine cancelling last week's appointment due to illness and said that they would come today but they did not. Four women arrived today. The four women like Groups 1 and 2 helped themselves to drinks and then we began the meeting.

All four women entered into debating this week’s discussion topics - What has hindered and what has helped weight loss for them previously. Some of the personalities exhibited more personal confidence and extroversion than
others. One woman was very happy to talk freely and more loudly. I had to make sure that the more introverted group members had the opportunity to speak and voice their experiences and feelings.

This group as a whole came across as less confident than the evening groups. Most of the group did not appear to have much faith in themselves and openly talked about their negative feelings about themselves. One woman commented on 'loving oneself' and how by loving oneself life would be better. The others agreed with this comment, they too believed that they didn't love themselves.

The group spoke about how they put everyone else first and still felt guilty if they thought about themselves. They also talked about sorting everything out for their respective families but not leaving time to sort out their own requirements or needs. The requirements and needs that they spoke about included eating and drinking, making sure to eat at all, planning eating and drinking and giving time to eat food slowly. All of the women had dependants to look after either children or older relatives.

Some members of the group seemed more negative and resistant to change. They seemed less confident and less motivated to make lifestyle changes. When they had formed their own chosen action plan list they began to doubt their ability to achieve the actions. I confirmed that the actions were chosen by them so if they did not believe that they could achieve the tasks they should reduce or change the tasks set. They confirmed that they would stick with the tasks that they had set but they didn't sound confident or committed to achieving them.

The group appeared to gel however I came away from the group with doubt in my mind. I was concerned that they were just playing at weight loss. I had
concerns that the group may not return in the New Year and that they were not committed to the project. I myself felt quite drained by the negativity from the group and felt that I had been sapped of my own energy and enthusiasm.

To Dos for next meeting

Reflecting on the meeting I felt that I had to make sure that there would be sufficient time for motivational and empowering discussion and to find out what the women felt would help to spur them on. I could introduce comments from the other group meetings to stir up discussion and conversation.

What have you found that has helped you lose weight?

- Clubs (getting on the scales and it being recorded)
- Competition in a group
- Support/ reward of the group
- Variety of food/ exercise/ lifestyle
- Treats
- Goals to work towards e.g. birthdays
- Knowledge of healthy eating
- Planning
- Time/ ease
- Counselling
- Assessing goal weight

What hinders weight loss?
• Lack of motivation
• Time
• Not giving yourself time-out
• Workload
• Lack of planning
• Fast eating
• Not being able to sit down and enjoy food
• Lack of support
• Variety/boredom
• Hormones
• People's comments – positive and negative
• Portions
• Lack of fluids
Appendix 8
1) After actively participating in this study what are your personal views on using the Action Research process for designing a Weight Management Programme?

2) Could you recommend an alternative way to design a Weight Management Programme?

3) What bearing did the group have on the decision making process?

4) Were the strategies chosen by the group different to strategies you would have chosen alone?
5) If yes, please give examples of strategies you would not have chosen alone and strategies you would have chosen alone.

6) What are your thoughts on the strategies chosen by the group?

7) In hindsight, are there any strategies that you believe should have been included in the programme?

8) Which of the strategies do you believe you will continue?

9) How easy or difficult do you believe it will be to continue the strategies?

10) Are there any of the strategies chosen for the Weight Management Programme that you do not believe that you will continue at the end of the study? If yes, which?

11) Do you believe the 'group' had any positive or negative influence on individual Weight Management progress?

12) What benefits or problems do you believe group meetings create for the individuals attending?

13) What do you believe are the positives and negatives of meeting in a group for Weight Management?
14) How could group meetings be improved to promote individual success?

15) Do you have any recommendations for future Weight Management Programmes?

16) In what way has participation in this study affected you?

17) Do you have any further comments?

Thank you so much for your time and continued support of this study. You have been fundamental in progressing research into Weight Management.
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Appendix 9
WHAT HAVE YOU FOUND HELPFUL?

- Slimfast drink + fruit for lunch rather than sandwich.
- Support from others
- Incentive
- Understanding
- Routine
- Not restricted
- Walking
- Planning
- Wellbeing
- 3 meals a day

GROUP 1
WEEK 1
HINDERANCES TO WEIGHTLOSS

* Social Life
* Lethargy/Laziness
* Snacking
* Slow Results - Disappointment
* Fit in with family
* Comfort - TV Food
* Size of food portions
* Love of food
* Eat fast
* Temptation
* Injury - Unable to exercise
* Demoralising

