The Effects of a Structured Diet and Exercise Intervention on Psychological Variables and Fitness Measures in Post-Bariatric Surgery Patients: Project REACH

Thesis

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Abstract

There is a growing obesity epidemic in the United States and increasing numbers of individuals are turning to bariatric surgery as the solution. Fifty percent of patients regain weight after 48 months and post-surgical programs targeting behavior modification are not available at every surgery site. Project REACH (Relearn how to Eat, increase Activity and Create better Habits) was a newly developed intervention aimed at bariatric surgery patients 2-years post surgery who are struggling to maintain their weight loss. The purpose of this pre-experimental study was to analyze the effects of this 12-week exercise and diet plus counseling intervention on psychosocial and fitness variables. Eight participants self-selected into the program in the winter of 2010 and four completed the posttest. Large effects (Cohen’s d) for changes in several variables were found. Social Support for Eating from family, cardiorespiratory endurance (6 min. walk test), and Self-Regulation for Goal-Setting had large positive effects. We concluded post-surgical programs that foster social support, include in-class exercise and counseling, and target self-regulation skills have the potential to prevent regaining weight. Future research should focus on this understudied population and incorporate healthy eating technology, multiple groups, and longer duration into an experimental study.
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Chapter 1: Background

The Center for Disease Control and Prevention (CDC, 2005) reported the leading causes of death in the United States in 2005 were heart disease, cancer, stroke, chronic lower respiratory diseases, accidents, and diabetes. Obesity, defined as a body mass index (BMI) of 30 or greater can be linked to heart disease, cancer and stroke, and is a serious health concern in itself (CDC, 2005). In addition, obesity is a concern because it increases the risk of hypertension, osteoarthritis, dyslipidemia, type II diabetes, coronary heart disease, stroke, gallbladder disease, sleep apnea and respiratory problems, and some cancers including endometrial, breast, and colon (CDC, 2007). It is a health concern that is increasing in prevalence and cost.

The prevalence of obesity in the United States among adult males has slightly increased from 31.3% in 2003-2004 to 32.2% in 2007-2008 (Flegal, Carroll, Ogden, & Curtin, 2010). Among adult women nationwide, the prevalence of obesity slightly increased from 33.2% in 2003-2004 to 35.5% in 2007-2008. In 2007, 35.4% of Ohio adults were overweight and 28.1% were obese (CDC, 2007). The CDC estimates the United States spent $75 billion dollars on obesity-related medical problems in 2003. These costs were passed on to taxpayers through Medicare and Medicaid (Herper, 2006).

A lack of physical activity and poor nutrition are responsible for 300,000 premature deaths yearly in the United States. Lack of physical activity can also be attributed to an increase in health care costs from chronic diseases and conditions
associated with a sedentary lifestyle, such as obesity. Americans living with chronic illnesses account for 60% of all medical costs (Ohio Public Health Association, 2003).

Physical activity, diet modifications, group counseling, or commercial weight loss programs can reduce both the financial and health costs associated with obesity if patients are able to successfully lose weight and maintain their loss. Another option obese people are turning to for weight loss is bariatric surgery, which is any weight loss surgery that can reduce the amount of food an individual’s stomach can hold, or prevent the digestive system from absorbing all of the nutrients from food, or a combination of these two outcomes (Hydock, 2005). Behavior modification programs that address successful weight loss maintenance techniques are necessary prior to and post-surgery in order to ensure patient success (Kral, 2001).

Purpose

The purpose of this study was to analyze the effects of a newly developed 12-week exercise and diet plus counseling intervention on psychosocial and fitness variables in post-bariatric surgery patients. Participants were volunteers who enrolled in the winter 2010 session of Project REACH (Relearn how to Eat, increase Activity and Create better Habits) a program for post-bariatric surgery patients in need of additional information on exercise, diet and behavior modification techniques.

Research Objectives

Primary Research Objective: To analyze the effects of a 12-week exercise and diet plus counseling behavior change intervention on psychosocial variables (i.e.,
attitudes toward eating behavior, social support for eating and social support for exercise, diet and lifestyle self-efficacy, self-regulation for exercise planning and scheduling, self-regulation for goal setting, self-esteem) and fitness variables (i.e., BMI, body weight, strength, cardiorespiratory endurance, waist and hip circumference, waist to hip ratio) in post-bariatric surgery patients.

Secondary Research Objective: To measure the relationships among changes in psychosocial variables targeted in the intervention and fitness outcomes.

**Definition of Terms**

BMI: Body Mass Index is a number calculated from a person’s weight and height used as a standard for disease risk using the formula: weight in kg divided by height in m².

Normal BMI ranges from 18.5-24.9 (CDC, 2009).

Obesity: Obesity is defined as having a BMI > 30.

Morbid Obesity: Morbid obesity is defined as having a BMI > 40.

Social Support: Social support is defined as reassurance, validation and acceptance from friends and/or family concerning positive health changes. For this project, social support was defined in respect to tangible and intangible support from family and from friends for healthy diet and exercise.

Bariatric Surgery: Bariatric surgery is any weight loss surgery that reduces the amount of food the stomach can hold, or prevents digestive system from absorbing nutrients, or a combination of these two outcomes.

**Limitations**
The limitations of this study include location, sample size, and participant selection. The intervention’s sample size was limited by available classroom space. There was only one group and participants self-selected into the intervention.

**Basic Assumptions**

This intervention was limited to individuals over the age of 18, who had bariatric surgery at least 2-years prior, and considered themselves in need of additional information concerning exercise, diet and behavior modification techniques specific to bariatric surgery patients.
Chapter 2: Literature Review

Data from the National Weight Control Registry (Van Dorsten & Lindley, 2008) and the American College of Sports Medicine (ACSM) (Donnelly, Blair, Jakicic, Manore, Rankin, & Smith, 2009) indicate that adherence to regular exercise is one of the keys, along with nutrition management, to maintaining weight loss long-term. The literature on exercise adherence indicates mediating effects of self-efficacy, social support, and self-regulation skills on exercise behavior change and maintenance (Baranowski, Anderson, & Carmack, 1998; Hallam, & Petosa, 2004). Patients in behavior modification programs must work towards increasing social support networks, regular physical activity, internal motivation for weight loss, and finally the ability to focus on positive outcomes related to weight loss in order to be successful in weight loss and maintenance (Foreyt & Goodrick, 1990). Weight loss programs typically include information about exercise and nutrition along with instruction in self-regulation, but usually do not consider psychological influences. Weight management programs need to address psychological dynamics (Van Dorsten & Lindley, 2008), especially considering associations between weight gain and psychological stress (Block, Yulei, Zaslavsky, Ding, & Ayanian, 2009).

Several studies have findings that indicate the importance of psychosocial factors in weight loss and maintenance. In order to find common factors associated with weight loss, Roberts and Ashley (1999) interviewed patients who visited a small, rural physicians’ practice and had successfully maintained 10% weight loss over eight years to
find common factors associated with weight loss maintenance. Patients cited that new perceptions of self and positive feelings were most commonly associated with successful weight maintenance. Specifically, self-generated positive feedback was most commonly mentioned in qualitative interviews as a primary reason for weight maintenance, and one-third of patients interviewed named support from spouse and friends and support from surgery staff as a factor (Roberts & Ashley, 1999).

Another study that addressed long-term weight loss maintenance was an intervention titled STOP Regain and involved three different methods of weight loss, very low-calorie diet (VLCD), commercial program, or a self-guided approach (Pinto, Gorin, Raynor, Tate, Fava, & Wing, 2008). The purpose of this study was to look at the relationship between method of weight loss and long-term maintenance. Participants had to have lost at least 10% of their body weight in the two years prior to enrollment using one of these three methods. These individuals were randomized into one of three types of intervention delivery: face-to-face, Internet, or newsletter. This intervention was based on self-regulation. Pinto et al. (2008) found that the VLCD individuals entered the intervention with the most weight lost, but also the fewest participants who maintained it compared to the other two methods. Only 21% of the VLCD group was maintaining their weight lost at six months into the intervention compared to 75% and 76% of individuals maintaining in the other two groups. The VLCD group also regained the most weight during the first six months and continued to gain throughout the 18-month intervention. Researchers found no differences between the three groups in self-reported dietary intake,
physical activity, or depressive symptoms, so they hypothesized that it was the method of weight loss that influenced weight maintenance. Pinto et al. (2008) suggested the possibility of other important factors influencing weight maintenance. Certain personality characteristics might have led people to choose certain methods; for example the VLCD group may not have had the confidence in themselves to self-guide their weight loss or to join a commercial support group. Lack of confidence could have contributed to their failure. In addition, the self-guided weight loss group was the only group to have maintained weight lost over the 18-month intervention (Pinto et al., 2008).

Franz, et al. (2007) conducted a meta-analysis of weight loss clinical trials to inform health care professionals of the most successful method of weight loss for continued maintenance. Eighty randomized clinical trial articles met inclusion criteria of greater than one-year follow-up, published between 1997-2004, and included at least one of the following weight loss methods: advice-alone, diet-alone, exercise-alone, diet and exercise, meal replacements, very-low-energy diets, orlistat, or sibutramine. Diet alone was the most commonly found method in the research trials. After synthesizing the data, researchers found interventions that included some type of diet information including, diet-alone, diet and exercise, and meal replacements, were the most successful. Participants in these programs lost an average of 5-8.5 kilograms and maintained an average of 3-4 kilograms loss without weight regain over a 48-month period. It should be noted that very-low-energy diets had the most dramatic weight loss as well as most dramatic weight regain out of all of the methods. Exercise-alone was not successful in
weight loss, but did prevent weight regain. Researchers also found behavioral modification methods in nearly all of the studies reviewed and noted mediators were self-monitoring, goal setting, stimulus control, reinforcement, cognitive change, problem solving, relapse prevention, stress management and social support. Franz et al. (2007) concluded that weight loss interventions should follow the American Dietetic Association’s Adult Weight Management Evidence-Based Nutrition Practice Guidelines, which include a comprehensive weight-loss program that addresses physical activity, diet and behavioral modification in order to produce modest results and maintenance.

**Bariatric Surgery**

Many obese patients are turning to surgery in order to reap the benefits of weight loss. Bariatric surgery refers to any weight loss surgery that can reduce the amount of food an individual’s stomach can hold, or prevent the digestive system from absorbing all of the nutrients from food, or a combination of these two outcomes (American Society for Metabolic and Bariatric Surgery, 2008). The number of bariatric surgeries performed in the US has increased between the years 1990-2000. The rate of bariatric surgery has increased from 2.4 to 14.1 per 100,000 adults from 1990-2000 and gastric bypass is the most commonly performed surgery (Trus, Pope & Finlayson, 2005). The increase in bariatric surgeries reflects the growing rates of grade 2 (BMI ≥ 35) and grade 3 (BMI ≥ 40) obesity. In 2007-2008, 10.7% of men and 17.8% of women were classified at grade two obesity, and 4.2% of men and 7.2% of women were at grade three obesity (Flegal, Carroll, Ogden, & Curtin, 2010).
Only bariatric patients that are well informed, motivated and willing to participate in pre and post-operative programs should be considered for surgery to maximize long-term outcomes. According to the literature, surgeons’ selection of patients should consider both safety during surgery and long-term outcomes. Long-term outcomes are not influenced by the technical aspects of surgery, so patient selection is especially important (Kral, 2001). Patients’ lifestyle and behavior choices after the surgery, specifically diet and exercise choices, influence weight-loss outcomes and if the patients selected understand that concept, there is a greater possibility for success. Potential surgical candidates should be self-motivated enough to exercise, improve nutritional habits and attend behavioral modification meetings post surgery (Smiertka, 1994; Walsh, Albano, & Jones, 2008). Candidates should be able to comply with this postoperative regimen; although to date there are not methods to evaluate their post-operative potential (Kral, 2001). According to Kral (2001), bariatric surgeries require a necessary change in eating and exercise. Therefore, pre- and post-operative education and behavior modification programs are especially important. Psychosocial risk factors, including denial, childhood abuse, negative life events, snacking, drug and or alcohol use, and codependence are also concerns for affecting postoperative results for potential surgical patients. Positive psychosocial factors that enhance postoperative outcomes include marriage, employment, realistic expectations, higher education, knowledge of eating rules, and social support (Kral, 2001).
During most pre-bariatric surgery programs, healthcare professionals recommend patients attempt to lose weight prior to surgery, and although it may not translate to long-term weight losses, or weight maintenance, it is beneficial for teaching patients to adopt healthy exercise and eating habits (Mohamed et al., 2007). Medical personnel including surgeons, nurses, dietitians, and psychiatrists should work together as a team in order to provide patients continuity of care and help them successfully manage their outcomes in the long-term (Kral, 2001; Walsh et al., 2008).

Although numerous research articles show weight loss success from the surgery, most articles do not report long-term follow-up of patients. One study that did include long-term results was a five-year gastric bypass prospective study conducted to compare weight losses at 18-months post-surgery to weight losses at 24, 36, 48, and 60-months post surgery (Magro, Geloneze, Delfini, Pareja, Callejas, & Pareja, 2008). The authors cited significant weight losses up to 18-months post surgery until 24 months when it was no longer significant. Weight regain became significant after 48 months within 50% of patients. Obesity is associated with chronic disease and disability, and weight regain is often accompanied by a loss of health benefits achieved with initial weight loss (Shah, Simha, & Garg, 2006). Thus, maintenance of weight loss is a critical health goal.

Two potential problems that can be linked to poor long-term outcomes are inadequate patient knowledge and psychosocial maladaptation (Knol, 1994). There is limited research on post-bariatric programs that addresses exercise and psychological
issues because the majority of interventions focus primarily on nutrition, although there is evidence that self-esteem and emotional eating predict weight loss in this population (Canetti, Berry, & Elizur, 2009).

Post-operative visits and communication and support from nutritionists are cited as important post-operatively, but formal post-operative behavior modification programs are not often included in the literature (Walsh et al., 2008). Tucker, Samo, Rand, and Woodward (1991) conducted a behavioral intervention and followed bariatric surgery patients for two years. Outcomes were evaluated between a treatment group and a control group. Both groups received pre-surgery information, but the treatment group was received detailed educational materials every two weeks for 24 weeks post-surgery in the mail and attended six monthly behavior consultations focused on lifestyle and eating behaviors. Results following the intervention showed patients in both groups lost weight the first year after surgery and weights stabilized the second year. Researchers noted no differences in weight losses between the two groups and hypothesized a more intensive treatment that is longer in duration might be necessary for severely obese individuals. One positive outcome for the treatment group was that they reported increased daily physical activity as well as improved marital and familial relationships satisfaction (Tucker et al., 1991).

**Self-Regulation**

Self-regulation, specifically self-monitoring is the cornerstone of behavior modification interventions that are specifically focused on diet and exercise (Baker &
According to Buckworth and Dishman (2002, p. 295), self-regulation is “ways in which people modify their own behavior.” One example of self-regulation is recording diet and exercise behavior. A study done by Helsel, Jakicic, and Otto (2007) looked at two different methods of self-regulation, one detailed and one brief, and the differences in weight loss on a group of overweight adults. One group wrote detailed diaries the entire intervention and the other group wrote detailed diaries from the start until week eight, then during weeks 8-16, they checked boxes to indicate their estimated amount of activity and calories per day. Both groups were mailed 16-weeks of behavior lessons and were told to keep weekly diaries of exercise and eating behavior. After participants mailed in their weekly diaries, they received feedback on their diaries within a week from researchers. At the end of the study, researchers found no significant differences between the two groups on weight loss, or the amount of diaries returned. They did find a correlation between a change in body weight and the number of diaries returned. Researchers concluded that the behavior of self-regulation, not the details of how it’s accomplished, is what is important in weight loss (Helsel et al., 2007).

Teixeira et al. (2010) conducted a study that focused on behavior modification techniques to identify the mediators of long-term weight loss success. Middle-aged women completed a year-long behavior modification intervention that included 30 treatment sessions focused on identifying barriers, relapse prevention, goal-setting, and self-monitoring. One year after treatment, researchers followed-up with participants and
re-tested psychosocial variables and weight. Half of participants lost at least 5% of their body weight and maintained weight losses. Researchers found the largest effect sizes in body image and eating self-regulation. They also found exercise self-efficacy was a good predictor of long-term weight loss. Researchers suggested the idea of “spill-over” where increased self-regulation in one aspect of health positively, or negatively affected another aspect of health. Researchers’ future recommendations included a focus on emotional eating and self-regulation for eating in weight-loss interventions (Teixeira et al., 2010).

Lim, Norman, Clifton, and Noakes (2009) conducted another study focused on a different aspect of self-regulation, goal-setting. The purpose of the study was to compare two groups, one of which received prescriptive lifestyle advice and the other received general lifestyle advice. The prescriptive advice group received a specific exercise prescription of 60-minutes of daily exercise and 1430 calorie diet. Members of this group also kept weekly logs to track eating and exercise. The general advice group was told to follow national healthy eating guidelines and aim for 30-minutes of moderate-intensity physical activity most days of the week. Both groups received biweekly counseling on weight loss progress and online newsletters that targeted behavior modification techniques. Lim et al. (2009) measured weight, food intake and psychological outcomes and found significant changes in the prescriptive group. There was significantly greater weight loss and improvements of psychological outcomes in the prescriptive group compared to the general advice group. There was also a higher attrition rate in the
prescription group and researchers hypothesized it was because of the rigid structure of the program (Lim, Norman, Clifton, & Noakes, 2009).

Social Support

Social support is a key construct found in numerous behavior theories used to motivate individuals to make changes in health behaviors. Social support can come in many forms and from many people. According to Thompson, Dorsey and Miller (2003, p. 265), it is an “umbrella term for providing a sense of reassurance, validation, and acceptance, the sharing of needed resources and assistance, and connecting or integrating structurally within a web of ties in a supportive network.” Social support also has ties to physical health and emotional well-being (Albrecht, Burleson & Sarason, 1992). Social support is a “consistently significant predictor of psychological adjustment and quality of life” (Canetti, Berry & Elizu, 2009, pg. 2). Social support can come in the form of direct or instrumental support, where one person provides assistance, or indirect support, where a person would provide encouragement and emotional support (Kurc & Leatherdale, 2009). Environmental change that promotes health is another form of social support, where people who are trying to make a behavior change need to change their social environment to include people who support and encourage their efforts for weight loss (Van Dorsten & Lindley, 2008). Social support is necessary at all stages of bariatric surgery, especially from patients’ partners, to encourage attendance at educational workshops and support groups and to help the patient begin to build a support network (Applegate & Friedman, 2008).
Wing and Jeffrey (1999) conducted a study to compare natural social support with created social support among individuals in a weight loss program aiming for long-term maintenance. Natural social support was defined as between people recruited for the study with three friends, and created social support was established between those recruited solo and placed on a team with three strangers. There were four research groups, two groups where participants were recruited solo, but one of those two groups received standard behavioral treatment (SBT) and the other received SBT plus social support. The other two groups were recruited in teams of four and one of those groups received SBT and the other received SBT plus social support. Researchers measured weight loss during the program and weight maintenance six months post treatment.

Everyone received treatment that consisted of weekly group meetings for 16 weeks, which were led by a nutritionist and behavior therapist. Participants were lectured on self-monitoring and energy intake, problem solving, assertion, stimulus control, developing social support, dealing with high-risk situations, and long-term maintenance strategies. The two groups that received SBT plus social support made team names, sat together, made a telephone chain, and completed other homework assignments, in addition to planning a group party at the end of the treatment. These two groups were encouraged to eat together and exercise together at least one time during the treatment. Researchers found most of the participants completed the whole program, but notably the completion rate for the group that was recruited with friends and received SBT plus social support was 98% compared to 79% for the group that was recruited alone and received only SBT.
They also found that participants who were recruited with friends regained less weight than their counterparts in other groups. Only 24% of the group recruited alone and received only SBT maintained their weight loss in the six months post-intervention compared to 66% of the participants who were recruited with friends and received SBT plus social support. The group recruited with friends and who received SBT plus social support lost 33% more weight at month 10 compared to the other groups. The researchers found contrasting results from the Sallis Social Support Scales for Eating and Exercise Behavior instrument. The group recruited with friends and receiving SBT plus social support demonstrated a modest negative association between family support for healthy eating and exercise and weight loss from the start of the treatment until month 10. In the same group of participants, social support from others in their group was positively associated with weight losses from baseline until month 10, which was the same result as the group that was recruited alone, but received SBT plus social support. Overall, the groups that received the social support whether recruited alone or with friends increased their weight loss maintenance and had a higher likelihood of completing the entire program (Wing & Jeffrey, 1999).

Bariatric patients could benefit from improved social support. One hospital utilized “bari-buddies,” or former bariatric patients who were successful to attend support groups with new patients in order to increase compliance with post-operative instructions (Walsh, Albano, & Jones, 2008). Another group of individuals who can provide positive or negative support post-surgery are spouses or romantic partners. Each set of partners
has their own communication style about diet and weight and their communication style can influence numerous aspects of the patients’ relationship post-surgery. Dynamics affected by partner communication style include the status of the relationship, perceived attractiveness, sexual intimacy, eating behaviors, and leisure-time activities (Applegate & Friedman, 2008). According to Applegate and Friedman (2008), partners of patients can be supportive of the post-operative changes, or can feel threatened or fearful of the future of their relationship. Feeling threatened can influence how the partner supports necessary changes in diet and exercise. Researchers suggest that partners should be included as much as possible in meetings, educational workshops and post-surgery support groups to increase communication, answer questions and proactively solve common problems (Applegate & Friedman, 2008).

Conclusion

The use of psychological counseling in conjunction with a traditional behavior modification intervention has not been previously reported for this population, despite the obvious need. Recent reports show that obesity particularly morbid obesity is on the rise, which parallels the increased rate of bariatric surgeries (Flegal et al., 2010; Trus et al., 2005). However, surgery is not always a long-term solution. A prospective study conducted by Magro et al. (2008) showed significant weight losses up to 18-months post surgery, but weight regain became significant after 48 months within 50% of patients. Rates of obesity and bariatric surgery are climbing and if only 50% are successful long-term, there is a need for socially supportive focused interventions that will target
underlying mental health needs in addition to providing information about diet and exercise and training in behavior regulation strategies.
Chapter 3: Methods

Research Design

The research design is a pre-experimental, one group, pre-test, post-test design.

Sample

A wellness center offered Project REACH for a minimum of eight participants and no more than 16 participants. The sample size for this study was a function of the program site’s size limitation. Participants had to be at least 2 years post-surgery as well as 18 years of age or older to participate in Project REACH and in this study.

Potential participants were identified and recruited from individuals who enrolled in Project REACH. Physicians and staff from the wellness center identified post-bariatric surgery patients who were 2 or more years post-surgery and were struggling to maintain weight loss. They informed patients who were eligible for the program about the opportunity to enroll in the study. Flyers were also posted in the wellness center to recruit potential participants. The intervention components were newly developed as part of a pilot study. The wellness center staff contacted patients who wanted to enroll in Project REACH and scheduled the pre-program assessment session. At the first session, the staff introduced the Principal Investigator (PI) to patients interested in volunteering for the study. The PI answered any questions about enrollment in the study and administered consent and HIPPA forms to volunteers before any data were collected. Staff members who conducted the assessments and the exercise physiologist who implemented the intervention were both blinded to study enrollment status.
Measurement/Instrumentation

The following fitness variables were measured as part of Project REACH: body mass index (BMI), weight (kg), waist and hip circumferences (cm), waist to hip ratio, strength (number of wall push-ups), and cardiorespiratory endurance (meters walked in 6 minutes).

Psychosocial assessments included social support for eating and social support for exercise, self-regulation for exercise planning and scheduling, and self-regulation for goal setting. Other psychosocial assessments that were included, but not a focus of the study included attitudes toward eating behavior, self-efficacy for diet and lifestyle, and self-esteem. Level of physical activity was assessed through self-report. All of the assessments were administered during week 1 (pre-test) and week 12 (post-test). A process evaluation of the intervention was administered during Week 12. Three of the four participants were unable to attend the final assessment, and a wellness center staff member contacted them individually to schedule time to complete the assessments.