GROUP 1
WEEK 1
<table>
<thead>
<tr>
<th>Foods Enjoy</th>
<th>Not Enjoy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Weight Watchers</td>
<td>1. Atkins</td>
</tr>
<tr>
<td>2. Bread</td>
<td>2. Cabbage Diet</td>
</tr>
<tr>
<td>3. Pasta</td>
<td>3. Detox</td>
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<tr>
<td>4. Potatoes</td>
<td>4. Slimming World</td>
</tr>
<tr>
<td>5. Cheese</td>
<td>5. Lack of Variety</td>
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<td>6. Chocolate</td>
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<td>7. Sausages</td>
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<td>8. Roast Dinner</td>
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<tr>
<td>9. Meat</td>
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<td>10. Soup</td>
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<td>11. Fish</td>
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<td>12. Fruit</td>
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<td>13. Curry</td>
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<td>14. Chinese</td>
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<td>15. Fish/Chips</td>
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<td>16. Sauces</td>
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</tbody>
</table>
Enjoyed  |  Not Enjoyed
---|---
1. Swimming  |  1. Gym
2. Cycling  |  2. Aerobics
3. Football  |  3. Running
5. Dancing  |
6. Gym / Aerobics (other)  |
7. Running (with music)  |
8. Badminton  |
9. Walking, with purpose  |
10. Skipping  |
11. Yoga  |
12. Pilates  |
13. Cricket  |
14. Rounders  |
15. Golf  |
HARD

socialising /drinking
Slow eating
Exercise

EASY

Sleep
Drinking water
Exercise
Planning
HARD
Exercise - Finding Time
Eating Slowly - Habit - Remembering
Drinking Water.

SUCCESS
Drinking Water
Planning
WEIGHT PLATEAU

BE AWARE LONG TERM PLAN
LOOK AT LOSS ACROSS A YR NOT A WK
SMALL LOSSES STILL BENEFICIAL
REGULARLY MONITOR WEIGHT ON SCALES, TAPE, CLOTHES

- INCREASE EXERCISE - 30 MIN PER WK MORE THAN BEFORE
- CHECK PORTION CONTROL - IT MAY HAVE CREST UP
- SEE HOW FAR THEY'VE COME - ENJOY NEW SHAPE, BUY NEW CLOTHES
- STRATEGIES MAY HAVE SLIPPED
- HAVE SEPARATE MEETING WITH LEADER
  REFLECT ON EVERYDAY LIFE - WHAT HAS CHANGED
  ANXIETY COMES + GOES + AFFECTS EATING NO MATTER HOW SMALL
WHAT CAN YOU DO WHEN YOU PLATEAU.
INCREASE EXERCISE, BY 20 MINS.
REDUCE PORTION SIZE.
CHECK AGAIN YOU ARE FOLLOWING STRATEGIES.
CHANGE ONE THING AT A TIME TO SEE WHICH HELPS.
WOULD YOU LIKE TO WEIGH MORE OFTEN?
NO.
MAY OPT TO BE MEASURED AS YOU CAN LOSE INCHES ETC. BUT NOT LOSE WEIGHT OR PLATEAU.
INCREASE MEETING?
NO.
INCH MEASUREMENTS ONCE EVERY 3MTHS
THEN PERHAPS AT PLATEAU
Group 1

Weight Management

Weekly meetings

Support

Help from family

Planning meals

Increase water intake

Exercise

Monitor weight loss

Enjoy eating

Cook from scratch

Daily

Fortnightly rather than weekly

07/01/20
Was has hindered us?

- Children
- Contentment
- Stress
- Money (lack of)
- Yo-Yo dieting
- Sugar cravings
- Portions size
- PMT
- Laziness
- Drinking (Alcohol & pop)
- Seasons, e.g. Christmas/Easter etc.
- Other people's habits
- Fussy eater
- Allergies
- Time (8 was!)
- Commitment/Attention span
- Lack of variety
- Range of different diets
- Lack of support from others
- Temptation
- Self-power
- Time
- Time of eating dinner
What has helped us to lose weight?

* Knowing I am going to be weighed
* When I have lost weight it keeps me motivated
* Needs to be told what to do
* Books
* Calorie counting
* Logging what we ate & showing it to someone
* Keeping it simple
* Interest in a sport
* Someone to keep me motivated
* Running
* Info about exercise
* Someone to support me
* Holidays | Before & After
* Stress
* Slimming pills

GROUP 2

WEIGHT
EXERCISE
90 MINS TO STAR
Broken down to manageable chunk
INCREASE - Personal Choice by how much + when.
AIM TO 150 MINS
CHOSING SOMETHING YOU ENJOY!

SLOW EATING
EATING ATTABLE + SOCIAL
EATING HELPS SLOW DOWN
PORTION CONTROL - EAT LESS FULLEQ QUICKER

PLANNING
PLAN CONTINGENCY
IF FAILS, EVERYTHING HARDER
NOT NECESSARILY WRITTEN DOWN - IN HEAD

* ROUTINE *
* HABIT *

FRUIT + VEG
CAN BE INCREASED BIT BY BIT depending on life style
NATIONALLY RECOGNISED AS BENEFICIAL
STOP SNACKING ON CHEESE ETC.
FILLS YOU UP
PANN IT - FIT AROUND TOILET STOPS.

PORTION CONTROL
MORE EASIER EQUATION.