Social Support. Social support for exercise and social support for diet were measured using two scales (Sallis, Grossman, Pinski, Patterson, & Nader, 1987). Each scale provides separate scores for support from family and support from friends. Participants rated the frequency of 13 statements related to support for exercise and 10 statements related to support for diet on a 5-point scale ranging from 1 (none) to 5 (very often) for family and friends separately. The Social Support for Eating Habits Survey has
two subscales, which indicate encouragement (sum of items 1 -5) and discouragement (sum of items 6 -10).

**Self-Regulation Skills.** Two scales were used to measure self-regulation skills related to exercise and physical activity: Exercise Planning and Scheduling Scale (EPS) and Exercise Goal Setting (EGS). These scales were developed by Rovniak, Anderson, Winett, and Stephens (2002) to assess planning and scheduling exercise as part of one’s daily routine, and to determine participation in goal setting, self-monitoring, and problem solving related to exercise. Each scale has 10 items that participants rated on a 5-point scale ranging from 1 (*does not describe*) to 5 (*describes completely*). Cronbach’s alphas of .87 for EPS and .89 for EGS were reported, and test-retest reliability was .89 for EPS and .87 for EGS (Rovniak et al., 2002).

**Godin Leisure-Time Exercise Questionnaire.** Level of physical activity was measured using the Godin Leisure-Time Exercise Questionnaire (Godin & Shephard, 1985). Participants reported the number of 15-minutes, or longer bouts of activities that are strenuous, moderate, and mild during a typical week. An activity score is computed using the following formula:

\[
(# \text{ strenuous} \times 9) + (# \text{ moderate} \times 6) + (# \text{ mild} \times 3)
\]

**Process Evaluation of the Intervention.** A customized process evaluation questionnaire was used to examine participants’ ratings of aspects of the intervention, including the practicality of a 2-hour weekly meeting, the effectiveness of the in-class exercise component, and the helpfulness of the counseling portion of each session.
Descriptive data and comments from this questionnaire will be used to make adjustments to Project REACH for the future.

Other instruments administered, although the variables measured were not necessarily targeted during the intervention, were the Rosenberg Self-Esteem Scale, Three-Factor Eating Questionnaire-Revised (TFEQ-R18V2) and Diet/Lifestyle Self-Efficacy Questionnaire.

**Procedures**

Data collection occurred during all aspects of the Project REACH program. The newly developed intervention consisted of one 2-hour session per week for 12 weeks. During the first week (pre-test, Week 1) and the last week (posttest, Week 12), participants completed population specific fitness testing, which included assessments of weight, height, body circumference, waist to hip ratio, strength, and cardiorespiratory endurance. They also completed questionnaires to measure social support, self-regulation skills, and physical activity. At enrollment, each participant was assigned an identification number to keep personal identity confidential. Any and all the data collected were filed and analyzed according to this number. Only the primary investigator, co-investigators and key study personnel had access to the participant’s name and corresponding number assignment, which were kept separate from study data. The wellness center staff administered the assessments. The participants were reminded they could leave survey questions blank if they felt uncomfortable answering certain questions. The posttest included a process evaluation questionnaire to provide
information about modifying the intervention to improve outcomes and patient satisfaction.

An exercise physiologist implemented strategies to promote healthy eating and exercise during weeks 2-11, although a registered dietitian and former bariatric surgery patient led class discussion during weeks 3 and 7, respectively. The general structure of program sessions was one hour of cognitive behavioral modification, nutrition counseling and physical activity, followed by one hour of a closed counseling session with a licensed counselor. The exercise physiologist led each session during the first hour, and the dietitian led the session that directly addressed nutrition and dietary choices. The exercise portion included in-class practice of warming up and cooling down, cardiorespiratory and resistance training, water aerobics and yoga. A licensed counselor led the second hour, which was a closed session during which the psychological issues that can be barriers to successful weight loss and maintenance in this population were addressed.

**Intervention**

The 10 content sessions newly developed for this intervention included the following topics in order. Table 10 in Appendix A shows each class session and the psychosocial/behavioral variables targeted.

1. Self-Monitoring and Goal Setting. The first content session included an icebreaker where participants shared information about their surgery experience that led them to Project REACH. Next, participants completed detailed goal worksheets and asked for the support of another participant and/or the instructor.
Finally, exercise records were handed out and explained so they could log their exercise and eating in future weeks.

2. Diet Refresher / Mindful Eating. The registered dietitian led this session, which reminded participants of how they should be eating specific to their surgeries. The registered dietitian reviewed the exchange system and discussed healthy meal replacement bars, ways to sneak in fruits and vegetables, and healthy beverage choices. Handouts were distributed covering the information and a specific caloric need was calculated for each participant. During the last part of this session, the exercise physiologist taught participants a dynamic warm-up for home and/or gym use. Participants completed the warm-up in pairs and were given a handout with illustrations of the exercises to take home.

3. Cardiorespiratory Programming: The exercise physiologist discussed the most recent weight loss recommendations from ACSM and asked participants to share their ideas about the health benefits of cardiorespiratory workouts. The instructor also discussed the FITT (Frequency, Intensity, Time, Type) principle as a specific example of how much cardiorespiratory exercise should be completed and at what intensity per week. Email and telephone information were gathered and shared in order to cultivate support through weekly check-ins amongst group members. Finally the participants chose a cardiorespiratory machine, either a treadmill, recumbent bicycle, or NuStep™ and completed 10-15 minutes of aerobic exercise.
4. Time Management, Scheduling, and Online Resources. Participants were encouraged to track workouts online using mapmyrun.com, fitday.com, and other online programs. Participants also completed a scheduling activity using a worksheet and colored pencils to find hours in the day to complete workouts. They were asked to color household and family time, work, social and free time. The white space left could be devoted to exercise. The participants also completed 15-20 minutes of aerobic exercise together after the discussion.

5. Resistance Training. The exercise physiologist explained the benefits of resistance training for participants’ metabolism and types of resistance training. She gave participants a handout with strength training exercises to complete at home. Participants revisited the goals set at the first session in order to revise as needed. The class ended with participants using the gym to learn proper lifting techniques and actively participated in resistance training.

6. Social Support for New Exercise/Eating Habits. The exercise physiologist taught participants to solicit support for exercise and healthy eating through group discussion of typically challenging situations. Scenarios that described barriers to healthy behavior were discussed as a group. For example, in one scenario, a co-worker wanted a participant to attend happy hour after work instead of going to exercise class. The group was asked how to effectively handle the situation and how to solicit support in order to overcome the barrier in this scenario. Participants ended the group session by completing the resistance training
exercises from the previous week with a partner in order to be supported in their exercise routines.

7. What’s your Reflection? & Healthy Relationships. The exercise physiologist asked a guest speaker, a former bariatric surgery patient who had successfully lost and maintained her weight loss, to discuss exercise, body image issues, self-esteem and relationship changes that commonly occur after surgery. The class structure was an informal discussion related to post-surgical issues the speaker faced and her use of exercise to overcome them. The group participated in circuit training at the end of class. Participants completed three 5-minute bouts of aerobic exercise, then completed two sets of 15 repetitions for two resistance training exercises and repeated these routines for 20 minutes.

8. Stress and Stress Relief. The exercise physiologist discussed positive and negative stressors, what causes stress and how to prevent it, and individual perceptions of stress. Following the stress discussion, she initiated an interactive discussion where a stressful situation was presented and participants were asked for their methods of coping. The class ended with a gentle yoga class for flexibility and as another form of stress relief and healthy coping.

9. Relapse Prevention/ Barriers to Exercise. The exercise physiologist encouraged participants to list what they perceived to be barriers encountered thus far during the program and to brainstorm solutions to those barriers. The group supported each other’s future health goals and solutions if they were shared. A handout that
described the most important messages to remember from each class was passed out and discussed. Finally, class ended with a water aerobics session for exercise.

10. Last Session: Review and Final Party. The participants gathered and reflected on the previous ten weeks of self-reflection, exercise and hard work. The exercise physiologist told the class there was a final list of tasks to be completed and passed out a list of exercises that included: three miles on the treadmill, 50 modified pushups, 50 Cook Hip Lifts, five miles on the stationary bicycle or NuStep,™ and 20 pull-ups. After the participants received the handout and recognized the amount of exercise to be completed as overwhelming individually, they were told that the group as a whole was to complete these tasks. For example, each distance they walked individually on the treadmill was added to reach the three miles. Thus they worked as a group to complete the exercises. The take-home message was social support is essential in the completion of daunting tasks.

Validity

There were several threats to internal and external validity. To reduce the potential internal threat of mortality, or a loss of subjects, the 10 content sessions and exercise prescription were individualized to ability level. Potential participants were also informed about the entire program before committing to Project REACH. History threat, or the potential of events to occur during the study that would have affected the
participants’ responses was also a possibility. The study took place during the winter, so adverse weather conditions could not be controlled.

There were also threats to external validity related to population validity. First, sample bias issues could occur from subjects not completing their surveys, or non-response error. In order to reduce this threat, wellness center staff were available at alternate times to collect questionnaires and fitness data. This study was not randomized, participants self-selected into the intervention and there was only one group. These limitations reduce the generalization to the target population. Replication could improve this threat, or randomization of participants to multiple groups in future studies.
Chapter 4: Data Analysis

Preliminary analyses were conducted to provide baseline characteristics of the participants’ age, BMI, weight (kg), waist and hip circumferences (cm), waist to hip ratio, strength (# of wall pushups), cardiorespiratory fitness (m. walked in 6 min), and level of physical activity. Descriptive statistics (means and standard deviations) for the baseline psychosocial variables are also reported. For the first aim, paired sample t-tests were conducted to determine the significance of differences from the pre-test to the post-test. Because of the small sample size, Cohen’s $d$ was used as a measure of effect where $\leq 0.20$ is a small effect, $0.50$ is a medium effect, and $\geq 0.80$ is a large effect. The posttest scores were subtracted from the pretest scores to calculate $d$, which means that a positive $d$ value represents a decrease in the variable and a negative $d$ value represents an increase in the variable.

Results

Demographics

At pre-test our sample population ($N = 8$) was women between the ages of 39 to 68 years who had bariatric surgery at least 2-years prior to enrolling in the program. At pre-test the relationship status of the participants included: six of the women were married, one was single (never married) and one was divorced. Their living situations included: four lived with their spouse and children, one lived with their spouse only, two lived alone and one lived with other relatives. Their employment status included three who did not work, two worked part-time and three worked full-time.
Table 1 shows baseline demographic characteristics mean and SD for each variable. Table 2 shows baseline fitness characteristics mean and SD and Table 3 shows baseline psychosocial characteristics for each targeted variables. See Table 4 in Appendix A for variables that were not focused on during the intervention, but tested.

<table>
<thead>
<tr>
<th>Characteristic</th>
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<th>SD</th>
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<tr>
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<tr>
<td>Weight (kg)</td>
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<tr>
<td>Height (m)</td>
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<tr>
<td>Body Mass Index</td>
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<td>Waist (cm)</td>
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<td>Hip (cm)</td>
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<td>Waist to Hip Ratio</td>
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<td>0.059</td>
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Table 1. Baseline Demographic Characteristics (N = 8)
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>SD</th>
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<tbody>
<tr>
<td>Godin-Strenuous</td>
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<td>0</td>
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<tr>
<td>Godin-Moderate</td>
<td>1.06</td>
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<td>Godin-Mild</td>
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<tr>
<td>Godin-Total</td>
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<td>12.31</td>
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<tr>
<td>Strength, count Wall Pushups</td>
<td>30.13</td>
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<tr>
<td>Cardiorespiratory Endurance, m. 6 min walk test</td>
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Table 2. Baseline Fitness Characteristics (N = 8)

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<td>Social Support Exercise-Friends</td>
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<td>Social Support Eating-Family: Discouragement (n=7)</td>
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<tr>
<td>Social Support Eating-Family: Encouragement (n=7)</td>
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<td>Social Support Eating-Friends: Discouragement</td>
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<tr>
<td>Social Support Eating-Friends: Encouragement</td>
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<td>4.92</td>
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<tr>
<td>Exercise Planning and Scheduling</td>
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<tr>
<td>Exercise Goal Setting</td>
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<td>0.46</td>
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</table>

Table 3. Baseline Psychosocial Characteristics: Social Support and Self-Regulation (N = 8)
Posttest

Four participants posttested and four dropped out. One dropped out after the first class without reason, two dropped out during the intervention because of time constraints and the fourth completed the intervention, but did not complete the posttest fitness assessment or questionnaires. Data analysis using Paired Samples t-test and Cohen’s $d$ showed a large effect in some variables and medium effect in others. A large effect was found for Social Support for Eating and Self-Regulation for Exercise Goal Setting. Social Support for Eating encouragement subscales (friends, $d = 0.83$; family, $d = -0.87$) demonstrated large effects, while discouragement had a small effect. Exercise Goal Setting ($d = -1.02$) had a large effect. Pre-post difference in Social Support for Exercise from family and friends and Self-Regulation for Exercise Scheduling and Planning had small effects. Changes in cardiorespiratory fitness ($d = -1.68$), weight ($d = 0.75$), and BMI ($d = 0.77$) had large to medium effects. The Godin total showed a medium effect ($d = -0.63$) as did Godin-Strenuous ($d = -0.5$), Godin-Mild ($d = -0.52$), while Godin-Moderate showed a small effect ($d = -0.33$). Medium effect was found for strength ($d = -0.54$). Small effects were found for changes in waist ($d = 0.05$) and hip ($d = 0.46$) circumference measurements. Tables 4, 5 and 6 show paired samples $t$-test and values for Cohen’s $d$ for demographics, fitness, and psychosocial variables. See Table 8 in Appendix A for the psychosocial variables tested, but not focused on during the intervention.
<table>
<thead>
<tr>
<th>Characteristic</th>
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<th>Pre</th>
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<th>Post</th>
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<td>Body Mass Index</td>
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<td>3.33</td>
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<td>Waist (cm)</td>
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<td>Hip (cm)</td>
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Table 4. Demographic Characteristics paired samples $t$-test and values for Cohen’s $d$ ($N = 4$)

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<th>Post</th>
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<tbody>
<tr>
<td>Godin-Strenuous</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Godin-Moderate</td>
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<td>2.45</td>
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<td>Godin-Mild</td>
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<td>Godin-Total</td>
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<td>63.64</td>
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<td>Strength, count Wall Pushups</td>
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<td>39.75</td>
<td>14.84</td>
<td>-1.09</td>
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<td>Cardio. Endurance, m. 6 minute walk test</td>
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Table 5. Fitness Characteristics paired samples $t$-test and values for Cohen’s $d$ ($N = 4$)
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<tr>
<td>Social Support Exercise-Family</td>
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<td>4.93</td>
<td>17.67</td>
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<td>1.51</td>
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<td>11.75</td>
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<td>Exercise Goal Setting</td>
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<td>.14</td>
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Table 6: Psychosocial Characteristics paired samples t-test and values for Cohen’s d: Social Support and Self-Regulation (N = 4)
Chapter 5: Discussion

Bariatric surgeries are on the rise, which is not surprising considering obesity, particularly morbid obesity, is on the rise (Flegal et al., 2010; Trus et al., 2005). Bariatric surgery requires dietary changes immediately post-surgery and life-long behavioral changes for diet and for exercise for continued weight loss and maintenance, yet there is not a screening process to determine who might be more successful in making behavior changes, and who might not (Kral, 2001). Magro et al. (2008) conducted a prospective study that showed significant weight losses up to 18-months post surgery, but weight regain became significant after 48 months within 50% of patients. If 50% of patients are unsuccessful after 48 months, one can hypothesize that the lack of individuals’ ability to change behavior could be a contributor. Knol (1994) concluded that poor weight loss outcomes are linked to psychosocial maladaptation. Pre-surgical programs are designed to help patients cope with surgery, but most programs focus only on post-surgical care specific to diet (Walsh et al., 2008). Diet is important and emotional eating has been linked to weight gain, but other psychosocial factors are influential; for example, self-esteem has also been linked to weight loss in bariatric surgery populations (Canetti et al., 2009). Pre-surgical programs lack information on exercise and the psychological aspects of having weight-loss surgery, and post-surgical programs are virtually non-existent (Walsh et al., 2008). Many surgical centers offer support groups, but that format cannot address individualized exercise, diet and psychological assistance necessary to overcome barriers and succeed long-term. Tucker et al. (1991) conducted a post-surgical program
with mailed materials and monthly behavioral consultations, but concluded a more intensive treatment was necessary. There is a void for bariatric surgery patients in need of life-long support for behavior change. Well-designed post-surgical programs can help fill that void.

Post-surgery programs should be a required part of the bariatric surgery process given the risk of regaining weight over time. We believe that post-programs can provide information and support for individuals at a time when they might be more open to learn. Based on observations from the wellness center staff involved with Project REACH, pre-surgery patients often have unrealistic expectations for themselves, but two years after surgery, patients have had time to learn what is necessary in order to maintain their surgical weight loss. Two necessary topics to learn about are exercise and diet because both are linked to long-term weight loss (Donnelly et al., 2009; Van Dortsen & Lindley, 2008). Project REACH individuals participated in exercise during the intervention. Active participation of exercise versus discussion-only teaching benefits individuals who learn kinesthetically and allows individuals to overcome barriers of fear and negativity. Positive exercise experiences can reinforce behavior change. For example, one woman overcame her fear of falling off a moving treadmill by walking with the group leader by her side at the start of the intervention and eventually walking alone.

The effect sizes for most of the fitness variables were large. A large effect size was found for increased cardiorespiratory endurance (1.68) and nearly large effects were found for reductions in weight (0.75) and BMI (0.77). Medium effects were found for
increases in Godin Total physical activity (-0.63), Godin Mild activity (-0.52) and Godin Strenuous activity (-0.5). Participants exercised weekly as part of the intervention and set physical activity goals at the start of the program. Participants learned about how to properly complete cardiorespiratory and strength programs, warm-up, stretch and to vary the intensity of their programs using circuit training and intervals. Hip and waist circumference measurements had small effect sizes possibly because changes in body composition take longer than 12 weeks and greater weight changes are necessary for there to be a significant effect on body composition (Ursula, Zhang, Morabia, & Pichard, 2006). The large effect sizes for most of the fitness variables coupled with process evaluation comments have brought us to the conclusion that discussion should not be the only teaching method used in a post-bariatric surgery group.

Large effects were shown for increases in self-reported exercise, but there are other important variables that should be considered. Self-efficacy, social support, and self-regulation skills have been shown in exercise adherence literature to have a mediating effect on exercise behavior change and maintenance (Baranowski et al., 1998; Hallam, & Petosa, 2004). Project REACH targeted those mediators, specifically exercise goal setting and exercise scheduling and planning. Exercise goal setting had a large effect (-1.02), yet exercise planning and scheduling did not. Setting specific goals and keeping exercise and food records are both linked to weight loss and our participants were encouraged to participate in both (Teixeira et al., 2010; Lim et al., 2009). Goal setting was revisited weekly and participants were encouraged to make their goals dynamic. For
example, participants started each session by sharing what they had accomplished towards their goals and if they were unhappy with progress, then they were encouraged to change their goals to better suit their current place in life. Exercise planning and scheduling were targeted in one class discussion, but more time could have been spent on this topic. We also encouraged self-regulation by handing out a log and asking participants to use it by explaining the potential benefits to weight loss. The exercise physiologist asked weekly if anyone had kept logs they would like to have analyzed and only one participant turned in a log once during the intervention. The record-keeping aspect of the intervention should be improved. It is possible participants felt they did not successfully schedule and plan exercise, although there was some evidence of improvements to cardiorespiratory endurance and strength. Participants might have been successful in scheduling physical activity, but perceived they were not better at scheduling.

Social support was another mediator of exercise behavior change and maintenance that was targeted in our intervention (Baranowski et al., 1998; Hallam, & Petosa, 2004). Bariatric surgery patients, and in particular those who have regained weight, are in need of support for numerous reasons. First social support has been shown to have ties to physical health, well-being and psychological adjustment (Albrecht et al., 1992; Canetti et al., 2009). Secondly, the behavioral aspects of bariatric surgery require support throughout all stages (Applegate & Friedman, 2008). Finally, research supports the value of social support in weight management; Wing and Jeffrey (1999) conducted a
weight loss intervention and found that participants in the groups that received social support had the highest likelihood to complete the program and be successful in weight loss. Roberts and Ashley (1999) reported that new perceptions of self, positive feelings, positive self-generated feedback and support from friends and family were patients’ reasons for maintaining weight loss.

Social support was a major aspect of Project REACH. Participants started the first group session by learning each other’s names and the reasons for participating. The second hour of counseling allowed participants a chance to work on their psychological issues pertaining to weight loss, and also a chance to see each other in vulnerable moments and provide support. This intervention did not allow rolling enrollment, which gave the participants weeks to get to know each other. There is some evidence that the relationships grew as the weeks passed; they asked why someone was missing when they did not attend, and during the third week, participants asked the group leader to make a contact list in order to call, email, or text each other during challenging and positive moments of their week. Participants were encouraged to find a buddy in class who would offer them support. This buddy signed their goal sheets in support of their goals for the intervention and encouraged them throughout the 12 weeks. All of these class components could have contributed to the large effect in increased social support for eating encouragement from family (-0.87), although there was a large effect in decreased support from friends (0.82). One possible explanation for this decrease is a discussion that took place during the class that targeted social support. Participants openly discussed
the negative feedback received from some friends and co-workers. They each shared a personal conversation with individuals who had expectations for them to fail post-surgery. For example, this person would ask if they had regained their weight yet, and participants agreed they felt people in their lives were hoping for their failure. Social support for exercise from family and friends and social support for eating discouragement both had a small effect sizes.

In order to make improvement for future interventions, a process evaluation was administered week 12 of the intervention. Participants responded on a Likert scale of 1-5 (5 being the most positive) to statements specific to the intervention components. We reviewed the overall score and individual items of the process evaluation and the mean scores are listed in Table 9 in Appendix A. The overall mean score for the process evaluation was 3.68 out of 5, 5 being the most favorable. On the process evaluation there was an area designated for comments and all four post-tested participants wrote in comments. These comments in addition to data analysis scores helped determine what improvements can be made to the intervention. The participants commented on exercise during class, providing social support to other participants, the nutrition component of class, and the guest speaker. Some comments are listed below.

A participant wrote, “Make this (Project REACH) part of the required program.” Two examples of positive exercise experiences written on the process evaluation included one participant asked for “more dynamic group exercising,” on her process evaluation and another stated to “keep yoga, swimming.” One participant
suggested we move the social support class earlier in the intervention and wrote, “if you don’t plan social support, you won’t be as successful.”

Aspects of the intervention they believed should be improved include the nutrition component, guest speaker, and counseling. On the process evaluation, participants noted that the nutrition discussions could have been more “regular” and “advanced.” Participants were not in favor of the guest speaker. For example an individual wrote, “Instead of someone being successful first time around find someone that lost/gained and lost again to speak to class.” Another participant said, “don’t bring her back, I was more disheartened than encouraged by her.” The comments related to the counseling sessions included a suggestion they include, “More focus on barriers to successful weight loss, motivation, self-esteem, sabotage, etc.” Another participant mentioned individualized time to check in could be useful because “food/weight can bring up a lot of emotional baggage.”

Changes can be made to the intervention, not only based on the participants’ opinions, but also the data results. Project REACH overall was successful for individual patients and showed large effect in fitness variables, goal-setting, and social support, yet improvements can be made. First, the diet component of the intervention could be expanded. Diet was discussed in this intervention during one class, but specific mediators of diet behavior change were not targeted. The effect sizes were small for the TFEQ-V2 subscales of uncontrolled eating (0.36) and emotional eating (-0.53) and a large decreased effect was found for cognitive restraint (-0.73). The diet and lifestyle self-efficacy
measurement also showed a small effect (-0.23). Setting specific nutrition goals, after listening to a nutrition discussion that is more tailored, and also participating in hands-on nutrition lessons could help.

Another aspect that could be improved is our choice of guest speaker. As previously mentioned on the process evaluation, participants were not favorable of our speaker choice. The guest speaker was a former bariatric surgery patient who was successful. Participants felt someone who struggled and then overcame, which is more closely related to their path, would be more beneficial. Modeling is an important source of self-efficacy information (Buckworth & Dishman, 2002, pg. 217) and a model more like the participants could better foster an increase in self-efficacy.