WATER
Group 2: Weight Management Strategies

Exercise - Aerobic, build up gradually

Not waiting too late to eat, fat evening meals

Portion Control - Gradually, reduced to hunger

Planning meals

Healthy Snacking - Nuts, fruit, natural yogurt, seeds

Good fluid intake - Hot drinks, water, not sodas

Group Meetings - Initially weekly, then fortnightly, then taper, every 3 months

Measurements - Scales every meeting, tape every 3 months

Not banning any foods - be kind to yourself

PMT - Be aware of weight fluctuations, no guilt

If it will pass, be kind to self
Hard
- Exercise
- Eating on time
- Converting Partner

Easy
- Snacking to do (hard to avoid)
- Exercise
- Breakfast
- Avoid certain food

GROUP: 10/01/07
Physical
- Intensity/duration - gives target to work to/why.
  - Life style
  - Centre based (2)
  - Home based (1)
  - Pedometers (1)

Diet
- Low calorie diet
- Low fat
- Low sugar.

Steps over eating <-> Diet diaries --> focus too much on diet
Some 'don't need it - pain'!

Water consumption - hardest thing to do.

Breakfast, lunch, dinner (need to individualise)

Reduce soda/juice as not problem

Group 2
07/03/07

Positive for some

Community based.
- Heart rate monitors could possibly be.

Activity log - another thing to think about - does not add stress by not doing it.
GROUP 2: POSITIVES
07/03/07

Using mirror
- Physical evidence, shock!

Regular weighing
- Fortnightly (not jumping on evidence every set scales you use)

Clothes fit
- Loose fitting = good indicator = confidence boosts

Programming physical activity
- Planning - have to go!

SUPPORT
All positive - depends on individual needs.
Incentive to carry on
- Healthy competitiveness between individuals
Don't want to be the 'one' to put on weight.
A friendly ear, someone who knows what you are doing.

NEGATIVES

Avoidance of trigger foods
- Be aware of, try reduction around you. Planning.

Reduction fats/sugars
- Be aware, flavoured at base weight
you will alter intake.
WHAT CAN YOU DO WHEN YOU: PLATEAU.
INCREASE EXERCISE. by: 20 mins.
REDUCE PORTION SIZE.
CHECK AGAIN YOU ARE FOLLOWING STRATEGIES.
CHANGE ONE THING AT A TIME TO SEE WHICH HELPS.
WOULD YOU LIKE TO WEIGH MORE OFTEN
NO.

MAY OPT TO BE MEASURED AS YOU CAN LOSE INCHES
etc. BUT NOT LOSE WEIGHT OR PLATEAU.

INCREASE MEETING ?
NO.

INCH MEASUREMENTS ONCE EVERY 3MTHS
THEN PERHAPS AT PLATEAU
How often should meetings be.
Good to start off weekly, for 3 weeks. Majority want to meet every two weeks but a few like weekly. Some people may want to meet weekly for support. If you miss a meeting it means you have gone a month without support.
Every two weeks or option to weigh weekly should you wish to.
What have you found that has helped you lose weight?

- Clubs (getting on the scales and it being recorded)
- Competition in a group.
- Support/reward of the group.
- Variety of food/exercise/lifestyle.
- Treats
- Goals to work towards e.g. birthdays.
- Knowledge of healthy eating.
- Planning
- Time/leave
- Counselling

Group 3
What hinders weight loss:

- lack of motivation
- time
- not giving yourself time-out
- workload
- lack of planning
- fast eating
- not being able to sit down and enjoy food.
- lack of support
- variety / boredom
- hormones
- people (comments)
- portions
- lack of fluids
WEIGHT MANAGEMENT

FACE TO FACE
  WHALE INS.
    WEEKLY
DIARY
  MEETINGS
    GROUP
EXERCISE
  WEEKLY
LIFESTYLE
  SHORT BURSTS
  PURPOSEFUL
WALKING
  FACE TO FACE
    GROUP
    BUDDIES

PLATE SIZE
  PORTION SIZE
  WATER CONSUMPTION
    3 MEALS A DAY
  5-A DAY

FAT/SUGAR CONTROL
  AVOID TRIGGER FOODS
DIARY
  REWARDS
  EMPATHY
  COMMON EXPERIENCES
  HABITIVE THINKING
  SUPPORT
  WEEKLY
GROUP 3

PHYSICAL ACTIVITY
p/hr - NO
knowledge iad YES
lifestyle - YES
centre based - NO
home based - YES
community based - NO
activity log - YES

Behaviour therapy
avoid trigger foods - YES
reduce fats/sugars - YES
using a mirror - NO - creates depression
regular weigh-in - WEEKLY - YES
checking tightness of clothes - NO
programming physical activity - YES

DIET
Low cal - YES
V. L. cal - NO
Low fat - YES
Low sugar - YES
diet diaries - YES
Water consumption - YES
Juice/soda consumption - YES
breakfast/lunch/dinner - YES

Support
telephone - NO
internet - NO
buddies - YES
Group - YES
Family - NO
Friends - NO

PERSONAL
Colleagues - NO
Face-to-face - YES