Finally, self-esteem is another variable that should be targeted in future interventions. Effect sizes were small for self-esteem (0.19), yet post-programs still need to address it because of its potential influence on long-term change and mental health. For example, the STOP Regain intervention found that a lack of confidence contributed to failure in weight-loss programs (Pinto et al., 2008). According to processing meetings with the licensed counselor, the Project REACH participants were hard on themselves and quicker to point out personal failures compared to personal successes, so these issues were targeted in the counseling hour of the intervention. According to the licensed counselor of our intervention, self-esteem can contribute to long-term success, but could take awhile to change and she recommended individualized therapy as a possible solution.
In the future, more research should be conducted with this population, especially as obesity continues to be a growing problem in the United States. Research should pertain to pre and post-surgical programs and target useful mediators of diet and exercise, such as social support and goal setting. Nutrition, self-esteem and self-efficacy for diet and lifestyle should also be targeted. Further experimental research is needed to compare types of interventions, possibly incorporating more technology, or support programs directly after surgery. This is an under-studied population in need of our attention and support, and future research results could translate to greater success post-surgery for the patients.
References


Disorders, 42, 109-117.


<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>SD</th>
</tr>
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<tbody>
<tr>
<td>Three Factor Eating Questionnaire-Version 2-cognitive restraint</td>
<td>2.43</td>
<td>0.44</td>
</tr>
<tr>
<td>Three Factor Eating Questionnaire-Version 2-uncontrolled eating</td>
<td>2.16</td>
<td>0.55</td>
</tr>
<tr>
<td>Three Factor Eating Questionnaire-Version 2-emotional eating</td>
<td>2.76</td>
<td>0.78</td>
</tr>
<tr>
<td>Diet and Lifestyle Self-Efficacy</td>
<td>60.38%</td>
<td>0.18</td>
</tr>
<tr>
<td>Rosenberg Self-Esteem</td>
<td>28.25</td>
<td>7.40</td>
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</table>

Table 7. Baseline Psychosocial Demographics: TFEQV2-18, Self-Efficacy, Self-Esteem (N = 8)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Pre</th>
<th>Pre</th>
<th>Post</th>
<th>Post</th>
<th>t</th>
<th>p</th>
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<td>2.15</td>
<td>0.19</td>
<td>2.03</td>
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<td>0.71</td>
<td>.53</td>
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<td>3.00</td>
<td>0</td>
<td>3.03</td>
<td>0.47</td>
<td>-0.11</td>
<td>.92</td>
<td>0.05</td>
</tr>
<tr>
<td>Diet and Lifestyle Self-Efficacy</td>
<td>0.51</td>
<td>0.11</td>
<td>0.54</td>
<td>0.18</td>
<td>0.38</td>
<td>.73</td>
<td>-0.23</td>
</tr>
<tr>
<td>Rosenberg Self-Esteem</td>
<td>24.00</td>
<td>6.38</td>
<td>23.50</td>
<td>8.70</td>
<td>0.38</td>
<td>.73</td>
<td>0.19</td>
</tr>
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</table>

Table 8. Psychosocial Characteristics paired samples t-test and values for Cohen’s d: TFEQV2-18, Self-Efficacy, Self-Esteem (N = 4)
<table>
<thead>
<tr>
<th>Statements</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The group sessions I attended were helpful.</td>
<td>4.00</td>
</tr>
<tr>
<td>2. My time as a participant has been enjoyable.</td>
<td>4.25</td>
</tr>
<tr>
<td>3. The program helped me to overcome barriers to being physically active.</td>
<td>3.25</td>
</tr>
<tr>
<td>4. Since becoming a participant I know more about how to keep physically active.</td>
<td>3.75</td>
</tr>
<tr>
<td>5. The second hour of the weekly sessions helped me psychologically.</td>
<td>3.25</td>
</tr>
<tr>
<td>6. The program helped me to overcome barriers to making healthy food choices.</td>
<td>2.25</td>
</tr>
<tr>
<td>7. My partner was supportive. ( (N = 3) )</td>
<td>4.30</td>
</tr>
<tr>
<td>8. I would tell a friend to become a participant in a program like this.</td>
<td>4.25</td>
</tr>
<tr>
<td>9. I was able to achieve my physical activity goal during the program.</td>
<td>3.25</td>
</tr>
<tr>
<td>10. I am able to do more things I want to do since starting the program.</td>
<td>3.50</td>
</tr>
<tr>
<td>11. I prefer to do physical activity in a group setting.</td>
<td>3.50</td>
</tr>
<tr>
<td>12. I would participate in the program again.</td>
<td>3.75</td>
</tr>
<tr>
<td>13. I was able to meet my dietary goals during the program.</td>
<td>3.00</td>
</tr>
<tr>
<td>14. The in-class exercise was fun.</td>
<td>4.00</td>
</tr>
<tr>
<td>15. The 2-hour session format was the right length of time.</td>
<td>4.25</td>
</tr>
<tr>
<td>16. The 12-week format was a good length.</td>
<td>4.00</td>
</tr>
<tr>
<td>17. The program met my expectations</td>
<td>3.50</td>
</tr>
</tbody>
</table>

Table 9. Process Evaluation Mean Scores \( (N = 4) \)
<table>
<thead>
<tr>
<th>Session</th>
<th>Variables Targeted</th>
<th>Session</th>
<th>Variables Targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Cardiorespiratory Endurance</td>
<td>Social Support, Ex. Planning and Scheduling, Cardiorespiratory Endurance, Goal-Setting, Overcoming Barriers</td>
<td>8. Stress</td>
<td>Social Support, TFEQV2-18, Ex. Planning and Scheduling</td>
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<tr>
<td>4. Time Management</td>
<td>Social Support, Cardiorespiratory Endurance, Ex. Planning and Scheduling, Goal-Setting</td>
<td>9. Relapse Prevention</td>
<td>Social Support, Self-Esteem, Goal-Setting</td>
</tr>
</tbody>
</table>

Table 10. Intervention Table
APPENDIX B: IRB APPROVAL LETTER
August 15, 2009

Protocol Number: 2009H0185
Protocol Title: THE EFFECTS OF A STRUCTURED DIET AND EXERCISE INTERVENTION PLUS GROUP COUNSELING ON PSYCHOLOGICAL VARIABLES AND FITNESS MEASURES IN POST-BARIATRIC SURGERY PATIENTS, Janet Buckworth, Caroline A. Carducci, Shirley A. Kendrick, Dean J. Mikami, Katelyn J. Moser, Bradley J. Needelman, Dara P. Schuster, Kay N. Wolf. School of Physical Activity & Educational Services

Type of Review: Initial Review – expedited
IRB Staff Contact: Carolyn Haganian
614-688-0560
Haganian.5@osu.edu

Dear Dr. Buckworth,

The Biomedical IRB APPROVED BY EXPEDITED REVIEW the above referenced research. The Board was able to provide expedited approval under 45 CFR 46.104(b)(1) because the research presents minimal risk to subjects and qualifies under the expedited review category(s) listed below.

Date of IRB Approval: August 14, 2009
Date of IRB Approval Expiration: August 14, 2010
Expedited Review Category: 5

If applicable, informed consent (and HIPAA research authorization) must be obtained from subjects or their legally authorized representatives and documented prior to research involvement. The IRB-approved consent form and process must be used. Changes in the research (e.g., recruitment procedures, advertisements, enrollment numbers, etc.) or informed consent process must be approved by the IRB before they are implemented (except where necessary to eliminate immediate hazards to subjects).

This approval is valid for one year from the date of IRB review when approval is granted or modifications are required. The approval will no longer be in effect on the date listed above as the IRB expiration date. A Continuing Review application must be approved within this interval to avoid expiration of IRB approval and cessation of all research activities. A final report must be provided to the IRB and all records relating to the research (including signed consent forms) must be retained and available for audit for at least 3 years after the research has ended.

It is the responsibility of all investigators and research staff to promptly report to the IRB any serious, unexpected and related adverse events and potential unanticipated problems involving risks to subjects or others.

This approval is issued under The Ohio State University’s OHRP Federalwide Assurance #00066378.

All forms and procedures can be found on the ORP website – www.erp.osu.edu. Please feel free to contact the IRB staff contact listed above with any questions or concerns.

Kara Zadnik, OD, PhD, Chair
Biomedical Institutional Review Board
APPENDIX C: INFORMED CONSENT and HIPPA FORMS
The Ohio State University Consent to Participate in Research

Study Title: The effects of a structured diet and exercise intervention plus group counseling on psychological variables and fitness measures in post-bariatric patients

Principal Investigator: Janet Buckworth, PhD

Sponsor: n/a

- This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate. Please consider the information carefully. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to participate.

- Your participation is voluntary. You may refuse to participate in this study. If you decide to take part in the study, you may leave the study at any time. No matter what decision you make, there will be no penalty to you and you will not lose any of your usual benefits. Your decision will not affect your future relationship with The Ohio State University. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

- You may or may not benefit as a result of participating in this study. Also, as explained below, your participation may result in unintended or harmful effects for you that may be minor or may be serious depending on the nature of the research.

- You will be provided with any new information that develops during the study that may affect your decision whether or not to continue to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form. You are being asked to consider participating in this study for the reasons explained below.

1. Why is this study being done?

Many people who have bariatric surgery are very successful with weight loss during the first year after the surgery. Over time, some of these people find themselves getting out of exercise and nutrition habits and are struggling to maintain their weight loss. There are very few programs to help people keep from regaining weight two or more years after bariatric surgery. We designed this study to test the effects of an exercise and diet plus counseling intervention on weight, other fitness variables, and psychological factors in post-bariatric surgery patients. We want to identify the best strategies to help bariatric surgery patients get back on track with diet and exercise to maintain their weight loss and even lose more weight.
2. How many people will take part in this study?

There will be at least 8 and no more than 16 people in this study.

3. What will happen if I take part in this study?

You will do everything that is part of participating in Project REACH (Relearn how to Eat, increase Activity, and Create better Habits), which is offered by the OSU Center for Wellness.

When you enroll in Project REACH, you will complete assessments of your fitness, attitudes, beliefs, perceptions, and self-management skills the first and last week of the 12-week program. You will attend weekly 2-hour educational and activity sessions during weeks 2 through 11 of the program. In these sessions, a registered dietitian and an exercise physiologist will provide information about diet and exercise especially for people who have had bariatric surgery. You will also learn practical behavior strategies to support healthy choices. Some days you will do mild strength training and aerobic exercise and learn exercises you can do at home. Research has shown that stress and other psychological barriers contribute to returning to unhealthy habits, so a licensed counselor will lead the second hour of the group sessions.

By agreeing to be part of this study, you allow us to collect your responses to the assessments and combine your information with that of other people in Project REACH who have agreed to be part of this study. We will analyze your group data to find out if the program is effective and what parts are more important to help with weight loss and maintenance for people who have had bariatric surgery.

4. How long will I be in the study?

Data collection for this study will last for 12-weeks.

5. Can I stop being in the study?

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University. If you stop participating in the study, you will still be able to continue in Project REACH.

6. What risks, side effects or discomforts can I expect from being in the study?

There is a very low risk that your study related information will not be kept confidential from allowing us to analyze your data. Other risks are part of being in Project REACH regardless of whether you are in the study or not. For example, psychological stress from
answering some of the questionnaires could be mild to moderate, and the risk is low. Possible long-term consequences are minimal considering the general nature of the information being gathered in this study. In addition, muscle soreness from unaccustomed physical activity may occur during the first 2 to 3 weeks of the program. This discomfort usually goes away as the body adapts to the training regime. There are no long-term negative consequences.

7. What benefits can I expect from being in the study?

There is no direct benefit because this is a data collection study. However, what you learn from this research may benefit future patients who have problems with weight loss following bariatric surgery.

8. What other choices do I have if I do not take part in the study?

You may choose not to participate without penalty or loss of benefits to which you are otherwise entitled. Not participating in this study will have no effect on your enrollment or involvement in Project REACH.

9. Will my study-related information be kept confidential?

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- U.S. Food and Drug Administration;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor supporting the study, their agents or study monitors, and
- Your insurance company (if charges are billed to insurance).

If the study involves the use of your protected health information, you may also be asked to sign a separate Health Insurance Portability and Accountability Act (HIPAA) research authorization form.

10. What are the costs of taking part in this study?

None.
11. Will I be paid for taking part in this study?

You will not be paid to take part in this study.

12. What happens if I am injured because I took part in this study?

If you suffer an injury from participating in this study, you should notify the researcher or study doctor immediately, who will determine if you should obtain medical treatment at The Ohio State University Medical Center. The cost for this treatment will be billed to you or your medical or hospital insurance. The Ohio State University has no funds set aside for the payment of health care expenses for this study.

13. What are my rights if I take part in this study?

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

You will be provided with any new information that develops during the course of the research that may affect your decision whether or not to continue participation in the study.

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

14. Who can answer my questions about the study?

For questions, concerns, or complaints about the study you may contact Janet Buckworth, PhD, at 614-292-0757, email jbuckworth@ehe.osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

If you are injured as a result of participating in this study or for questions about a study-related injury, you may contact Janet Buckworth, PhD, at 614-292-0757, email jbuckworth@ehe.osu.edu.
Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed name of subject: ____________________________ Signature of subject: ____________________________
Date and time: ____________________________

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent: ____________________________ Signature of person obtaining consent: ____________________________
Date and time: ____________________________

Witness(es) - May be left blank if not required by the IRB

Printed name of witness: ____________________________ Signature of witness: ____________________________
Date and time: ____________________________
THE OHIO STATE UNIVERSITY
AUTHORIZATION TO USE
PERSONAL HEALTH INFORMATION IN RESEARCH

Title of the Study:
The effects of a structured diet and exercise intervention plus group counseling on psychological variables and fitness measures in post-bariatric surgery patients

OSU Protocol Number:

Principal Investigator: Janet Buckworth, Ph.D.

Subject Name

Before researchers use or share any health information about you as part of this study, The Ohio State University is required to obtain your authorization. This helps explain to you how this information will be used or shared with others involved in the study.

- The Ohio State University and its hospitals, clinics, health-care providers and researchers are required to protect the privacy of your health information.
- You should have received a Notice of Privacy Practices when you received health care services here. If not, let us know and a copy will be given to you. Please carefully review this information. Ask if you have any questions or do not understand any parts of this notice.
- If you agree to take part in this study your health information will be used and shared with others involved in this study. Also, any new health information about you that comes from tests or other parts of this study will be shared with those involved in this study.
- Health information about you that will be used or shared with others involved in this study may include your research record and any health care records at the Ohio State University. For example, this may include your medical records, x-ray or laboratory results. Psychotherapy notes in your health records (if any) will not, however, be shared or used. Use of these notes requires a separate, signed authorization.

Please read the information carefully before signing this form. Please ask if you have any questions about this authorization, the University’s Notice of Privacy Practices or the study before signing this form.

Initials/Date: ___________________

Page 1 of 3
Those Who May Use, Share And Receive Your Information As Part Of This Study

• Researchers and staff at The Ohio State University will use, share and receive your personal health information for this research study. Other Ohio State University staff not involved in the study but who may become involved in your care for study-related treatment will have access to your information.

• Those who oversee the study will have access to your information, including:
  • Members and staff of the Ohio State University’s Institutional Review Boards, including the Western Institutional Review Board
  • The Office for Responsible Research Practices
  • University data safety monitoring committees
  • The Ohio State University Research Foundation

• Your health information may also be shared with federal and state agencies that have oversight of the study or to whom access is required under the law. These may include:
  • The Food and Drug Administration
  • The Office for Human Research Protections
  • The National Institutes of Health
  • The Ohio Department of Human Services

The information that is shared with those listed above may no longer be protected by federal privacy rules.

Authorization Period

This authorization will not expire unless you change your mind and revoke it in writing. There is no set date at which your information will be destroyed or no longer used. This is because the information used and created during the study may be analyzed for many years, and it is not possible to know when this will be complete.

Signing the Authorization

You have the right to refuse to sign this authorization. Your health care outside of the study, payment for your health care, and your health care benefits will not be affected if you choose not to sign this form.

Initials/Date________________
• You will not be able to take part in this study and will not receive any study treatments if you do not sign this form.

• If you sign this authorization, you may change your mind at any time. Researchers may continue to use information collected up until the time that you formally changed your mind. If you change your mind, your authorization must be revoked in writing. To revoke your authorization, please write to:

Janet Buckworth, PhD  
A044 Phys Activ & Educ Srvs Bldg  
304 W 17th Ave  
Columbus, OH 43210  
or  
Jill Springer  
271 Meiling  
370 W 9th Ave  
Columbus, OH 43210

• Signing this authorization also means that you will not be able to see or copy your study-related information until the study is completed. This includes any portion of your medical records that describes study treatment.

Contacts for Questions

• If you have any questions relating to your privacy rights, please contact Jill Springer, 271 Meiling, 370 W 9th Ave, Columbus, OH 43210, Tel. 614-292-4767.

• If you have any questions relating to the research, please contact Janet Buckworth, PhD, A044 Phys Activ & Educ Srvs Bldg, 304 W 17th Ave, Columbus, OH 43210, Tel. 614-292-0757.

Signature

I have read (or someone has read to me) this form and have been able to ask questions. All of my questions about this form have been answered to my satisfaction. By signing below, I permit Janet Buckworth, PhD and the others listed on this form to use and share my personal health information for this study. I will be given a copy of this signed form.

Signature  
(Subject or Legally Authorized Representative)

Name

(Print same above)  
(If legal representative, also print relationship to subject)

Date__________ Time__________ AM / PM

Page 3 of 3
APPENDIX D: INSTRUMENTS
Project REACH:
Relearn how to Eat, increase Activity and Create better Habits

Background Information

Name ___________________________ Date ____________________

The following statements ask you to identify some basic information about yourself. Please fill in the blank or check the appropriate spaces.

1. Age: __________

2. Gender: ______Male ______Female

3. Ethnic Background: “X” all that apply
   ______ White (non-Hispanic)
   ______ Black (non-Hispanic)
   ______ Native American
   ______ Hispanic or Latino
   ______ Asian
   ______ Other: please specify __________________________

4. Do you work?
   ______ No
   ______ Part-time (total hours worked per week ____________)
   ______ Full-time
   ______ Job title: _______________________________________

5. Marital Status:
   ______ Single (Never married)
   ______ Married/partnered
   ______ Separated
   ______ Divorced
   ______ Widowed

6. With whom do you currently live? “X” all that apply
   ______ Alone
   ______ Spouse/domestic partner
   ______ Roommate(s)/friend(s)
   ______ Parent(s)/guardian(s)
   ______ Other relatives
   ______ Children
7. What is the highest level of education you completed?
   _____ Did not finish high school
   _____ Graduated from high school
   _____ Attained a GED
   _____ Some education after high school/GED
   _____ Associate's Degree
   _____ Bachelor's Degree
   _____ Master's Degree
   _____ Professional Degree
   _____ Doctoral Degree
   _____ Post-Doctoral Training

8. Date of bariatric surgery: _____ / _______ (month/year)

9. Do you know of any medical problems that might make it dangerous or unwise for you to participate in mild exercise? _____YES _____NO
   If YES, please explain: ______________________________________________________
   ______________________________________________________
   ______________________________________________________

2 of 12
Three Factor Eating Questionnaire – Revised 18-item

Directions: Circle the answer that best describes you.

1. When I smell a sizzling steak or juicy piece of meat, I find it very difficult to keep from eating, even if I have just finished a meal.
   Absolutely true        Mostly true        Mostly false       Definitely false

2. I deliberately take small helpings as a means of controlling my weight.
   Absolutely true        Mostly true        Mostly false       Definitely false

3. When I feel anxious, I find myself eating.
   Absolutely true        Mostly true        Mostly false       Definitely false

4. Sometimes when I start eating, I just can’t seem to stop.
   Absolutely true        Mostly true        Mostly false       Definitely false

5. Being with someone who is eating often makes me hungry enough to eat also.
   Absolutely true        Mostly true        Mostly false       Definitely false

6. When I feel blue, I often overeat.
   Absolutely true        Mostly true        Mostly false       Definitely false

7. When I see a real delicacy, I often get so hungry that I have to eat right away.
   Absolutely true        Mostly true        Mostly false       Definitely false

8. I get so hungry that my stomach often seems like a bottomless pit.
   Absolutely true        Mostly true        Mostly false       Definitely false

9. I am always hungry so it is hard for me to stop eating before I finish the food on my plate.
   Absolutely true        Mostly true        Mostly false       Definitely false

10. When I feel lonely, I console myself by eating.
    Absolutely true        Mostly true        Mostly false       Definitely false

11. I consciously hold back at meals in order not to gain weight.
    Absolutely true        Mostly true        Mostly false       Definitely false
Three Factor Eating Questionnaire, cont.

Circle the answer that best describes you.

12. I do not eat some foods because they make me fat.
   Definitely true   Mostly true   Mostly false   Definitely false

13. I am always hungry enough to eat at any time.
   Definitely true   Mostly true   Mostly false   Definitely false

14. How often do you feel hungry?
   Only at meal times   Sometimes between meals   Often between meals   Almost always

15. How frequently do you avoid "stocking up" on tempting foods?
   Almost never   Seldom   Usually   Almost always

16. How likely are you to consciously eat less than you want?
   Unlikely   Slightly likely   Moderately likely   Very likely

17. Do you go on eating binges though you are not hungry?
   Never   Rarely   Sometimes   At least once a week

18. On a scale of 1 to 8, where 1 means no restraint in eating (eating whatever you want, wherever you want it) and 8 means total restraint (constantly limiting food intake and never "giving in"), what number would you give yourself?

   1  2  3  4  5  6  7  8
   No restraint   Little   Some   Moderate   Considerable   Constant restraint
Social Support and Eating Habits

The following is a list of things people might do or say to someone who is trying to develop healthy eating habits. Some of the questions may not apply to you, but please read each statement and give an answer to every question.

Rate each question twice. Under Family, rate how often your family members and/or anyone living in your household has said or done what is described during the last 3 months. Under Friends, rate how often your friends, acquaintances, or co-workers have said or done what is described during the last 3 months.

**SAMPLE:**

<table>
<thead>
<tr>
<th>If my family rarely offers me fruit for a snack, and my friends very often do, I would answer like this:</th>
<th>Family</th>
<th>Friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offers me fruit for a snack.</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>None</th>
<th>Rarely</th>
<th>A few times</th>
<th>Often</th>
<th>Very often</th>
<th>Does not apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Please write one number from the rating scale shown above in each space:

During the past 3 months, my Family (or members of my household) or Friends have...

<table>
<thead>
<tr>
<th>1. Encouraged me not to eat “unhealthy foods” (cake, soda, chips) when I’m tempted to do so.</th>
<th>Family</th>
<th>Friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Discussed my eating habit changes with me (asked me how I’m doing with my eating changes).</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3. Reminded me not to eat high fat, high salt foods.</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4. Complimented me on changing my eating habits (“Keep it up”, “We are proud of you”).</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5. Commenced if I went back to my old eating habits.</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6. Ate high fat or high salt foods in front of me.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7. Refused to eat the same foods I eat.</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>8. Brought home foods I’m trying not to eat.</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>9. Got angry when I encouraged them to eat low fat, low salt foods.</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>10. Offered me food I’m trying not to eat.</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
**Diet/Life-Style Efficacy Questionnaire**

For the following questions please rate your confidence concerning the statements using the five-point percentage scale with 0% being no chance at all and 100% completely certain.

<table>
<thead>
<tr>
<th></th>
<th>0%</th>
<th>25%</th>
<th>50%</th>
<th>75%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I can maintain the diet that was recommended after surgery.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I can eat 5 to 6 mini-meals daily.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I can limit my food to recommended portions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I can eat high protein foods.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I can drink fluids in-between meals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I can avoid alcohol.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I can avoid caffeine.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I can resist high-calorie foods.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I can follow the recommended diet at restaurants.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I can resist peer-pressure when I eat.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I can follow a recommended diet at a party.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I can ask others to help support my new lifestyle diet changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I can ask others to help support my new lifestyle exercise changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I will reach my original goal weight.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. I can talk to my doctor about my weight.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I can change my diet for life.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Social Support and Exercise

The following is a list of things people might do or say to someone who is trying to exercise regularly. If you are not trying to exercise, then some of the questions may not apply to you, but please read statement and give an answer to every question.

Rate each question twice. Under Family, rate how often your family members and/or anyone living in your household has said or done what is described during the last 3 months. Under Friends, rate how often your friends, acquaintances, or co-workers have said or done what is described during the last 3 months.

**SAMPLE:**

*If my family rarely does physical activities with me, and my friends very often do, I would answer like this:*

<table>
<thead>
<tr>
<th>Family</th>
<th>Friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did physical activities with me.</td>
<td>2</td>
</tr>
</tbody>
</table>

Please write one number from the rating scale shown above in each space:

During the past 3 months, my Family (or members of my household) or Friends have...

<table>
<thead>
<tr>
<th>Family</th>
<th>Friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Exercised with me.</td>
<td>1.</td>
</tr>
<tr>
<td>2. Offered to exercise with me.</td>
<td>2.</td>
</tr>
<tr>
<td>3. Gave me helpful reminders to exercise. (“Are you going to exercise tonight?”)</td>
<td>3.</td>
</tr>
<tr>
<td>4. Gave me encouragement to stick with my exercise program.</td>
<td>4.</td>
</tr>
<tr>
<td>5. Changed their schedule so we could exercise together.</td>
<td>5.</td>
</tr>
<tr>
<td>6. Discussed exercise with me.</td>
<td>6.</td>
</tr>
<tr>
<td>7. Complained about the time I spend exercising.</td>
<td>7.</td>
</tr>
<tr>
<td>8. Criticized me or made fun of me for exercising.</td>
<td>8.</td>
</tr>
<tr>
<td>9. Gave me rewards for exercising (Bought me something or gave me something I like)</td>
<td>9.</td>
</tr>
<tr>
<td>10. Planned for exercise on recreational outings.</td>
<td>10.</td>
</tr>
<tr>
<td>11. Helped plan events around my exercise.</td>
<td>11.</td>
</tr>
<tr>
<td>12. Asked me for ideas on how they can get more exercise.</td>
<td>12.</td>
</tr>
</tbody>
</table>
## Exercise Planning and Scheduling

The following questions refer to how you fit exercise into your lifestyle. Please indicate the extent to which each of the statements below describes you by circling the corresponding number.

<table>
<thead>
<tr>
<th></th>
<th>Does not Describe</th>
<th>Describes Moderately</th>
<th>Describes Completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I never have enough time for exercise.
2. Exercise is generally not a high priority when I plan my schedule.
3. Finding time for exercise is difficult for me.
4. I schedule all events in my life around my exercise routine.
5. I schedule my exercise at specific times each week.
6. I plan my weekly exercise schedule.
7. When I am very busy, I don’t do much exercise.
8. Everything is scheduled around my exercise—both classes and work.
9. I try to exercise at the same time and same day each week to keep a routine going.
10. I write my planned activity sessions in an appointment book or calendar.
**Exercise Goal Setting**

The following questions refer to how you set exercise goals and plan activities. Please indicate the extent to which each of the statements below describes you by circling the corresponding number.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Does not Describe</th>
<th>Describes Moderately</th>
<th>Describes Completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I often set exercise goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. I usually have more than one major exercise goal.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. I usually set dates for achieving my exercise goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. My exercise goals help to increase my motivation for doing exercise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. I tend to break more difficult exercise goals down into a series of smaller goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. I usually keep track of my progress in meeting my goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. I have developed a series of steps for reaching my exercise goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. I usually achieve the exercise goals I set for myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. If I do not reach an exercise goal, I analyze what went wrong.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. I make my exercise goals public by telling other people about them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Godin Leisure-Time Exercise Questionnaire

Considering a 7-day period (a week), how many times on the average do you do the following kinds of exercise for more than 15 minutes during your free time? Write the appropriate number on each line.

a) STRENUOUS EXERCISE (HEART BEATS RAPIDLY)
(for example, running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, roller skating or blading, vigorous swimming, vigorous long-distance biking)

b) MODERATE EXERCISE (NOT EXHAUSTING)
(for example, fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, down-hill skiing, popular and folk dancing)

C) MILD EXERCISE (MINIMAL EFFORT)
(for example, yoga, archery, fishing from river bend, bowling, horseshoes, golf, snow-mobiling, easy walking)
Rosenberg Self-Esteem Scale

Read each of the 10 statements and then circle the appropriate number to the right of the statement to indicate how it best describes you. Please be sure to answer each item and try to be as honest and accurate as possible in your responses. Remember that there are no right or wrong answers.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel that I am a person of worth at least on an equal basis with others.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. I feel that I have a number of good qualities.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. All in all, I am inclined to feel that I am a failure.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4. I am able to do things as well as most other people.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5. I feel I do not have much to be proud of.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6. I take a positive attitude toward myself.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7. On the whole, I am satisfied with myself.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8. I wish I could have more respect for myself.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9. I certainly feel useless at times.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10. At times I think I am no good at all.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
**Project REACH:**
*Relearn how to Eat, increase Activity and Create better Habits*

**Process Evaluation** (Only Week 12)

The following statements refer to your experiences with Project REACH. Please indicate the extent to which the statements below describe you by circling a number for each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Do not Agree</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The group sessions I attended were helpful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. My time as a participant has been enjoyable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. The program helped me to overcome barriers to being physically active.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Since becoming a participant I know more about how to keep physically active.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. The second hour of the weekly sessions helped me psychologically.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. The program helped me to overcome barriers to making healthy food choices.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. My partner was supportive.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. I would tell a friend to become a participant in a program like this.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. I was able to achieve my physical activity goals during the program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. I am able to do more things I want to do since starting the program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. I prefer to do physical activity in a group setting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. I would participate in the program again.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. I was able to meet my dietary goals during this program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. The in-class exercise was fun.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. The 2-hour session format was the right length of time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. The 12-week format was a good length.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. The program met my expectations.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. What do you think should be added to the program?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. What do you think should be removed from the program?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You may add other comments on the back.
Name ____________________________ Date __________________

Project REACH:
Relearn how to Eat, increase Activity, and Create better Habits

Fitness Data Sheet

1. Weight ____________ (kg)
2. Height ____________ (m)
3. BMI ____________ [wt (kg) / ht (m²)]
4. Wall Push-ups ____________ (count)
5. 6-min. walk ____________ (m)
6. Circumferences:
   Waist __________________ (cm)
   Hips __________________ (cm)
APPENDIX F: INTERVENTION HANDOUTS
Goal setting is essential for progress and goals should be **SMART**.

**Specific**  
**Measurable**  
**Attainable/ Action Oriented**  
**Realistic**  
**Timely**

Use the directions and prompts below to begin thinking about the goals you would like to accomplish with the help of Project REACH.

**My Goal:**

Is my goal **specific**? For example: if your goal is weight loss, then to make the goal specific, state the number of pounds you would like to lose. If your goal is to exercise more, then state what “more” is to you, either number of days per week, or minutes per session.

**What makes my goal specific?**

Is my goal **measurable**? For example: if your goal is to get in shape, then how will you know once you are there? Is “in shape” weight loss, or a certain number days at the gym, or keeping up with your kids, spouse, or friend in recreation?

**How will I measure my goal and how will I know once it’s accomplished?**
Project REACH  

Goal Worksheet  

Week 1

Is my goal **attainable** while still being challenging? Are they possible within the time limits set based on where I am starting? For example: if you want to participate in a charity 5k, what things need to happen to prepare for that distance and is the race far enough away in order to accomplish those steps?

What steps, or actions are necessary to achieving my goal? Are those actions realistic?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Is my goal **realistic** and **relevant**? Think about these things: do you have the resources necessary to complete the goal? Is the goal health-related? Does this goal help you move towards the life you want? Will you have support in this goal?

Am I willing to make a commitment to the goal and the actions necessary? Why is this goal important to me?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Is my goal **timely**? Goals can be short and long-term, and often in making a long-term goal it is necessary to list short-term goals in the way there. Ensure yourself that you have time to complete the actions necessary to accomplish your goal, but it is not too much time that you forget about it altogether.

What is your goal’s deadline? How will I keep track of my goal along the way?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

After completing this sheet, please write your revised SMART goal below:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Project REACH

My SMART Goal:

Actions necessary for goal’s completion:

How will I keep track of my progress?

When will my goal be completed?

Who will support me in my goal?

This signature represents my support of my friend/spouse/family member’s goal

Signed
X ___________________________ Date ___________________________

This signature represents my commitment to this goal

Signed
X ___________________________ Date ___________________________
Project REACH Warm-up

Project REACH Warming Up

A proper warm-up is an essential start to any exercise routine. According to the American College of Sports Medicine (ACSM) it is one of the three basic components of any conditioning routine, along with the cool-down and work portions. Warming up is important because it prepares the mind, heart, joints and muscles for the work they are about to do and reduces the risk for injury. Although previously thought, we now know that static stretching is not a proper warm-up, but better for the cool-down. Cool-downs are also important to allow your body to recover and return to its normal temperature.

Our sample warm-up is listed below and can be substituted for cardiovascular activity of your choice for 5-10 minutes at 50% of the intensity intended during the “work” portion of your workout. You could also do both: dynamic movements and a cardio warm-up. Remember it’s a warm-up, so be gentle, listen to your body and don’t force the movements.

Leg Swings: front-to-back and side-to-side: 1x 10-12 repetitions each leg
Project REACH  

Warm-up  

Week 3

**Hurdle Step-Overs:** lift knee up as high as you can, then rotate to the side and put back down: 1x 10-12 each leg

![Image of Hurdle Step-Overs]

**Trunk Rotations:** feet positioned wider than your shoulders, extend your arms out to your sides and gently rotate from your trunk to face the opposite wall (this can also be done seated): 1x 10-12 each side

![Image of Trunk Rotations]

**Arm Circles:** with tall posture and knees slightly bent rotate your arms in a circles forward, then reverse: 1x 10-12 each direction

![Image of Arm Circles]
The MyActivity Pyramid for Adults is modeled after the USDA’s MyPyramid and is based on the 2008 Physical Activity Guidelines for Americans. It is designed to help adults aged 18-65 meet these guidelines. To learn more about these guidelines visit: The U.S. Department of Health and Human Services at www.health.gov/paguidelines

Lifestyle activities: As often as possible
- Pick an activity you like and one that fits your life.
- Some physical activity is better than none.

Aerobic activity: 150 minutes of moderate intensity each week or 75 minutes of vigorous intensity each week*
- What is a moderate-intensity activity?
  - You can talk while you do it, but you can’t sing.
- What is a vigorous-intensity activity?
  - You can only say a few words without stopping to catch your breath.
* Or do a combination of moderate- and vigorous-intensity activities.

Strength and flexibility: At least two times each week.
Strength: Include all major muscle groups. Perform 8-12 repetitions per set (1-3 sets).
Flexibility: Perform flexibility activities 2x week at least 10 minutes each day.

Inactivity: Limit Inactivity
- Screen time (television, computer, video games).
- Sitting longer than 60 minutes.
Research: Major research findings about the health benefits of physical activity from the Physical Activity Guidelines for Americans:

- Regular physical activity reduces the risk of many adverse health outcomes such as heart disease, type II diabetes, and some cancers.

- Most health benefits occur with at least 150 minutes (2 hours and 30 min.) a week of moderate-intensity physical activity.

- For additional health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or a combination of both.

- Additional benefits include lower risk of colon and breast cancer and prevention of unhealthy weight gain.

- People with disabilities can also benefit from physical activity.

Physical Activity Guidelines are also available for the following:
- Children and adolescents
- Older adults
- Women during pregnancy and the postpartum period
- Adults with disabilities
- People with chronic medical conditions
Project REACH  Map My...  Week 4

In order to increase our steps per day, not only by parking farther away at stores and
-taking the stairs, please find common points of interest to find how long it would take to
use our feet to get there.

Use one of the sites listed to map, or find the mileage, to the locations listed below.

www.googlemaps.com
  • Type in your home address, so googlemaps can find your home
  • Once found, choose the Get Directions link
  • Once the Start Address box pops up, type in the point of interest you’d like to find
  • Choose the point of interest, click Get Directions, and scroll down to see the
    mileage

Other fun sites for your use:
  • http://www.gmap-pedometer.com/
  • http://www.mapmyrun.com/

For each location, write the name of the point of interest and the corresponding mileage.

Grocery Store________________________________________

Park__________________________________________________

School________________________________________________

Post Office____________________________________________

Coffee Shop____________________________________________

Bar____________________________________________________
RPE, or rate of perceived exertion calls on both your mind and body to sense how hard you are working. Borg developed the scale in 1985 and it is used in both gym and clinical settings alike.

You can use the scale while you’re working out to measure your own perception of how hard you are working. Warm-up should be about a 7-10. The work portion of your workout can be anywhere from an 11-15 depending on the duration and intensity of your work. This number can be recorded on your workout logs and you can notice patterns of perceived effort as they relate to sleep, eating habits and fitness levels. Borg’s scale is below, along with an adapted version using 1-10.

Borg Scale
6  No exertion at all
7  Extremely light
8  Very light
10  Light
11  Somewhat hard
12  Hard (heavy)
13  Extremely hard
20  Maximal Exertion

10 Point Scale
0  Nothing at all
1  Very light
2  Fairly light
3  Moderate
4  Somewhat hard
5  Hard
6  Very hard
7  Very, very hard
Cardiorespiratory Benefits:
- Burns calories (aim to burn 250-300/exercise day)
- Increases endorphins, or “feel good” hormones
- Reduces stress, depression and anxiety
- Increases confidence and self-esteem
- Cardio that has impact on ground (walking, jogging) increases bone density
- Increases strength of heart and cardiovascular system
- Reduces risk of diseases: certain cancers, diabetes, heart disease
- Reduces blood pressure

RPE: Rate of Perceived Exertion
- One method to measure your intensity, or how hard you’re working
- On a 1-10 scale: 1=sleeping, 10=the hardest you can imagine

Activity Pyramid: aim for 10,000 steps/day
- Try to be more active during day, park farther away, walk to “run your errands”

FITT principle: applied to cardio
Frequency: most days of the week
Intensity: on 1-10 RPE scale 4-8
Time: aiming for 30-60 min, if starting with 0 min. start with 15-20 min, then increase
Type: walking, biking, elliptical, row machine, swimming, stair climbing

Goal: 150 min. of activity per week, or 30 min. on 5 days per week
- It can be 60 min. then 2-3 days if that’s easier to accomplish
- It can also be accumulated: 20 min. in the morning, 20 in the afternoon

How to burn more calories in less time? “Vigorous cardio”= RPE 7-9
- If you’re doing cardio for as much time as you have, but you need to challenge yourself more, then increase your intensity by increasing your incline, or speed (or resistance on a bike, or elliptical).
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Please reflect on your typical week in order to find time for exercise.

RED: household and family time
BLUE: exercise
GREEN: work
YELLOW: social and free time
Why is resistance training important?

According to the ACSM:
- Muscle strength, size and power improvements
- Increase in bone density
- Improve sports performance
- Injury prevention
- Combats normal effects of aging (we lose 1% of our strength/year after age 25)
- Muscle actively burns calories fat does not

Resistance training programs should be well balanced, which includes a proper warm-up, cool-down and exercising each muscle group to fatigue. Below is a full-body resistance training program you can complete at home with minimal equipment. Complete each movement 1-2 times through starting with 10 repetitions and working up to 15-20 reps.

Each exercise is shown with different modifications; choose the ones that best suits you.

**Squats, Chair Squats**

**Wall Push-ups, Modified Push-ups, Push-ups**
Seated Row, Standing Row

Woodchoppers with a Dumbbell, with a medicine ball, or seated with medicine ball

Seated Leg Raises

Glute Drive, Single Leg Glute Drive
Weight Loss Equation:
3500 calories=1 pound
Divided by 7 days=500 calories/day need to be expended
(burned in exercise, or reduced in diet)
=1 pound weight loss/week

What is RMR?
Resting Metabolic Rate=how many calories your body burns in 1 day just to survive
Higher RMR=faster weight loss

How do you change your RMR?
- Increase your body’s muscle mass through resistance training
- Muscle mass burns calories, fat mass does nothing, so the more muscle mass you have, the higher your RMR is and the faster and easier it is to lost weight and maintain weight.

FITT principle of resistance, or weight training
F requency: 2 (or 3) times/week on non-consecutive days
I ntensity: each muscle group to “exhaustion”
T ime: anywhere from 10-20 repetitions
T ype: bands, dumbbells, machines, body weight

Make sure to exercise each muscle group for a well-rounded program:
Front of upper body: chest and shoulders, biceps
Back of upper body: back, triceps
Front of lower body: quadriceps
Back of lower body: gluteus (butts), hamstrings, calves
Side: core and hips

How to design a program?
Start with largest muscle groups first:
Chest, back, legs (front and back)
Then end with your smaller muscle groups:
Biceps, triceps, shoulders, hips and core

Start with 1 set of 10-15 repetitions, then
Add a 2nd set, then
Increase the weight loads you’re lifting, then
Add 3rd set, then
Increase your repetitions, then
Change your workout!
Social Support Role Playing Scenarios

In each scenario one of you will play “yourself” asking for social support from your partner who will be trying to tempt you to make a poor lifestyle choice. The goal of the role playing activity is to practice asking people around you to support your positive life changes, especially in challenging situations. Practice asking for support,

**Situation 1:**
It’s Friday, a co-worker’s birthday and at lunch there is cake in the break room in celebration. You want to have a piece of cake, but you know this weekend you’ll be having birthday cake for your daughter’s birthday, plus you know its not a healthy choice.

**Partner’s role:** Co-worker who made the cake wants you to have a piece.

**Situation 2:**
You typically take workout classes at your gym after work, but a group of your co-workers are trying to get you to kick off the weekend early by going to a Thursday night happy hour.

**Partner’s role:** Co-worker who always organizes parties at work and after work.

**Situation 3:**
Your spouse doesn’t understand why you are spending time away from home to workout. She/He feels that it’s taking you away from family time because dinner is later, and you are not there to help the kids with their homework. You want to arrange your schedule to work out in the morning.

**Partner’s role:** Spouse who does not understand why it is hard for you to find time to work out.

**Situation 4:**
It’s tailgate time and you’re headed to watch a sporting event with your best friend. You are going to a big tailgate party, and everyone invited needs to bring a covered dish to share, so you are anticipating a tough day of turning down delicious tailgate food.

**Partner’s role:** Best friend who thinks you have been depriving yourself too much and need a break from your diet.

**Situation 5:** Create your own challenging situation.
The same reasons that resistance training is important for fitness, including increased muscle strength, bone density and calorie expenditure for weight loss, circuit training is useful for variety and potentially cardiorespiratory endurance.

Circuit training programs should include a proper warm-up, cool-down and exercising each muscle group to fatigue. Below is a full-body circuit training program you can complete at home with minimal equipment. Complete each movement 2 times through starting with 15 repetitions and adding in heart rate raises in between your lifting circuits. Try to complete the workout continuously without rest in between exercises.

Squats, Pushups, Standing Row: 2x15, the 60 seconds of jumping jacks

Woodchoppers, Seated Leg Raises, Glute Drives: 2x15, 60 sec. jumping jacks
We all need support to finish our BIG goals!

Use each other to finish the BIG exercise goal for the day. You can divide up the listed tasks in anyway necessary in order to finish, but remember support is necessary!

_____ 3 Miles on the Treadmill
_____ 50 pushups (wall, modified, or regular)
_____ 50 glute drives
_____ 3 miles on the bike/rustep
_____ 20 pullups
Project REACH

Final Take-Home Message

Week 1: Goal Setting
Goals should be SMART:
Specific
Measurable
Attainable/ Action Oriented
Realistic
Timely

Make sure you find a way to track your progress, get what you need to accomplish the goal, find support people, and set new goals as you achieve them.

Week 2: Nutrition Refresher
Add more fruits and vegetables to your day.
Use mini-meals and snack ideas to eat smaller portions, more often

We learned a sample warm-up which is important to prepare your mind and body for the work they’re about to do, plus can reduce risk of injury.

Week 3: Cardiorespiratory Programming
Aim to be more active during your day by parking farther away, taking the stairs, choosing active leisure activities and through household chores. aim for 10,000 steps/day.

Benefits of cardio: Burns calories (aim to burn 250-300/exercise day)
- Increases endorphins, or “feel good” hormones
- Reduces stress, depression and anxiety
- Increases confidence and self-esteem
- Cardio that has impact on ground (walking, jogging) increases bone density
- Increases strength of heart and cardiovascular system
- Reduces risk of diseases: certain cancers, diabetes, heart disease
- Reduces blood pressure

RPE= rate of perceived exertion: how hard are you working? On a 1-10 scale, aim for 4-7

FITT principle: applied to cardio
F requency: most days of the week
I ntensity: on 1-10 RPE scale 4-8
T ime: aiming for 30-60 min, if starting with 0 min. start with 15-20 min, then increase
- Use vigorous cardio RPE: 7-9 for more calorie burn in less time
Type: walking, biking, elliptical, row machine, swimming, stair climbing

Week 4: Time Management
Brainstorm ways to add more activity into your day.
Schedule your workouts into your week, look at your weekly calendar, see when you have the most available time and put your workouts into your calendar like an appointment.
Week 5: Resistance Training

Weight Loss Equation: why weight training is important
3500 calories = 1 pound
Divided by 7 days = 500 calories/day need to be expended
(Burned in exercise, or reduced in diet)
= 1 pound weight loss/week

How do you change your Resting Metabolic Rate, (or how many calories your burn in 1 day to survive) so you can lose weight more efficiently?
- Increase your body's muscle mass through resistance training
- Muscle mass burns calories, fat mass does nothing, so the more muscle mass you have, the higher your RMR is and the faster and easier it is to lost weight and maintain weight.

FIT principle of resistance, or weight training:
F requency: 2 (or 3) times/week on non-consecutive days
I ntensity: each muscle group to "exhaustion"
( make sure your workouts are challenging!)
T ime: anywhere from 10-20 repetitions
T ype: bands, dumbbells, machines, body weight

Use the at-home resistance training workout. Or at a gym, use 1 machine per body part: legs, chest, back, triceps, biceps, shoulders, stomach, and lower back for 2 sets of 12-20.

Week 6: Social Support
Finding support from spouse/partner, friends, family and co-workers is essential to changing lifestyle habits.

Ask those who are supporting you how to specifically: positive feedback, accountability, rewards, actively exercising, shopping for food, or cooking.

Week 7: Nancy Davis, fellow bariatric surgery patient

She stressed the need to find an exercise mode that you are excited about, she fell in love with biking. You MUST find a mode of exercise: walking, biking, swimming, group exercise classes, water aerobics, lifting weights, that you Love and do regularly.

Week 8: Stress Relief and Yoga
Stress part of life, we have to find ways to manage it because of how detrimental it is to health and weight loss. You can manage stress through: exercise, time with friends or family, solo time, journaling, deep breathing, yoga, music, stop sweating the small stuff.

Week 9: Relapse Prevention/ Preventing Exercise Burnout
Use variety in types of exercise, restart right away after a break, workout on vacation, set a minimum amount of days you'll workout on a busy week, exercise with a friend.
APPENDIX G: EXERCISE LOG
## Exercise

### Aerobic Activity:

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### Strength Training:

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<th>Push/Modified Pushup</th>
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### Stretching:

Per handout: Yes  No

### Comments/Feelings:

### Self Evaluation:

1. Did I have a plan for aerobic activity today? YES  NO
   If so, did I meet my time goal? YES  NO
2. Did I work out at an intensity to help me see the most benefit? (RPE 4-7) YES  NO
3. Am I ready to challenge myself to do more? YES  NO
4. Did I have a plan for strength training today? YES  NO
   If so, did I complete my goal? YES  NO
5. Am I ready to make increases to any of my weights, sets, or reps? YES  NO
6. Did I stretch today? YES  NO
7. Did I look for ways to be more active in my day? YES  NO
   If so, how many minutes were spent in activity?
8. Overall, I was committed to being more active today? YES  NO

### Plan for tomorrow: