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Exercise Adherence Following Short Term Weight Loss Programs

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EXERCISE ADHERENCE FOLLOWING SHORT TERM WEIGHT LOSS PROGRAMS

by

JUSTINE COLEMAN

Under the Direction of Barry Joyner

ABSTRACT

The dramatic increase in obesity has captured the attention of the government, private foundations, and the media for several years. One media outlet, reality television, a social phenomenon, has pushed the epidemic into the public eye (Finklestein, Brown, & Evans, 2008). One of the most popular weight loss programs on television is the Biggest Loser. The popularity of the television show has been a possible catalyst of the epidemic of similar weight loss programs in community gyms, recreation settings, and even within universities around the United States.

The purpose of this study was to conduct a follow up assessment with participants who had formerly participated in the Spring 2008 or Fall 2008 weight loss program. By conducting a follow up study exercise adherence could be measured, and the reasons for continuing or discontinuing exercise were analyzed.

There were 11 participants in this study (n=9, females; n=2, males) whose ages ranged from 26 to 67 years of age. Participants completed semi-structured focus group sessions, a demographic questionnaire, fitness assessment follow up, Rosenberg Self-Esteem Scale, Self-

Efficacy Measure, Social Physique Anxiety Scale, Temptation Not to Exercise Scale, and an Exercise Staging Algorithm.

The follow up of the fitness assessment revealed significant changes in the following circumferences: neck, arm, forearm, waist, abdomen, hips/buttocks ($p \leq .001$). There was a significant difference between the initial completion of the weight loss program and present ($p \leq 0.01$). Results of the psychological instruments supported the focus groups discussions that issues such as time management, family circumstances, and work related issues can cause an individual to have lack of confidence in their ability to exercise. The focus groups results supported results found in the psychological instruments. Many participants expressed reasons for not exercising such as excuses that related to time management, loss of support from the group and trainers, and a feeling that they knew they could exercise but this did not result in long term adherence. The results of this study demonstrated that participants do not typically continue exercise adherence following a short term weight loss program.

INDEX TERMS: Social physique anxiety, Self-esteem, Exercise adherence, Weight loss program

EXERCISE ADHERENCE FOLLOWING SHORT TERM WEIGHT

LOSS PROGRAMS

by

JUSTINE COLEMAN

B.S., Georgia Southern University, 2004

A Thesis Submitted to the Graduate Faculty of Georgia Southern
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MASTER OF SCIENCE

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EXERCISE ADHERENCE FOLLOWING SHORT TERM WEIGHT

LOSS PROGRAMS

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DEDICATION

This thesis is dedicated to those who stood by me in the face of this mammoth project. Thank you for your continued support and helping me smile along the way. To those of you who inspired me to write this thesis, each of you are incredible and are an inspiration.

Special Thanks to:

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Dr. McMillan

Dr. Czech

Campus Recreation & Intramurals

My Wonderful Husband Tim

Mom, Dad, & RJ

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CHAPTER 1

INTRODUCTION

Purpose of Study

According to the CDC (2009), obesity is defined as a body mass index of 30 or greater. The number of people whom fall into this category continues to increase steadily; in fact, thirty-two states have an obesity prevalence rate of twenty-five percent or higher (CDC, 2009). According to Finklestein, Brown, and Evans (2008), the dramatic increase in obesity has captured the attention of the government, private foundations, and the media for several years. One media outlet, reality television, a social phenomenon, has pushed the epidemic into the public eye. Many people have used various weight loss reality shows as motivation, in fact one individual stated, “They are very encouraging, you wish you were there, it seems so hard for them, but they did it at the end and you think you can too” (Thomas, Hyde, & Komesaroff, 2007, p. 212).

Viewers witness the failures, challenges, and triumphs of normal everyday people that struggle with weight loss and share that experience from the comfort of their own home. One show that has become a sensation and spurred similar programs nationally and internationally has been the Biggest Loser©. People who are sedentary and severely obese but ready to make a life change are chosen to participate. Participants go through weeks of rigorous training and strict dietary restrictions. In the finale, many participants lose upwards of one hundred pounds. Although these results are shocking and capture millions of people’s attention, what is the reality of maintaining this change? Once the trainers, dieticians, and strict programming have disappeared, on what do the participants have to rely?

The benefits of exercise are well documented. Exercise has both physiological and psychological benefits that range from lower incidences of depression, reduced tension, increased self-esteem, lowered risk of heart disease, and maintenance of body weight. All of these reduced risk factors can result in better well being (Weinburg, R.S. & Gould, D., 2003). However, most adults are sedentary (Netz, Zeev, Arnon, & Tenebaum, 2008; Morey, Dubbert, Doyle, MacAller, Crowley, et. al, 2003). Interestingly, researchers' notes that often these overweight individuals are reoccurring dieters, fluctuate in weight regularly, and find long-term weight loss difficult (Turner, Thomas, Wagner, & Moseley 2008). As one becomes older, exercise and physical activity appear to decrease with 50 % of adults between the ages of 65 to 74 years reporting no physical activity, and 50 % of those adults will not maintain an exercise regimen once they begin (Morey, et. al, 2003).

Past studies and programs reveal unclear conclusions about what exactly empowers a person to continue an exercise program. For the present study, the program was based on the nationally and internationally syndicated television show, and for purposes of the study the program was considered to be a short term based on a duration that was less than six months. During the process of the weight loss program, participants worked collectively as a group for approximately fifteen weeks. Although they competed individually, there was social support and camaraderie built unintentionally between the participants. In addition, participants were not given the opportunity to create their own exercise program. The program was always designed by the personal trainer. The participants were initially pleased and motivated by the weight loss they incur along with the benefits of added energy and motivation; however, once the trainers were no longer present the participant relied on his or her own self-efficacy to continue the

program. During the weight loss program of spring 2008 and fall 2008, weight loss ranged from fifteen to fifty pounds and circumferences decreased by thirteen to thirty-two inches.

The environment and social surroundings of an individual can influence his or her ability to be self efficacious. Annesi (2007) states that self-efficacy is a person's perception that they have the competence and ability to reach a goal successfully. In a world where day to day life is fast paced, and food is served curbside on a regular basis and one must find ways to battle these obstacles and at the same time feel empowered to do so. The family and culture to which the individual belongs will encourage certain eating habits, foods, and activity levels from an early age into adulthood. According to Petosa, Suminiski, and Hertz (2003), family has the opportunity to first shape one's attitude towards exercise, and these experiences would develop one's ideas of exercise outcomes. For people who live outside of major cities, the option of going to a gym could be out of the question because the seasonal changes or transportation. Exercise adherence will be unique to each individual based on the challenges they face depending on whether they are social, cultural, or environmental, but programs like the Biggest Loser that use short term program designs tend to promote a one program fits all approach for the group.

There are several theories that are used to analyze health behavior. One of the most popular is Health Belief Model, which is based on value expectancy concepts, which are defined by one's desire to avoid illness, the ability to take action to prevent illness, and the individual's susceptibility to the disease (Glanz, et al, 2002).

Although the above model is insightful, two models more appropriately fit the examination of this particular study. One of the key characteristics of this study was exercise adherence. An individual's ability to adhere to exercise is based on the environment he or she lives and works in and his or her ability to adapt and overcome the challenges that they face

regularly. The empowerment of the individual to overcome obstacles presented before them can be analyzed and better understood using the Social Cognitive Theory (Bandura, 1997). Most importantly, the Social Cognitive Theory predicts the initiation of new health behavior with adverse conditions and the continuation of the health behavior (Glanz, et al, 2002). The Social Cognitive Theory proposes that personal, behavioral, and environmental factors operate reciprocally. Some of these factors that are obstacles to exercise adherence have been cited as a lack of time, disease, illness, or travel (Morey, et al., 2003). Turner, et al (2008) notes that adherence is the key factor and decreasing physical activity is a contributor to weight gain. Self-efficacy of the individual is the most important aspect of this model. According to Weinburg and Gould (2003), self-efficacy has continued to be a good predictor of behavior and continuance of the behavior. School based initiatives that institute exercise program interventions are often evaluated on their ability to increase strength of self-efficacy and outcome expectancy because they are important individual values (Hortz, & Petosa, 2008).

Another frequently used model is the Transtheoretical Model (TTM). This model has gained popularity mostly because the interventions for the individual are based on their specific stage of change (Glanz, et al, 2002). Although many individuals started the weight loss program at the same time they could have been at a different stage of change. In addition, the TTM uses termination as one of the stages of change. According to the research by Fallon and Hausenblas (2004), termination from exercise can only occur after five years of adherence. In addition, one individual may experience more temptation to participate in certain unhealthy lifestyle activities versus another; therefore, a one size fits all program could have left a few individuals with insufficient information (Fallon, & Hausenblas, 2004). The constructs of the Transtheoretical Model are more in depth and encompass the components most needed for this particular study.

The constructs for the TTM are as follows: stages of change, self-efficacy, temptation, decisional balance, and process of change (Fallon, et al, 2005). These constructs are believed to be the components that move a person through the stages of change and narrowing the association of these constructs could lead to better interventions that would lead to greater long term exercise adherence (Fallon, et al, 2005).

The weight loss program for this study has marked differences when compared to its reality star counterparts. Faculty and staff members participated in the program in the fall of 2008 and spring 2008. Five workouts were offered over the course of the week with some offered in the morning and others at night. All participants were required to attend mandatory coaching sessions that focused on nutrition, daily battles with food, and obstacles that prevented them from engaging in physical activity. The participants were not given mandatory meals, and every workout was structured by a personal trainer. The participants were in control of the food they ate on a daily basis, but they were not in control of the workout. When the program ended, the training sessions ended. Many participants lost upwards of twenty pounds, but the physical activity that was mandatory to maintain the weight loss was no longer an expectation. Because of the loss of structure and constant communication with all involved in the program, there was a possibility that participants felt a sense of uncertainty and lack of confidence in their new found schedule.

In order to fully investigate exercise adherence and the intertwining of self-efficacy and confidence in the self, this study will examine exercise adherence from both a qualitative and quantitative approach. This mixed methodology approach will use focus groups as a qualitative approach because this method will tap into attitudes, perceptions, and tendencies that the group may have to exercise adherence (Kreuger, 1994). This allows for a more descriptive examination

than simply reviewing physiological records and scale instrumentation. A hybrid approach will give a multidimensional investigation to exercise adherence.

Therefore, the purpose of this study is to examine the exercise adherence of participants after six months to two years following a short term program, like the Biggest Loser. This study will examine the common obstacles that all participants encountered following the program and the time they returned to former habits or what motivated them to continue their current exercise routine. Using the Transtheoretical Model as a guide to investigate the purpose of this study, we will investigate the possible conflicts or obstacles environmentally, socially, personally, or behaviorally that affects their efficacy and adherence.

CHAPTER 2

METHODS

Participants

Fourteen participants have successfully completed the Biggest Loser Program at Georgia Southern University. All former participants were asked to be a part of the Biggest Loser Exercise Adherence Study. The group was comprised of three males and eleven females. Their ages ranged from 23 to 65. All of the participants were able to lose at least 20 pounds in 15 weeks. Prior to beginning the program participants completed demographic paperwork that included information about medical history, behavior change readiness, age, and gender (Appendix C).

Participants were also required to participate in three to five one hour sessions with a nationally certified personal trainer weekly. In addition, all of the programs consisted of team coaching sessions with a psychologist (PhD) and nutritional consultations with a Registered Dietitian (R.D.). Changes made to during the second semester program and psychological instruments were added including: Social Physique Anxiety Scale and the Rosenberg Self-Esteem Scale. Slight changes were made to the format of the paperwork between groups. Physiological assessments were conducted individually for each participant included: height, weight, circumferences, Rockport one mile walk, and muscular strength using the hand dynamometry, muscular endurance with push-ups and sit-ups, and traditional sit and reach, and blood work. Failure to complete any of the above requirements resulted in immediate termination of the participant from the program.

For purposes of the focus group portion of this study, participants were randomly placed into two groups that had 6-8 individuals. Prior to the focus group meeting, all participants signed a university IRB approved informed consent document.

Instrumentation

The Rosenberg Self-Esteem scale was administered in this study (See Appendix C). In the study conducted by Cairney and colleagues (2009), the self-esteem scale is shown to be reliable in measuring both college age individuals ($R = 0.94$) and adults who are sixty-five years of age or older ($\alpha = 0.85$). According to Cairney, et al. (2009), self-esteem of the individual is estimated by the combined numerical value of the survey and the greater the score the greater one's self-esteem is thought to be. Based on past research that was reviewed by Adler and Stewart (2004), both reliability (internal consistency and test-retest) and validity (convergent and discriminant) exist for the Rosenberg Self-Esteem Anxiety Scale.

The second survey was the Social Physique and Anxiety Scale (See Appendix C). This scale was developed to measure the amount of anxiety one experiences when their body is evaluated by others around them. This survey contains seven items and employs a Likert Scale. This survey has negatively worded items and positively worded items. There has been much debate about the dimensionality of the scale (Scott, Burke, Joyner, & Brand, 2004). In 2001, Motl and Conroy evaluated the 7 – item scale and verified “tight” cross validity and stated researchers could confidently use the scale (Scott, Burke, Joyner, & Brand, 2004). In former studies conducted by Scott, Burke, Joyner, and Brand (2004), this instrument was found to be reliable in measuring college age individuals ($R = 0.94$). The greater the combined score the greater one's anxiety.

The third instrument that was administered is the Temptation Not to Exercise Scale which has consistently demonstrated to have content and internal validity (Hausenblas, et al., 2001). This instrument is a ten item scale and asked the participants to rate the questions from which they feel extremely tempted the most 100 % to not tempted at all 0 % (Hausenblas, et al, 2001).

The final instrument that was administered to the participants was the 5 item Self Efficacy Measure which was originally developed to measure one's ability to continue exercise despite a variety of situations (Marcus & Owen, 1992). There is a seven point scale that ranges from *not confident at all* (1) to *very confident* (7) and *this does not apply to me* (0). The greater the combined score on the instrument the greater the self-efficacy one possesses. This instrument has an internal consistency of .82 (Marcus, Selby, Niaura, & Rossi, 1992).

Resting heart rate was measured using a standard stop watch and was taken by measuring the rate of pulsations at the radial artery. The participant will be seated and be asked to remain quiet and relaxed. The pulse was counted for thirty seconds and doubled to determine a sixty second resting heart rate.

Blood pressure was taken with the Mabis Caliber Signature Series Aneroid Adjustable Sphygmomanometer (Waukengan, IL). A Lumiscope Sprague Rappaport Style Stethoscope, Model 200-415 (East Rutherford, NJ) was used to listen for the diastolic and systolic blood pressure. The initiation of sound was the systolic number and the final absence of sound was the diastolic measure that was recorded.

Height and weight was measured to the nearest 0.5 cm and 0.5 kg, using a Detecto 439 Eye-Level Physician Scale with stadiometer (Webb City, MO). Participants were instructed to

remove shoes and excess clothing before weighing takes place. In order to blind participants to the results of the height and weight, they were required to face away from the scale.

Circumference measurements were taken following the height and measurement data. Participants were instructed to wear tightly fitted clothing that they wore during the program for previous circumference measurements. Circumference measurements were taken using a basic tape measure at the neck, chest, arm, abdomen, waist, hip/buttocks, thigh, and gastrocnemius. The tape was parallel to the floor and causes no indentation on the skin. All girth measurements were taken at the right side of the body.

Circumference of the neck was taken at the widest circumference of the neck below the Adam's apple (Latin, 2001). The chest circumference of both the males and females was measured at the nipple line following around the torso (Latin, 2001). The arm was measured between the acromion and the olecranon processes in the anatomical position (Latin, 2001). The faculty member then placed their arm by their side and the researcher measured the forearm at the point of maximum girth with the palm facing forward (Latin, 2001). The circumference of the waist will be measured at the narrowest portion of the torso that is below the xiphoid process but above the umbilicus (Latin, 2001). The abdomen measurement is always measured at the level of the umbilicus (Latin, 2001). Immediately following the abdomen, the researcher measured the hips and buttocks at the largest circumference above the gluteal fold (Latin, 2001). The thigh was measured at the largest circumference with the legs apart, and finally the gastrocnemious was measured at the maximum girth between the knee and the ankle (Latin, 2001).

Due to the size of the participants, measurement of body fat was not practical using the Jackson Pollack skin fold methods. Therefore, to remain consistent with former research of the

participants, a hand to hand body fat analyzer was used (Omron Body Fat Analyzer HBF-306, Body Logics: Burningshills, Illinois) to determine body composition. The researcher inputted the data into the analyzer based on data already collected from the participants which included: weight, height, age, and gender. The participant will then lightly grip the hand analyzer in a thumb up position, and the researcher will press the start button to begin the analysis of the body composition. When four bars light then bottom of the screen, the participants released the analyzer and the researcher recorded the body fat percentage results. In order to blind participants to the result of this study, a piece of opaque black paper was taped over the screen.

Cardiovascular endurance was measured using the Rockport 1 Mile Walk test as replicated by Byars, Greenwood, Greenwood, and Simpson (2003). Participants walked on the outside lane on an indoor track nine times to complete one mile. The original track distance for nine complete laps was 5200. 20 inches and was measured for 79.80 feet to complete the one mile distance. The track was Heart rate and time was measured by a Polar Heart Rate Monitor (Westburg, NY). As subjects completed the one mile walk, the researcher immediately recorded both elapsed time and final exercise heart rate. Reliability coefficients (test-retest) associated with the original maximally paced test were reported to be 0.93 for heart rate and 0.98 for walking time, and the Rockport 1 Mile Walk Test has been cross validated in many samples (Byars, et al, 2003). In order to blind participants to the result of the study, the researcher did not allow them to wear watches or any timing devices during the one mile walk, and the researcher recorded his or her walking time on the recording sheet.

Flexibility was the final test administered to the former participants. Flexibility was measured using the Acuflex 1, Nove Products (Rocktown, IL). Flexibility of the hamstrings was measured in inches and later converted to inches by the double leg modified sit-and-reach test

using the Acuflex Box. Participants removed their shoes. With their hips, back, and shoulders against the wall they pushed the slide on the top of the box three times. The legs of the participants had to remain straight for the duration of the test and the bottom of his or her feet had to be in contact with the box. His or her hands overlapped and the box was aligned with the finger tips. The greatest of the three attempts was recorded. The sit-and-reach test produces reliable scores in middle-aged men and women from trial to trial at one test session, ICC=0.99 for men, and an ICC=0.98 for women from test to test session (Lemmink, Kemper, Greef, Rispen, & Stevens, 2003). Although the modified sit-and-reach test was used to measure flexibility of the Biggest Loser participants, this test is not used for national testing (Neiman, 2003). In order to blind the participants to the results of the test, two research assistants will hold a blanket above the Acuflex box.

Procedures

The participants were contacted prior to the date of the measurements and the research team encouraged them to limit exercise the day before the study and to refrain from eating 2-3 hours before the study.

Former participants of the Biggest Loser program agreed to be a part of the exercise adherence program on a voluntary basis. They had the option to withdraw at any point during the study and ask questions regarding the study. They volunteered to participate in all focus group programs and answer questions from the Social Physique Anxiety Survey (SPAS) and the Rosenberg Self-Esteem scale, Temptation Not to Exercise Scales, Self-Efficacy measurement. In addition, to note changes in demographic information all participants completed the original application that they filled out for acceptance into the weight loss program. This information also included details such as current lifestyle behaviors and their current exercise behaviors. Question

sixteen of the application asked them how many times per week they exercised and the modality of exercise or type of physical activity they are participating in (Appendix C). All scores from the scales will be compared to scores received in the initial application process, and the application reports were also compared.

Each Biggest Loser participant was retested on the fitness tests that were administered during the weight loss program with the exception of the muscular endurance and muscular strength tests due to lack of proper protocol during previous programs. The participants signed up for single one hour slots based on availability. Monday through Friday, and he or she was blinded to the results. This kept participants from discussing weight or exercise issues after the focus group meeting. Results of this study were kept confidential and kept locked in filing cabinet.

Focus Group Procedure

A series of semi-structured interview questions were delivered by the same qualified interviewer for both groups. The session was tape recorded for the duration of the focus group. In addition, a Power Point with definitions for exercise adherence, self-efficacy, and exercise adherence was displayed behind the facilitator as a visual definition of each word as the questions are asked. This study was directed to those whom have completed the program, the identities of the individuals were known. The participants were told by the focus group facilitator that they could withdraw from the focus group at any time, that the interviews were to be digitally recorded, they would remain anonymous on the recording, they were able to ask about the procedures at any time, the interviews would be transcribed, and they could request a copy of the transcription to review. The participants did not receive compensation for participating in the focus group or physiological procedures, and finally the transcription was reviewed by the

researcher and a team of researchers to identify themes. The initial questions for the focus groups consisted of:

- “What are your thoughts on the relationship between self-efficacy and exercise adherence?”
- “When you think of the tools that you learned within the Biggest Loser program, what comes to mind?”
- “Were there any obstacles that kept you from maintaining exercise adherence, if so what comes to mind?”
- “When you think about social physique anxiety, apply it to yourself. What comes to mind?”
- “When you think about your experience in this program what comes to mind?”

In addition to the semi-structured questions that were asked, the interviewers asked additional probing questions to develop clearer more concise answers that were initially answered vaguely (Kreuger, 1994). These additional questions varied from the following examples:

- “You mentioned feeling _____. Could you further explain that feeling?”
- “You described your experience like this_____. Could you further explain?”

There were two separate focus groups, in order for the responses of all participants to be described in an in depth manner. This does not mean that the probing questions were the same between each focus group because the probing questions are based on the answers of the participants.

Data Analysis

The change in physical variables, Social Physique Anxiety Scales, and Rosenberg Self-Esteem, Temptation Not to Exercise, Self-Efficacy scales for each of the participants was recorded and analyzed using SPSS 17.0. The measurements of the former Biggest Losers physiological data was compared to their current measurements using dependent t-tests ($\alpha = .01$). A correlation between social physique anxiety and self-esteem were conducted. In addition a One Way ANOVA with repeated measures was used to compare total circumferences before beginning the weight loss program, immediately following the program, and presently.

Following past research, there was a specific outline that must be followed to approach the study from a phenomenological approach as described in Czech et al (2004). The procedures for the qualitative data followed the progression that is cited in (Czech, et al, 2004):

- A. Approaching the interviews
 - Transcribing the interview*
 - Obtaining a grasp of the interview*

- B. Focusing the data
 - Clearing the text*
 - Grouping the text*

- C. Summarizing the interviews
 - Preparing a summary*
 - Verifying the summary*

- D. Releasing meanings
 - Forming categories*
 - Determining structures*
 - Describing structures*

Approaching the Interview

All of the focus group interviews were transcribed verbatim. All transcribing was done by the researcher. Participants were allowed to obtain a copy of the transcription when the transcribing was completed. Only the transcriber and the participants had access to the audio tapes. Once the tape is transcribed the tape was be erased. All transcriptions and informed consent forms were kept in a locked filing cabinet in the fitness assessment center.

Once the tapes were transcribed, the researcher expunged any repeated language or unnecessary phrases to reveal clear and concise answers from the focus groups. The transcripts were sent to the participants to reveal if the answers were what they verbalized or if there was more to the answers. This allowed for a check between the participants and the researcher and lead to more information about the study.

Once the transcripts were returned by the participants there was a check between the transcripts and the lead professor in order to complete triangulation of the data. These three checks lead to a triangulation for further validating the data within the transcripts to determine themes within the answers.

Focusing the Data

Clearing the Data According to Krueger (2004), focus group research can yield a phenomenal amount of data, and sometimes the data is more important than others. The researcher was prepared to listen to hours of transcripts and recordings to grasp the data and yield information that was essential for the study. Some focus groups yield ten to fifteen pages of

field notes combined with seventy pages of transcript (Kreuger, 2004). In essence, by eliminating data that was not pertinent to actual answers, the researcher can understand the meaning and experience of the speaker (Czech, et al, 2004).

Grouping the Text Text was eliminated by the following protocols (Czech, et al., 2004):

- Elimination of repetition
- Punctuate (decreasing run on sentences, as long as the participant's answer is not distorted)
- De-emphasize the interviewer
- Enhance readability (if participants use words such as it or that define the objective of those words to make the understanding clearer)

Summarizing the Interviews

This step involved the participants within the study to ensure that the experience in the focus group was truthful (Czech, et al, 2004). The summary was sent to them to ensure that what said and felt during the interview process was in fact what was meant by the participants. Once the participants read the transcripts, they checked for distortion of the text because of editing and the participants made additions necessary to what they stated during the interviews for a clearer meaning (Czech, et al, 2004).

Releasing Meanings

After review of the transcripts and the tapes, and after the participants verified the transcripts that were sent to them, the researcher made an in depth analysis of the data.

According to the study done by Czech, et al (2004), the transcripts were reviewed for common themes as a group and then individual participant's answers were analyzed for individual themes and then compared to the themes of all of the other participants.

After the text was organized into themes and clusters were created, the data in each category was evaluated to insure that they are consistent with the heading within each category and that there are distinct differences among the separate categories (Czech, et al, 2004).

Reliability of the study was based on the definition that there is a consistent result across people and time (Czech, et al, 2004). According to Czech, et al (2004), the interpretation of reliability of qualitative studies is the extent to which a description can be shown to be true to the experience would be the criterion for reliability.

Validity of the study was confirmed when the reader can follow the process that has led to the conclusions and to accept the processes and the conclusions as valid because the description of the data leads on to a common features, the interviewer did not influence the description of the data, the transcriptions were accurate, and the structural description was evaluated as it pertains to one situation or if has a more global description (Czech, et al, 2004).

CHAPTER 3

RESULTS

Ultimately 11 (male = 2, female = 9) former weight loss program participants completed the study. The other three participants were no longer in the surrounding area to be able to participate in most aspects of the study which were required. The ages of the participants ranged from 27 to 67 years of age at the time that data were collected. All of the participants met on an individual basis with the researcher for collection of the psychological instruments and physiological measurements.

Quantitative Results

A dependent t-test was conducted for 19 variables to analyze the physiological data. Due to the number of statistical tests conducted, significance was set at a conservative p-value of less than 0.01 to protect the possibility of a type 1 error. There were no significant differences for resting heart rate, systolic diastolic blood pressure, body weight, BMI, chest, thigh, calf circumferences, exercising heart rate, Rockport 1 Mile Walk test times, waist to hip ratio, and flexibility ($p > 0.01$) (see Table 3.1).

Significant ($p < .01$) increases were found from the time of the weight loss program to time of data collection for the following circumferences (pre-test to post-test results): neck (36.26 cm \pm 4.16, 38.80 cm \pm 4.77), arm (35.26 cm \pm 5.23, 39.20 cm \pm 6.55), forearm (27.74 cm \pm 2.32, 28.68 cm \pm 2.69), waist (96.84 cm \pm 14.19, 104.88 cm \pm 17.47), abdomen (103.92 cm \pm 17.16, 112.63 cm \pm 18.11), and hips and buttocks (118.61 cm \pm 12.55, 126.02 cm \pm 14.31). The total circumference for all of the participants significantly changed and resulted in an overall increase in their averages (251.43 \pm 27.93, 266.18 \pm 32.08). Interestingly, waist to hip ratio

which was derived from significant increases at those circumferences was not significant ($p \geq .05$), but there was a slight increase over time ($0.81 \text{ cm} \pm 0.07$, $0.83 \text{ cm} \pm 0.07$).

The total circumferences did change over time. The results of the average total circumferences before beginning the program (275.75 ± 31.00) were significantly lower following the completion of the program (251.43 ± 27.93) ($p \leq 0.01$). The results of the One Way ANOVA revealed that there was a significant change from the beginning of the weight loss program to the conclusion of the program; however, there was a significant in the change from the beginning of the program to the present time ($p = 0.001$).

The results of physiological data were interesting given the statements indicated from the Exercise Staging Algorithm. Four of the eleven participants indicated that they have been exercising, but for less than six months. When the Self-Efficacy scale was investigated 45.5 % ($n = 5$) of participants were very confident and 27.3 % ($n = 3$) were slightly confident that they would exercise given when they stated, "I am in a bad mood".

When questions that pertained to time, 72.7 % ($n = 8$) of participants felt some lack of confidence in their ability to exercise when they felt that they did not have the time. In addition, over half of the participants also lacked confidence to exercise when they were on vacation (63.6%, $n = 7$).

The results of the Self-Efficacy Scale were supported by the Temptation Not to Exercise Scale. The participants were asked to write a percentage from 1 -100 % that defined how tempted they were to not exercise during the following situations. The statements with the greatest percentage of temptation not to exercise were the following: When I am busy (80.91 %), When I have to do work (80.00 %), When family/ events/ situations interfere (79.09 %), When I feel that I do not have the time (78.18 %) (see Table 3.2).

Similar to the results of the Self-Efficacy Scale ($\bar{x} = 21.36$, $SD = \pm 6.36$) when they were angry the participants were only 42.72 % likely to be tempted not exercise. In addition, only 40.90 % felt this way when they were satisfied, 53.18 % when they were alone, and 51.82 % when they were out of shape.

Pearson correlations were used to examine the relationship among scores on the SPAS, Rosenberg, and Self-Efficacy Scale. Half of the former weight loss program participants experienced moderate to intense levels of SPAS as supported by their high SPA score ($\bar{x} = 20.55$, $SD = \pm 6.41$). The total SPA score was correlated with the Rosenberg Self Esteem scores ($\bar{x} = 16.45$). The greater the self-esteem score the greater one's global self-esteem is thought to be. There was a strong positive correlation ($r = .722$, $p < .01$). There were no significant correlations found between self-efficacy and self-esteem ($r = -.080$, $p = .363$), or between SPA and self-efficacy ($r = .100$, $p = .770$).

The second weight loss program had incorporated the SPAS and Rosenberg Self-Esteem scale into the closing paper work. A dependent t-test was conducted for 19 variables to analyze the change in scores. There were no significant changes found from the end of the weight loss program to time of the follow up study.

Qualitative Results

The majority of the questions were directed towards the participants' experience during the weight loss program; however, some of the questions were contextual to terms such as social physique anxiety, self-efficacy, and exercise adherence. Therefore, to fully comprehend the experience of the participants the themes were broken into an experiential category and contextual, and further broken by each individual question. Due to the semi-structured method of the focus groups, two major themes appeared from the responses of the participants.

The questions that were directly associated with the experiential aspect of the weight loss program were:

- Were there any obstacles that kept you from maintaining exercise adherence?
- When you think of the tools that you learned during the Biggest Loser what comes to mind?
- When you think of the overall experience of the Biggest Loser what comes to mind?

The questions that were directly associated with contextual content of the weight loss program were:

- What are your thoughts on the relationship between self-efficacy and exercise adherence?
- When you think of social physique anxiety what comes to mind and apply it to yourself?

Experiential Experience

Were there any that kept you from exercise adherence?

All of the participants went through the same psychological coaching and exercise regimen. They all talked about what had originally kept them from exercise and what they were doing to prepare their bodies and their minds for exercise after the program. Some individuals were successful in overcoming their barriers; however, some barriers proved to be too much for the participants. Obtaining an in depth understanding of these obstacles was necessary to understand why one did or did not adhere. Three themes emerged from the focus group: loss of support, challenges, and excuses.

Loss of Support

Both focus groups acknowledged the need for the presence of a support system and indicated it was a vital tool that they learned during the weight loss program. The groups desired

to create a team atmosphere and supporters that were either from friends and family during the program. This is evident when Maddie noted that, “My husband is very supportive and children were very supportive.” Another source of support during the program was from the educational and structured aspect of the trainers. Raymond felt that when the program ended there was a loss of support by stating, “I think it goes back to the fact that we were such team players and supporters. Then we lost that. Without the extra support and the expectations from your trainers”.

Challenges

The participants of the program experienced an abundance of hardships during the weight loss program. The majority of the challenges were internal. There seemed to be self doubt within them during and after the program. Although they were able to overcome many of the personal challenges during and following the program, the support system that was present during the program was no longer there to overshadow the self doubt. Maddie talks vividly about the mental aspect of her doubt when she states,

“I am my own worst enemy. When they come up with new things to do, I would think, I can’t do that. I don’t have time to do that. I have to go home. I have things I have to do. I am my own worst enemy. That was my obstacle, myself. I was just me.”

Raymond states an equal personal struggle with his personal obstacles to exercise adherence when he states,

“For me shortly after finishing the program, I was in a living arrangement where I was easily able to go home and cook a meal for myself, control the groceries that were coming in. I was able to focus on the exercise that I was doing. Shortly after that, I moved out and moved in with friends. Well, the environment changed and I do not have easy access to cook. The living arrangement unraveled nutrition concepts.”

Not all of the participants completely let their internal struggles stop their experience with exercise, but they do acknowledge a continual challenge. Joahana states, “Fortunately I have been able to overcome that [excuses not to exercise]. Mentally it is still there trying to hold

me back.” The challenges that were present before the program are still present after the program.

Although the above statements represent challenges that were internally related, some of the other challenges to exercise inhibited the continuation of their exercise program. Many of the participants experienced bodily injuries during and after the weight loss program. Two of the participants experienced injuries that impeded the continuation of exercise. Maddie stated, “I had my share of injuries. I had plantar fasciitis. It was very painful.” Alissa also shared her battle with injuries which were more severe and long term when she states, “The whole last part of Biggest Loser I was in physical therapy for my wrist and knee. I had a bout of dizziness which makes an interesting workout.” Although she accepts the injuries as an obstacle, she does not give up when she states,

“I suspect that is something that comes with age. There are going to be injuries and I am going to have injuries. I got a feeling for a fact that there is always a way around the injuries to be able to exercise. If you really want to.”

Excuses

The obstacles that were present and are currently present in many of the former participants lives could possibly be rectified, but there is no action to change the circumstance. This was labeled as an excuse for purposes of this study. The majority of the excuses that were present had to do with time management. Ashley verified that many of the examples of obstacles that people gave were excuses when she stated, “As I listen to this. As I think of the things, they seem like excuses. It is my schedule.” She further goes into her explanation of the excuse for not working out when she states,

“Most days I work 7 to 7. I am tired. I do not want to go and workout, go home and still have to take a shower because I am nasty. And still have to eat and do housework. I want

to go home and talk about my day with my family and go to bed early. So I don't want to go to the [exercise facility]. It is a long day every day.”

Others seem to be in agreement with her, especially when the excuse seems to revolve around the inconvenience of the work day. Raymond states, “For me it was after work. If I had a bad day, at work I would find my excuses. I could find my excuse.” In addition, there seemed to be increasing agreement about the excuse of the work day when Aryn stated,

“For me it was difficult because I live 30 minutes out. So if I were to leave the office, if I leave at 5:30 it leaves me getting home at 6 o'clock at the earliest. If I exercise for an hour, then it is at least 7 before I go home. Then I have to cook dinner. Then by the time you cook dinner it is 8 or 9 o'clock then you have to eat, clean the kitchen. For me it is just late.”

External issues related to time management that were also affected by work were further magnified when issues with family were also involved. Jacob states,

“The obstacle was I've got kids. They are in girl scouts. I had to get them home, get them to girl scouts, then get them to bed. Then we have all these clubs and programs and my wife has that, so I have to deal with this.

What were the tools that you learned during the Biggest Loser?

The weight loss program involved psychological coaching, nutrition coaching, and exercise regimens during the fifteen weeks. Some of the tools that individuals learned during the program could prove to be important than others. This question was posed to invoke an in depth conversation of the tools that one learned during the weight loss program that they may or may not have had knowledge of prior to the exercise program. The themes that emerged were: support system, excuses, and knowledge.

Support System

Support that the participants experienced gave them motivation to continue throughout the program. Many referred to the motivation as a “push”. For example, “You being able to be

physically by someone on the treadmill and pushing each other.” This individual went further to state that the support system allowed for a competitive urge when they said, “Seeing how fast she is walking [referring to another participant]. When I am over there going, I don’t want to see her walking faster than me.”

There was also a strong desire for accountability. The accountability to one another was as Alissa described, “This is one of the things that I miss most. We are not calling and checking on each other. And seeing each other.” Alissa agreed with this when they stated,

“The support system is there, but it is not what I am trying to get at. More like a team. I am most successful following through with exercise when there are other people and we have made an appointment.”

Overcoming Excuses

Some of the participants learned to overcome some of their former excuses that they had prior to beginning the program. Two of the most poignant excuses that were overcome were stated by Alissa, Joahana, and Alissa states,

“My schedule was never the same. I have to reinvent the wheel about God knows how many times whenever we have a break. There’s fall, there’s spring, there’s Summer 1 and 2. Then there is a big break, at least five times. Not to mention all the holidays when everything fluctuates. That has been the biggest challenge for me with exercise adherence. You have to be proactive. Once the semester starts, if you don’t start at it, at the beginning of the semester it won’t work.”

Joahana had more of a personal or internal excuse to overcome. She explains this when she states,

“When I was in Biggest Loser I was married. I put his needs before mine. That was part of the reason that I gained so much weight. I know people with children do the same thing. It taught me I have to set aside an hour for yourself. You sit in front of the TV for an hour and watch TV and you learn to cut two of them out. You just learn time management better.”

Knowledge

Many of the participants felt that they had learned new concepts by participating in the program. This new knowledge has continued to have an effect on their life and how they perceive certain concepts and the change that they realized they had to make. Jackie states, “I was eating the amount of calories but too much sodium. I can’t grab those Lean Cuisines every day.” Sarah agreed with the statement and explained how she keeps up with her nutrition on a daily basis by stating, “Writing down exactly what you ate, when you ate it, and what time. It really makes you think and look back.”

One of the most prevalent concepts was nutritional knowledge. This knowledge was as simple as explaining calories to explaining the body’s use of nutrition at the beginning day.

Raymond states,

“All it took for me was one of the trainers simply explaining that your body is like a furnace. And when we go to sleep it is like it burns out. If you do not have breakfast or that meal, you do not start that spark that will help you through the day. I never really thought about it that way, so the nutrition discussion was really important for me.”

The Overall Experience of the Biggest Loser

This question was intended to capture the participants overall feelings toward the program prior, during, and following the program. The original intention of the weight loss program was to encourage a lifestyle change that would be long term for the participants. Some of the participants were not as successful in continuing the healthy behaviors they participated in during the program. What did this program ultimately teach everyone? What was the take home experience? The themes that emerged were: success, challenges, and support system.

Success

There appears to be a consistent feeling that the participants ultimately felt success when they thought of their overall experience. Raymond states, “It worked!” Jackie further confirmed the overall feeling of success by stating, “Life changing.” The purpose of the program was to give the participants the tools to make better decisions regarding their lifestyle behaviors. Jackie elaborated on this success by sharing,

“Lifestyle. Know that this is something that I have to do every day. Every day. I have changed the way that I eat and how exercise. It is not just a matter of changing a few things. Every time I that chik fil-a sandwich I ask for a bun with no butter. Every time I go to Waffle House I want plain toast. I get my eggs sunny side up no butter. A lifestyle change that I have to apply to myself. And it has worked!”

Maddie explains her success with exercise when she states,

“I know I can get out and walk three miles for my exercise. Before that all I was doing was a walk to work from my car to my office. The whole I can do this was huge for me. It was an eye opening experience for me. It proved to me that I could.”

Challenges

Along with the success there were also notable hardships that came with the experience of the weight loss program. Raymond immediately said, “Hard work!” Sarah further explained her overall challenge,

“Personally I thought it was challenging. For me it was challenging. For me it was challenging and for everyone else it was challenging. I did things at my age that I would not have thought to do. I could stay at home and sit in my little rocking chair. But it was very challenging.”

Not all of the challenges were necessarily approached in a positive light in the end and for the experience. Many of the participants learned that they were capable of completing tasks that originally they had never thought to be possible. The program gave them a glimpse of their

possibilities in those fifteen weeks. However, not all of the participants continued to exercise on a regular basis or improve. Alissa captures this when she states,

“Hind sight it is depressing. I know what I am capable of. I know what I did and how great it felt. I just let it all go. That is depressing. A fitness assessment terrifies me, when I see that I can only do 1 push up and 1 sit up compared to what I did at my last assessment for Biggest Loser. I am going to want to throw up. How do you go so far, make so much progress, and then throw it all away. That is what is hard.”

The feeling of letting people down was also felt by others. Failure was not just unique of the self, but also those who were part of the original program. Maddie explains this feeling when she states,

“You let yourself down. I let my family down by letting it go. I didn’t get on the scale before I came because I didn’t want to know and let myself down. Did I really want to remember all of this?”

The final challenge that was brought up was those that are uncontrollable. The challenge that one must be understanding of and flexible was an issue that Joahana had to confront. However, her experience with the program prepared her for the reaction to the issue. She states her personal challenge that was simply out her control,

“I have hotchimotos disease. The doctor told me it is going to be a tougher time for you than others who do not have it. Even though I was not losing on the scale, I still felt better and knew I was making good choices. That is the biggest thing that I got from the Biggest Loser. I have to stick through it. There are so many times that I wanted to give up. I am busting my butt at the gym and eating rabbit food. You do it for more than what you are going to see on the scale. Before I joined my doctor told me, lose weight, I was going to die. It was a great opportunity. The best thing ever.”

This challenge shows that the program gave this individual the opportunity to experience the lifestyle change and overcome the challenge that could have easily held her back.

Support System

Overall the experience of the program would not have been the same if there had not been a group to go through all of the trials and tribulations together. Raymond states, “I grew to love the people, the trainers, everything that we did.”

The overall experience of support was not unique to the individual teams that the participants were randomly broken into during the program. Sarah states, “If we couldn’t exercise with our team, we could go over and exercise with the other team. And I thought that was really good. Because there was that bond.”

Sarah seemed to have a lot of experience with support as part of her personal experience. She states, “I had a lot of support back at my work and that was very helpful. He let me come and go. I came and went in the morning. That was really great.”

The Contextual Experience

Many of the participants had feelings or experiences with certain issues that were not unique to the program, but issues that they felt they experienced throughout the program and also afterward.

The final results from the focus groups reveal themes that are connected to the experience with terms such as the participant’s thoughts on the relationship between exercise adherence and self-efficacy and social physique anxiety. Although they may have come to the conclusion about these experiences or terms during the weight loss program, they are not directly related to the experience.

What are your thoughts on the relationship between self-efficacy and exercise adherence?

Exercise adherence was the primary goal of the weight loss program following completion. The facilitators of the program intended to give the participants the tools to have the

ability to adhere to exercise following the program. Self-efficacy was defined as a person's perception that they have the competence and ability to reach a goal successfully. Exercise adherence was defined as the ability to continue a regular exercise regardless of characteristics that can influence exercise adherence such as demographic variables, cognitive variables, and behaviors. The theme that emerged from the data was knowledge.

Knowledge

The participants learned that they had the ability to complete the program during the process of the weight loss program. However, this did not necessarily predict the continuation of the exercise behaviors, techniques, or practice that they learned during the program. However, Alissa states, "I don't know that I could even do that [exercise] if I did not have the perception that I have the confidence or the ability to do it [exercise]." The ability to understand exercise and believe one can complete the necessary steps is best summed by Joahana when she states, "Before I did [weight loss program] I did not have self-efficacy. Now I do. It was through exercise adherence that I got my self-efficacy."

Exercise adherence as defined by the participants because of the program or their own personal lifestyle decision seems to be unclear. This is best illustrated when Alissa states,

"[Weight Loss Program] showed me that yes I have the confidence and ability. I know how to do it. I have the confidence and the ability to do. I know I can do it. There is no rush. I never made it to adherence."

Another participant, Jacob, found this within the program when he stated, "I have the confidence to do it [exercise] because of the program that we were in. I was motivated when we were in the program." Another emphasizes this point and states, "I know I have the self efficacy. I know I have the ability, but I do not have the self motivation and the discipline to do it."

There is an obvious gain of knowledge of exercise from the program which allowed the participants to feel self-efficacious. However, this knowledge of the ability of the self does not necessarily mean that there will be exercise adherence.

When you think of social physique anxiety, what comes to mind?

The participants were not secluded during their workouts unless they took place in an exercise studio. They were constantly exposed to other onlookers during the process of the weight loss program. The judgment of others could affect one's feelings during an exercise program or how they look during the exercise program. The definition of social physique anxiety of this study was the form of social anxiety that is found to be related to body image dissatisfaction and anxiety that is felt when an individual believes their body is being evaluated. The only theme that emerged from the focus group was challenges.

Challenges

Those who have social physique anxiety are concerned with those around them and the judgment that others are placing on their body. The individuals who went through this program struggled with exercise while others are around them. During exercise the aesthetic battle with those around seems to mentally occur quite often. The feelings that are derived from this judgment are negative. Some of the statements that exemplify this are, "It makes you feel bad", "It makes you down", "It makes you question yourself", "Why am I even trying".

Maddie notes, "You take an overweight person and stick on that platform up there with all those skinny little college students you are going to have anxiety." This could present the

mental effect during exercise. Another individual felt that younger persons whom look up to them would view the way they look exercising in a negative light when they stated,

“It is more of when I see students that I know and work with. That is what is hard for me. This is a person that I see every day and I am their advisor. They see me sweating and in a ratty shirt and shorts. That is hard for me.”

This feeling was also shared with another participant who felt that working out around those you work with every day brought another form of stress or possible judgment. Alissa states,

“My worst part is running into colleagues. There are people in my department that swim. I will slay a dragon to make sure I know then they are going to swim. I don’t want to run into them. I don’t mind if they see me in a bathing suit. I don’t want to see them in a bathing suit. Maybe it is a little bit of both. It bothers me to get in the pool when my colleagues show up there.”

The obvious challenge of the pool was not unique to one individual. Rather this frustration and disdain was shared by the group. Many of the statements were, “The pool I am not more around”, “I don’t do the pool”, “I hate the pool”. One the participants sums this up in an experience,

“I was more self conscious about being in the pool with these people that I work with. And then make us do pushups. If you are going to put me in the pool leave me in the pool. Don’t make me get out of the pool and do a push up. I don’t want anyone to see me until we are done”.

Most of the experiences with social physique anxiety did not actually occur, but there was a fear that the events could occur. For instance one of the settings that prompted personal fear was Jacob, when they stated,

“I recently reconnected with a lot of my friends from when I was in the marine corp. right after high school. And you know, I weighed 170 pounds and I was incredibly fit. It was great that I reconnected with a lot of them. And we are discussing having a reunion coming up this summer. And I am literally twice the man I was back then. So immediately the first thing that came to mind was oh my God, I have to lose weight. I have to get back into shape because I don’t want them to think badly of me because of that.”

Although this has not occurred there is still fear of the possibility. However, it is worthy note of a specific example in which a participant had to directly confront judgment of their body during exercise. This is explained by Joahana,

“You notice people that you like to look at and admire. This puts another form of anxiety on you. Oh God, what does he think of me. Are they looking at me and thinking that is so cool that she is running. When you feel that way [nervous about what others think] and are anxious about others and that is all you can think about, you can’t focus on yourself. I someone who blatantly would give me problems because of my size. I am sitting here thinking, I could probably kick your butt. It was this guy with no problems who was beside me. This guy gave me a rude comment. I turned to him while I was jogging. I said I am big and can lose weight, but you are stuck with that face.”

CHAPTER 4

THE OBESITY EPIDEMIC

Obesity is an increasingly serious disease. Some sources will acknowledge the possibility of obesity being called an epidemic. An epidemic is defined as a disease or condition with rapid growth amongst a people in a community or population (Morrill & Chinn, 2004). According to the WHO (World Health Organization) (2006), more than one billion people throughout the world are overweight, and 300 million of those individuals are obese. There are many sources that define obesity scientifically as having a BMI that is greater than or equal to 30 kg/m² (Wadden, & Didie, 2003). The United States is one of the leading countries with a population that is obese; in fact an estimated 129.6 million people are obese in the U.S. (Morrill, & Chinn, 2004). The World Health Organization (2006) predicted that in year 2015 approximately 2.3 billion adults will be overweight and more than 700 million will be obese. In addition, there are more obese persons than people who smoke, use illicit drugs, or suffer from other ailments that are not related to obesity (Philipson & Posner, 2003).

The CDC (2009), states that over the past twenty years there has been an increase of obesity in the United States, and only one state, Colorado had a prevalence of less than twenty percent, thirty-two states had a prevalence greater than twenty-five percent, and six of those states had a prevalence greater than thirty percent. Morrill and Chinn (2004) estimate that if the weight gain in this country continues to grow at the present rate then the obesity prevalence rate could climb above 40 % within the next five years.

According to the CDC (2009), Blacks (51 %) and Hispanics (21 %) have a greater prevalence of obesity when compared to their white counterparts. Regionally within the United

States, obesity prevalence tends to be greatest in the South and the Midwest (CDC, 2009). This is easily seen because six states with prevalence rates greater than 30 % are Alabama, Mississippi, Oklahoma, South Carolina, Tennessee, and West Virginia (CDC, 2009).

The reasons for people becoming obese varies, but often when people are asked to make a list of what they value in their life, health is not on the top of the list (Girvan, & Reese, 1990). Hunter, Weisner, Bamman, & Larson (1998) found that there is a fall in energy intake, but the obesity prevalence is rising because of the decrease in energy expenditure. Thus there seems to be a lack of knowledge that one will gain weight when the energy output does not exceed the amount of energy entering the body through food (Heading, 2008). An individual being physically active to be healthy has been documented regularly throughout history. Hippocrates even advised that a lack of physical exercise was detrimental to health (Paffenbarger, Blair, & Lee, 2001). Estimates of energy intake of ancestral humans was about 3000 kcal per day and physical activity accounted for 1000 kcal per day, but people today consume roughly 2100 kcal per day and only expend 300 kcal per day (Saris, Blair, Baak, Eaton, & Davies, 2003). Currently, physical activity rates drop during adolescence, the most dramatic drop in physical activity appears between the ages of 18 and 24 years of age (Petosa, Suminski, & Hertz, 2003). This change in energy balance could be explained by the increase in sedentary technologies that have shown to decrease the cost of consuming calories and coupled with a decrease of the energy expenditure at the work place (Philipson, & Posner, 2003). In addition to the sedentary technologies, that has an impact on the work place, other factors such as changes in transportation and increasing urbanization could cause the obesity prevalence to continue to increase (World Health Organization, 2006).

With the increases in obesity in the United States and worldwide, there is an increase in certain lifestyle diseases. In fact, non-insulin dependent diabetes mellitus, clinically symptomatic gallstones, hypertension, and cancer have been shown to increase in likelihood along with an increase in an individual's BMI (Colditz, 1992). According to the World Health Organization (2010), in the year 2000 worldwide 171 million people suffered from diabetes, but it is predicted that by the year 2030 366 million people worldwide will have diabetes. In addition, diabetes deaths will increase by more than 50 % over the next ten years (World Health Organization, 2006). One of the major concerns with the diabetes epidemic is the increased of cardiovascular disease (Pradham, 2007). Cardiovascular disease (CVD), which is also associated with obesity, is already the world's number one killer and kills about 17 million people each year (World Health Organization, 2006).

In the realm of cancer, there is research to support that an increase in BMI or body weight increases one's likelihood of developing certain cancers. According to Liu and Russell (2008), there is evidence that poor nutrition such as eating foods with high salt content, processed meat products, and being overweight or obese increase the risk of suffering from gastric cardia cancer. Breast cancer is steadily rising in obese women, and women who are obese were more likely to experience a delay in mammography (Fair, et al, 2009). According to Wigle, Gomez, and Turner (2008), men share a decreased risk in prostate cancer when they participate in vigorous physical activity. In the same study, epidemiologic evidence supported associations between prostate cancer and obesity or reduced physical activity (Wigle, et al, 2008).

Other conditions can take a physical toll on the body because of an increase in body weight. According to Orazio et al. (2007), weight gain is a well known consequence of renal transplantation. When waist to hip ratio and waist circumference measurements were high,

patients post transplant were more likely to gain weight, have a history of hypertension and hyperlipidemia, which are key factors in cardiovascular disease (Orazio, et al, 2007).

With the increase of lifestyle diseases associated with obesity, there is an obvious effect on the quality and years of life of obese individuals. In one study, if a person was 51 or 52 years old and was successfully treated for obesity, they would add an additional 0.85 years to their life, and this success in treatment could also potentially result in savings of \$7168 in health care costs (Goldman, et. al, 2009). The mean life expectancy of normal weight population is 83.5 years and individuals who are overweight will live 2.4 years less than their normal counterparts, but obese persons will live 3.9 years less than those who are normal weight (Finklestein, Brown, & Evans, 2008).

Increasing numbers of obese individuals, confronting those clients, patients, and participants have become a delicate and sometimes even an ignored issue. These individuals soon enough confront the effects of obesity with their physicians. The physician is the frontline individual giving the diagnosis of CVD, diabetes, cancer, or hypertension, but there is not always a positive correspondence with patients about the causes, concerns, and ramifications about obesity. According to a study conducted by Teachman and Brownell (2001), they confirmed that physicians, nurses, and healthcare professionals who work with obese individuals had strong implicit anti-fat bias and viewed them as bad and lazy. According to Puhl and Brownwell (2006), doctors were considered one of the top reported sources of stigma. This stigma is increasingly interesting because the stigma is often directed at the obese person and not obesity (Teachman, & Brownell, 2001). However, in a study conducted by Sack and colleagues (2009), physical therapists were found to have neutral attitudes towards obesity. When physicians or healthcare personnel confront obese persons there are a variety of words that can be used to describe obese

medically. The words that a physician chooses to confront a patient with according to one source can make a difference. Women in the study stated that fatness, excess fat, obesity, and large size were undesirable terms to use when describing their condition, and men rated the same terms similarly (Wadden, & Didie, 2003). Most people find that although the terms are medical, these labels increased society's disapproval for those who are obese (Thomas, et al, 2008).

Physicians and other healthcare professionals are not the only source of negative stigma for an obese person on a daily basis. Many sources have found that obese individuals feel that they have been treated poorly by coworkers, family members, hospital personnel, and healthcare persons (Puhl, & Brownell, 2006; Hebl, & Turchin, 2005). There appears to be no place where an obese person can find sanctuary in being themselves. This may be intensified by the fact that only recently has obesity been considered a medical condition rather than a failure morally or esthetically (Wadden, & Didie, 2003). In a study conducted on people living in rural Australia some reasons for gaining weight have been sedentariness, economic, environmental, self-discipline, knowledge gaps on energy imbalance, and mental health issues (Heading, 2008). Obviously, the solution to obesity is not as simple as adding physical activity because of the above reasons for gaining weight and the lack of ability or knowledge to overcome these obstacles.

In a society that to an extent places importance on one's appearance, there could be an increase in one's Social Physique Anxiety (SPA). This disorder tends to be prevalent in people who are dissatisfied with their bodies and have eating disorders, and SPA is strongly associated with exercising and dieting (Atlan & Gencoz, 2008). Body image dissatisfaction can lead to health problems such as being overweight, poor dietary habits, and depression (Forrest, & Stuhlderer, 2007). Those who do not exercise and are dissatisfied with their body image

experience more SPA than those who do partake in exercise; however, the central issue of concern is based on the findings that those who have high SPA tend to avoid locations like the gym or exercise centers which do not encourage physical activity thus leading to further dissatisfaction with body image and increased SPA (Atlan & Gencoz, 2008). The operational definition for body dissatisfaction is a discrepancy of what one believes that they look like and what they desire to look like (Forrest, & Stuhldreher, 2007). If one feels embarrassed to go to the gym the assumption is that they would be less likely to take part in physical activity. The absence of physical activity leads to possible weight gain which does not enhance body image. In a study conducted by Forrest and Stuhldreher (2007), those who were dissatisfied with their body image were more likely to suffer from body image distortion because they used media images as comparisons for how they should look. Further embarrassment of the individual that could cause an increase in SPA could be due to their lack of ability to accomplish tasks like moving or exercising like a normal sized person (Condradt, Dierk, Schlumberger, Raugh, Hebebrand, & Reif, 2008). Exercise is an important factor in improving SPA, and committing to an exercise program enhances participation which diminishes anxiety that one might feel (Chu, Bushman, & Woodward, 2008). Interestingly, when exercise obligation is considered there tends not to be a difference between the sexes, but women tend to have higher SPA (Chu, Bushman, & Woodward, 2008). This hesitation to exercise in gyms stems from the fear of being criticized by others (Atlan & Gencoz, 2008). This criticism makes females especially vulnerable to society's emphasis on being thin, and most females do overestimate their body size, and become increasingly dissatisfied with their body image and have an increase in their SPA (Atlan & Gencoz, 2008).

Lifestyle issues can influence one's SPA. This is not unique only to exercise although there is an abundance of research surrounding exercise. In a study that examined college students who smoked, those who smoked daily or within the past thirty days were more likely to have a decreased body satisfaction, have an increased amount of stress, and lower self-esteem (Croghan, Bronars, Patten, Schroader, Nirelli, et al, 2006). There is plenty of data to suggest in addition, that those who have dieting or eating disorders often tend to have low self-esteem (Griffiths, Beumont, Giannakopoulos, Russell, & et al, 1997).

Failure to recognize the issue from a health care practitioner is not unheard of, and many patients are left to cope with the social stigma. Each individual coping strategy is different, but there is research that supports that there are reoccurring themes. Some of the most common coping strategies that were found were positive self talk, faith, prayer, eating more food, and seeking social support from others (Puhl, & Brownwell, 2006). These coping strategies are not all positive.

Coping with the state of being overweight and obese not only has an internal effect on the individual, but it also affects the perceptions that other people have about them. According to Allison, Basile, and Yuker (1991), past research has shown that obese persons are admitted to college at lower rates, discriminated against in the job market, and people are less compliant with the requests of obese persons. Spiritual institutions have even begun to put emphasis on the issue of obesity. An overweight or obese person is seen as an individual unable to control themselves and their sin physically manifests itself through gluttony and sloth (Hoverd, & Sibley, 2007). With all the negative attitudes toward obesity, only one study found showed that there is a possible way to change people's attitudes toward obesity. Allison and colleagues (1991) further

discovered that people had positive attitudes towards obese persons when they became educated that obesity was out of the person's control.

As the obesity rates increase further into the coming decades, there should be no surprise that legislative bodies and businesses are jumping to make money from this disease. One researcher boldly states that there is a change in supply and demand of medicine, so as conditions such as polio and typhoid were eradicated there needed to be a new area to correct or treat to justify their existence (Oliver, 2006). The government has required that food labels become more in depth and give more information than in the past; however, this has also made food labels difficult to understand (Jacobson, Kim, & Tortolero, 2009). If food labels are difficult to read, then should different food distributors and restaurants take action to change the portion size of their meals, eliminate trans fat, use more vegetables, and reduce fat condiments (Stender, Dyberg, & Astrup, 2007). Although not all of these actions have taken place, but the City of New York has attempted to make the citizens that visit restaurants aware of what they are eating. A calorie count must appear next to the items on the menu, or the restaurant receives a fine that could amount to \$200 all the way up to \$2000 (Barron, J., 2008).

Food is not the only obstacle that needs to be tackled in order to combat obesity. Many cities and communities are built in such a way that driving is the most acceptable method of transportation. Driving does not encourage physical activity but rather a sedentary lifestyle. According to Hayne et al. (2004), incentives for logging walking or biking miles could be used to encourage employees to use other methods of arriving at work, and keeping walking paths such as sidewalks or bike paths well lit and safe. These all seem like daunting tasks that do not come about quickly, and regardless of the amount of money the bottom line is that they promote physical activity.

The benefits of exercise are well documented and researched. If the benefits seem to be common knowledge, it seems strange that so many people do not continue or neglect to exercise completely. An individual who exercises aerobically could reduce stress, lower blood pressure; have higher energy levels, and a reduced risk of heart disease (Girvan, & Reese, 1990). Some other benefits of exercise are a lower incidence of cancer, heart disease, reduced risk of hypertension and diabetes (CDC, 2009). Lambers, Laethem, Acker, and Calders (2008) found when a group of people who had type 2 diabetes used a combined endurance and strength training regimen they increased their fatty acid oxidation and had an increase in HDL and a decrease in total cholesterol within three months and had other significant changes beyond that time period.

The positive aspects of exercise are evident but there are obstacles that many individuals face in terms of exercise. A study conducted by Netz, Zeev, Arnon, and Tenebaum (2008) revealed that participants blamed unsuitable environmental conditions and time constraints. There tends to be an interesting trend in literature that when qualitative studies are done participants tends to give obstacles to lack of exercise and rarely site the reasons why exercise would be a positive aspect to their life. If one were to exercise regularly they could see results that would increase their Resting Energy Expenditure (REE) by 5- 15 % for up to 48 hours after exercise just by working at 70 % of their VO₂ max and benefit their caloric intake they could have a suppressed appetite after a bout high intensity exercise (Hunter, Weinsier, Bamman & Larson, 1998).

Although these barriers are noted throughout literature, this is not the only reason why there may be a lack of adherence to exercise. People have the option of attending aerobics classes, personal training, and recreational sports at many clubs across the country. The goals of

those activities vary. In one study that compared adherence of a Tae Kwon Do class to aerobics, Tae Kwon Do showed a higher attendance rate compared to aerobics because Tae Kwon Do was associated with competence and enjoyment rather than body-related motives (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997). However, exercise adherence may also be related to the participant attitude during the process of exercise. In a study conducted by Morey and colleagues (2003), participant's completed a supervised exercise program and were encouraged to complete weekly homework that prepared them to begin the second phase of the intervention that included unsupervised exercise at home. Interestingly those individuals who were adherent, exercised twenty or more minutes three times a week for six months, had less depressive symptoms, a lower body mass index, and had adhered to the weekend assignments that were given during the supervised portion of the intervention (Morey, et al, 2003).

In another study that was strictly targeted to women forty to sixty-five years of age, centre-based adherence was compared to home based adherence over a six , twelve, and eighteen month period (Cox, et al, 2003). Cox and colleagues (2003) concluded that those who participated in centre-based programs were more adherent during the first six months; however, after six months there were no significant differences after that period of time between the home based or centre based exercise location. In addition, it is worthy to note that those who participated in moderate intensity exercise were more adherent over those who participated in vigorous intensity programs at the eighteen month duration (Cox, et al, 2003).

In one study by Fallon, et al., (2005) there was a difference between men and women when the goal was to adhere to exercise for six months or even up to five years. Women were more likely to continue exercising for more than six months if they focused on the belief that family and friends will benefit from their exercising because of their increased quality of life and

longevity (Fallon, 2005). In order to reach the five year goal of exercise adherence they needed to remain confident in overcoming daily barriers that would keep them from exercise (Fallon, et al, 2005). Men appeared to need to focus on focusing on the consequences their behavior would have on others, increase their confidence in overcoming barriers, and coping with the negative affect (Fallon, et. al, 2005).

Exercise behavior attitudes can affect whether one adheres to exercise also. For instance, SPA is believed to be a significant factor in determining whether or not one is able to adhere to exercise because the body is the central factor (Eklund & Crawford, 1994). In the same study that drew this possible conclusion, SPA was significantly correlated with self-presentational reasons for exercise including increasing body tone, physical attractiveness, and weight loss (Eklund & Crawford, 1994). However, there were no in depth descriptions of the terms for physical attractiveness, body tone, or weight loss. Thus, the definition and reasoning for these subjects could be different for every individual who took part in the study.

Health behavior is important in the study, programming, and evaluation of exercise because those who create and facilitate the programs can move beyond intuition and use sound design to implement and evaluate health behavior and health promotions interventions (National Cancer Institute, 2002). Hertz and Petosa (2008) emphasize that the use of theory-based programs are more likely to increase the health behavior. However, in order to effectively incorporate theoretical framework into a theory based intervention the theory must be operationalized, mediators must be identified, and interventions must be designed to target those mediators (Sirur, et. al, 2009).

One such model that is used frequently is the Transtheoretical Model (TTM) which is termed interchangeably with the Stages of Change Model, and has been successful in increasing

physical activity levels (Jackson, Asimakopoulou, & Scammell, 2007). This model has been used to describe the maintenance of an exercise program (Fallon, et al, 2005). The TTM consists of five stages: precontemplation, contemplation, preparation, action, and maintenance (NIH, 2005). The behaviors through the stages of change are not linear, but rather cyclical in nature with relapses and progressions through stages (Fallon, et al, 2005). There are constructs that move individuals through progressions or relapses: self-efficacy, temptation, decisional balance, and the processes of change (Fallon, et al, 2005).

Self-efficacy represents the confidence that one has to engage in a positive behavior or discontinue to participate in a negative behavior (Marcus & Simkin, 1994). Those who were in the precontemplating or contemplating stages had lower levels of self-efficacy as opposed to those who were in the maintenance stage had the greatest score (Marcus & Owen, 1992). Fallon, et al (2005), noted that moderate effects of self-efficacy were measured between precontemplation to contemplation, but there were small to moderate effects measured between the contemplation to preparation. Large effects of self-efficacy were only seen between the stages of action to maintenance (Fallon, et al, 2005).

Hausenblas et al. (2001) defined the construct of temptation as one's ability to work through difficult situations and continue their specific behavior. Temptation and self-efficacy are inversely related across the stages of change, and temptation has been greater in the earlier stages as opposed to the lower levels in the later stages (Fallon, et al., 2005). Although there are lower levels of temptation in the later stages there is an increasing importance of temptation for maintenance in the behavior change (Hausenblas, et al., 2001).

Marcus and Owen (1992) defined (as cited in Janis & Mann 1968, 1977) decisional balance as the ability one possesses to acknowledge the pros and cons of engaging an exercising

behavior to the self and to others. Those who were determined to be in the precontemplation stage had less pros, increased cons, and lower decisional balance scores; however those who were in the maintenance stage had a higher pros, lower cons, and increased decisional balance score (Marcus & Owen, 1992).

The final process of change consists of five experiential and behavioral processes (Fallon, et al., 2005). These processes are thought to be used more often in later stages of change and then remain level at the action stage because all of the processes are necessary to continue with the lifestyle change (Fallon, et al., 2005). The five experiential processes are consciousness raising, dramatic relief, environmental reevaluation, self-reevaluation, and social liberation (Fallon, et al., 2005).

Fallon, et al. (2005) defined the five experiential processes as:

“Consciousness raising is evident when an person seeks information, understanding, and feedback about their behavior such as exercise. Dramatic relief is an affective aspects of change the often involves a significant emotional experience related to behavior. Self-reevaluation is emotional and cognitive appraisal by the individual regarding the behavior. Environmental reevaluation is how the individuals considers and assesses the behavior will affect their physical and social environments. Social liberation is the awareness, availability, and acceptance that there are other behavior lifestyles with regard to exercise within societies.” (p. 631)

The five behavioral processes of change are counterconditioning, helping relationships, reinforcement management, self-liberation, and stimulus control (Fallon, et al., 2005).

Fallon, et al. (2005) defined the behavioral processes:

“An example of counter conditioning for the particular exercise behavior would be replacing exercise with formerly sedentary behaviors. Helping relationships require one to trust, accept, and use the support from others that encourage them to begin exercise. Reinforcement management is changing or control factors that would otherwise maintain a sedentary lifestyle. Self-liberation is the person’s choice to change and commitment to that change while believing that they can change. Stimulus control is remaining in control of situations and other experiences that may cause the individual to become sedentary again.” (p.631)

Amidst all the stages, constructs, and behavioral processes, there is continued debate on the precise stages of change and defining the stages individually. In a study conducted by Jackson, Asimakopoulou, and Scammell (2007) relapse was considered to be the sixth stage of the TTM. The National Cancer Institute does not recognize termination as a stage in their model; however, Fallon and Hausenblas (2004) recognize and question termination as a stage in the investigation of exercise behavior in terms of validity of the termination stage. The current definition of termination for exercise is five years of exercise adherence, 100% self-efficacy and 0% temptation (Fallon & Hausenblas, 2004). The stages of change are a cyclical model moving through the stages that could include periods of progression and regression (National Cancer Institute, 2005; Prochaska & Velicer, 2004). Jackson et al. (2007), encourage program planners to include individuals on a team that have several strong backgrounds such as dieticians, those well versed in behavior modification, and implementing behavior change before a physical activity program is implemented. Interestingly in the study conducted by Fallon & Hausenblas (2004) only one person reported 100 % self-efficacy and 0 % temptation, and health behavior specialists or program facilitators may need to emphasize the cessation of negative behaviors rather than rigorous and seemingly unattainable self-efficacy. Fallon and Hausenblas (2004), acknowledge that because the TTM was created to explain the ceasing of negative behaviors like smoking or drinking there may be differences and difficulty in the application of TTM to the adherence of a positive behavior. Their final conclusion emphasized that a more accurate definition could be higher barriers –efficacy and low temptations in combination with the five years of exercise may ultimately define the transition from maintenance to termination (Fallon & Hausenblas, 2004).

Another theory that is often used in the research and evaluation of exercise is the Social Cognitive Theory (SCT). This theory includes various other conceptual pieces of frameworks seen in the Health Belief Model, protection motivation theory, the theory of reasoned action, and the theory of planned behavior (Sirur, et al., 2009). This theory takes into consideration the individual's environment which can include their family, friends, health professionals, coworkers, and other people that could surround one's social environment (NIH, 2005). In the study conducted by Hertz and Petosa (2008) the SCT and important variables such as self-regulation, self-efficacy, and social situations were used to address the encouragement of adolescents to engage in moderate intensity exercise based on the Planning to be Active Program. The results of this particular study noted significant changes in self-regulation which encompassed instruction on goal setting, planning, self-reflection and self-monitoring and social situations which included instruction on evaluating and developing their social environment (Fallon & Petosa, 2008). Due to the fact that self-efficacy did not increase in this program Fallon and Petosa (2008) both emphasize an increase in the variety and quantity of activities and modification of the educational experiences. In one study according to Sirur et al. (2009), self-efficacy at the completion of a 6 month exercise program was predictive of physical activity for 18 months. Sirur et. al (2009) states that when using the Social Cognitive Theory that "a direct relationship between outcome expectations and adherence assumes that when the outcome expectations, there is an increase in adherence.

The Health Belief Model has been used as a theoretical framework when studying exercise adherence. Hochbaum, the developer of the Health Belief Model, believed that a person could change their path of behavior based on the following four components: perceived

susceptibility, perceived severity, perceived barriers and benefits, and cues to action (Girvan, & Reese, 1990).

Perceived susceptibility refers to one's subjective perception of the risk he or she faces of actually contracting the disease. Perceived severity is an individual's feelings and how bad they a condition would really be if it did happen to them. The perceived benefits and barriers are an individual's reflection on whether adopting the behavior would be a benefit or that the barriers are too much. The cue to action was later adopted because a person may have high levels of benefits but not fully adopt a behavior (Graves & Reese, 1990).

Wood (2008) stated that the Health Belief Model has been applied to a group of women whom had recovered from breast cancer demonstrated the perceived benefits and benefits of exercise between women who had or had not experienced breast cancer and indicated that participation in exercise would give them control over their lives.

CHAPTER 5

DISCUSSION

This study was one of the first that was found to look at the results of participants from a mixed methodology standpoint. All 11 of the participants completed all of the required protocols to be a part of the study. During their weight loss program, they had social support through other participants, trainers, and a team psychological coach. During the program, everyone reduced their waist circumference, BMI, and overall weight. The support that was given has been shown in other studies to significantly decrease waist circumference, increase self-esteem and functional health status (Newnham- Kansas, Irwin, & Morrow (2008). Although the participant data was not available to indicate an increase in self-esteem there was evidence of the physiological betterment of the participants immediately following the program.

The results of physiological data yielded results that are interesting given the statements indicated from the Exercise Staging Algorithm. Four of the eleven participants indicated that they have been exercising, but for less than six months. The weight loss program for six of the participants had ended two years prior to the time of collection. The other four participants indicated that they had been exercising for more than six months. Two of the participants currently stated that they have exercised regularly in the past, but are not doing so currently. Only one did not intend to exercise within the next six months. This could explain the increases in circumferences because there has not been consistent regular exercise maintained amongst participants.

Participants mentioned a loss of support through the trainers and their team following the program. This was also noted as a social issue in the Newnham et al, (2008) study because many

of the participants noted that the continued assistance of a team coach could help them maintain or start a program. Many of the participants in our study either had a desire to participate in the program again or missed working out with a group or trainer. The participants in the short term weight loss program just like the participants in the Ryan, et al. (1997) study found that enjoyment was predictive of one's adherence to a program. This study showed that enjoyment was not sufficient enough to ensure long term adherence to a program. The weight loss program participants enjoyed the program that they were enrolled in and stuck with the program, so when the structure and team atmosphere were gone the enjoyment factor seemed to dwindle because enjoyment of the program rather than exercise were emphasized. Most of the participants initially continued to exercise for a short time period.

To determine the adherence of the participants they were asked to complete an Exercise Staging Algorithm. During the program all of the participants were in the action stage of changing; however prior to the program most of them were not participating in any exercise regimen. After the program many of participants had relapsed into the contemplation and precontemplation stage of change, which is where many of them were prior to the beginning of the study. This was determined because the participants were not considering beginning an exercise program. Seven of the current participants were not engaging in any sort of physical activity or exercise at the time. Although many of them felt that they had the ability to complete or participate in a physical activity program did not indicate that they would continue to participate in physical activity because of lack of time, work related issues, time, and a lack of enjoyment in exercise. During the program the participants were in the action stage of the stages of change; however following the program two participants were in the contemplation and precontemplation stage. Four of the participants had recently started exercising again but it had

been less than six months. All of the participants had adhered to exercise during the program but did not continually adhere following the program. According to the data there seemed to be a difference in the belief that one has the ability to participate in exercise, versus actually adhering to the exercise program.

Many of the participants gave examples as to why they could not adhere or did not adhere to exercise through the focus group investigation and the Temptation Not to Exercise instrument. Most individuals found that they were more likely not to participate in exercise when they had family events, felt they did not have time, when they were busy, and when they work to do. Many of the participants felt that their work day was long, and adding exercise after their long work day was too much for their schedule. These excuses were similar to the reasons for omitting exercise by Netz, et al. (2008), who found that environmental and time constraint barriers were two top external factors that kept one from exercising. However current results differed from Netz et al. (2008), in that those who were older did not report excuses such as family or career related reasons for not participating exercise. All participants in our study had the greatest omittance or temptation not to exercise when they were faced with time constraints. Reasons such as lack of time as a top reason for not exercising were reported by Schrop, et al. (2006). The older participants in this study were challenged with physical therapy for months to weeks following an injury that did not allow them participate in exercises or activities with the entire group. Many of the participants also experienced injuries during and after the weight loss program ranging from sprains to bumps and bruises that affected their ability to complete exercises. This was also noted as a reason for not continuing exercise by Netz, et al. (2008). Two of the weight loss programs had suffered injury that required therapy: plantar fasciitis, knee, and wrist injuries.

Just as the lack of time and external factors seemed to be indicative of a participant not adhering to exercise there seemed to be a parallel in their perceived ability to participate in exercise. Just as time management was indicated as a reason for not exercising, most participants were not confident to participate in physical activity when they felt they did not have the time. Interestingly, when the issue was an internal factor such as mood, most of the participants felt that they were confident in their ability to exercise.

Marcus, et al. (1994) found that self-efficacy has appeared to be an important and significant indicator of continuing physical activity regardless of the time constraints or other external variables that may stand in an individual's way. Although the participants had gained knowledge of the health benefits of exercise and were cognizant of the way they felt after exercise this did not affect their continuation. In fact, over half of the participants did not continue to exercise or some of them had just begun exercising again for less than six months. Self-efficacy appeared to be more related to an individual's belief that they could partake in an exercise program versus actually adhering to a program beyond six months.

The ability to exercise and the belief in the self were not found to correlate significantly. Participants as a whole had high self-efficacy scores and high self-esteem scores. The same could not be said for social physique anxiety. Participants noted that one could not workout as well or focus if they felt others were judging their bodies. The participants seemed to be concerned with the judgment others placed on their bodies when they were exercising. Some felt that it would create a difference in how they were looked at as a role model or approval from the opposite sex. Unlike most studies and what was predicted for this study, there was a significant positive relationship between the relationship of self-esteem and social physique anxiety. There is no evidence of this relationship found in current research. Martin, Engels, & Smith (1997),

found that self-esteem is more so related to SPA when compared specifically to the body. Many of the participants of this study began exercising for health improvement versus body image reasons. Therefore, they may have a high global self-esteem, but this does not mean that there is not anxiety over evaluation of this body.

The results of this study support prior research that found that external variables such as time constraints and social events are likely reasons or excuses one has for not exercising (Netz, et al. (2008). Research has shown that participants of a physical activity program do not continue after six months and was also true for this study. There appears to be a change in the stages that is not accounted for and it is unclear what factors occur during transitions into these various stages. One of the participants looked at the discontinuation of the exercise program protocols as a failure and described the experience as throwing it all away. One can only speculate the lack of time and loss of social support that was mentioned throughout the study was reasons for the stage transition stage.

One of the limitations of this study is that the participants were not followed during the entire duration of their experience after the weight loss program. Future research should follow participants for long term to determine factors that could be responsible for transitions amongst the stages or obstacles that keep one adhering or not adhering to exercise. According to Fallon (2005), termination or adherence occurs once one has been exercising for five years. However, there were no studies found that have shown this through means other than self report.

There were limitations to the physiological testing. Although the fitness assessors were not the same individuals for the separate programs, they had been taught to do the tests by the same individual. Physiological testing should be better evaluated on an individual basis to ensure safety of the participants. Adjustments should be made in terms cardiovascular testing and

strength testing. These tests were not measured post study because of the lack of consistent protocols. Tests should be evaluated based on the age, gender, and physical ability of each participant.

In the future, there is need for a self-esteem scale that specifically relates to physical activity or exercise. The use of a global self-esteem scale such as Rosenberg could be the reason why there was a positive correlation found between Social Physique Anxiety and Self-Esteem. More research should also be done to evaluate the relationship of self-efficacy and exercise adherence. This study expressed the relationship as multidimensional because one had to be self-efficacious to be adherent. However, one could be self-efficacious and not adherent. During the short term program some participants felt that adherence to the program made them self-efficacious as it related to exercise. However, this did not transcend to behavior/long term lifestyle change.

Although during the program all participants were in the action change of the exercise behavior the tools that they were given during the program were not unique to the stage the participants were in prior to the program. The program coerces one to be in the action stage and does not adjust for individual differences in stages. This could be the reason why so many people did not adhere following the program.

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APPENDIX A
RESEARCH INVESTIGATION

Research Questions

- 1.) What role does self-efficacy play in exercise adherence?
- 2.) What is the adherence rate of those who complete the program?
- 3.) What aspects of the program gave the participants the tools to be successful?
- 4.) If the participants were not successful, what do they feel was the reason for their relapse such as obstacles?
- 5.) What stage of change are participants in compared to where they were a year to a year and a half ago?
- 6.) If the participants have an increased physique anxiety, will there also be a decrease in self-esteem thus producing a feeling of embarrassment due to failure?

Limitations

- 1.) There is a lack of control regarding which Biggest Loser participants are still employed at the University.
- 2.) University Employees are usually on a 9 to 5 p.m. work schedule, but this is always decided by department and could interfere with the focus group times.
- 3.) Due to the fact that the Biggest Loser programs were conducted in different 16 week intervals, not all of the participants were exposed to all of the same psychological tests, trainers, or schedule.
- 4.) There was a greater majority of female participation than male participation in the program.
- 5.) Initial physiological measurements were done by various knowledgeable personal trainers that are no longer working within the exercise facility.

Delimitations

- 1.) The duration of the Biggest Loser programs was 15 weeks.
- 2.) The participants were required to work out a required three sessions that were an hour in duration, but were also permitted to work up to five sessions a week.
- 3.) Participants are those who completed the program.

Definitions

- 1.) Self-Esteem is defined as the achievement of behaviors that is associated with greater well-being (Bahaeloo-Horeh & Assari, 2008).
- 2.) Social Physique Anxiety is defined as the form of social anxiety that is found to be related to body image dissatisfaction (Atlay & Gencoz, 2008) and anxiety that is felt when an individual believes their body is being evaluated (Grieve, et al, 2005).
- 3.) Exercise Adherence is defined as the ability to continue a regular exercise regardless of characteristics that can influence exercise adherence such as demographic variables, cognitive variables, and behaviors (Weinburg, & Gould, 2003).
- 4.) Short Term Exercise is defined as exercise that lasts no longer than six months.
- 5.) High Intensity Exercise is defined in terms of perceived exertion for this study because most of the participants were formerly sedentary; therefore, any physical activity is initially difficult and exhaustive.

Assumptions

- 1.) All tests were conducted in the same manner and followed the same procedures between groups on the Spring 2008 and Fall 2008

APPEDNIX B
PHYSIOGICAL TABLES

Physiological Table Results

Table 3.1

Physiological statistics of weight loss participants using dependent t-test

Physiological Measurement	N	Mean Weight Loss Program	SD During Weight Loss Program	Mean After Program	SD After Program	p-value
Resting Heart Rate (BPM)	11	75.36	13.23	74.36	10.42	.754
Systolic Blood Pressure (mm Hg)	11	135.63	15.04	130.63	20.62	.347
Diastolic Blood Pressure (mm Hg)	11	83.18	9.33	79.63	8.98	.368
Weight (kg)	11	105.12	32.81	110.49	30.48	.125
BMI	11	35.74	6.41	37.79	7.47	.079
Neck (cm)	11	36.26	4.16	38.80	4.77	<.001*
Chest (cm)	11	109.67	12.66	112.45	14.29	.197
Arm (cm)	11	35.26	5.23	39.20	6.55	<.001*
Forearm (cm)	11	27.24	2.32	28.68	2.69	.001*
Waist (cm)	11	96.84	14.19	104.88	17.47	.005*
Abdomen (cm)	11	103.92	17.16	112.63	18.11	.001*
Hips/Buttocks (cm)	11	118.61	12.55	126.02	14.31	.004*
Thigh (cm)	11	65.75	6.79	68.99	9.19	.054
Calf (cm)	11	43.17	5.17	44.45	4.71	.022

Total Circumference (in)	11	251.43	27.93	266.18	32.08	.003
Exercising Heart Rate (BPM)	11	133.50	11.48	141.67	25.44	.509
Rockport 1 Mile (min)	11	15.46	1.54	17.03	2.52	.029
Flexibility (cm)	11	32.72	9.89	27.19	11.97	.031
Waist to Hip Ratio (cm)	11	0.81	0.07	0.83	.07	.068

* $p \leq .01$

Table 3.2.

Temptation Not to Exercise Scale

	N	Mean	Standard Deviation
When I am angry	11	42.73	36.90
When I feel satisfied	11	34.19	34.19
When I am alone	11	53.18	42.32
When I am stressed	11	55.45	35.03
When I am out of shape	11	51.82	27.50
When I feel lazy	11	54.09	32.54
When I feel that I do not have the time	11	78.18	32.11
When family / events situations interfere	11	79.09	31.69
When I am busy	11	80.91	31.05
When I have to do work	11	80.00	30.58

APPENDIX C
INSTRUMENTS

The Rosenberg Self-Esteem Scale

Please read each item and then indicate using the following scale the feeling you experience when reading each item.

1	2	3	4
strongly agree	agree	disagree	strongly disagree

1. _____ I feel that I am a person of worth, at least on an equal plane with others.
2. _____ I feel that I have a number of good qualities.
3. _____ All in all, I am inclined to feel that I am a failure.
4. _____ I am able to do things as well as most other people
5. _____ I feel that I have much to be proud of.
6. _____ I take a positive attitude about myself.
7. _____ on a whole I am satisfied with myself.
8. _____ I wish I could have more respect for myself.
9. _____ I certainly feel useless at times.
10. _____ At times, I think I am no good at all.

Social Physique Anxiety Scale

Please circle your answer to each question below. For each question, the answer scale is as follows:

1 = Not at all

2 = Slightly

3 = Moderately

4 = Very

5 = Extremely Characteristic

1) I wish I wasn't so uptight about my physique/figure.

1 2 3 4 5

2) There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.

1 2 3 4 5

3) Unattractive features of my physique/figure make me nervous in certain social settings.

1 2 3 4 5

4) In the presence of others, I feel apprehensive about my physique/figure.

1 2 3 4 5

5) I am comfortable with how fit my body appears to others.

1 2 3 4 5

6) It would make me uncomfortable to know others were evaluating my physique/figure.

1 2 3 4 5

7) When it comes to displaying my physique to others, I am a shy person.

1 2 3 4 5

Exercising Staging Algorithm

Regular exercise is any planned voluntary physical activity (brisk walking, aerobics, jogging, bicycling, swimming, etc.) performed to increase physical fitness. These activities should be performed 3 to 5 times in a week for a minimum of 20 minutes per session. Exercise does not have to be painful to be effective, but should be done at a level that does increase your breathing rate and cause you to break a sweat.

Do you exercise regularly according to the definition above? Place an “X” beside **ONE** statement that applies to you.

_____ No, I do not intend to begin exercising in the next 6 months.

_____ No, but I intend to begin exercising in the next six months.

_____ No, but I intend to begin exercising regularly in the next 30 days.

_____ Yes, I have been exercising, but for less than 6 months.

_____ Yes, I have been exercising for more than 6 months.

_____ I have exercised regularly in the past, but I am not doing so currently.

Temptation Not to Exercise

Please indicate how TEMPTED you are to NOT exercise in the following situations. The responses to this instrument will be 0 – 100 %. You could use the following the ratings as a guideline; however, any number from 0 – 100 % is an acceptable answer.

0 % = not tempted at all

50 % = somewhat tempted

100 % = extremely tempted

_____ When I am angry

_____ When I feel satisfied

_____ When I am alone

_____ When I am stressed

_____ When I am out of shape

_____ When I feel lazy

_____ When I feel that I do not have the time

_____ When family events/ situations interfere

_____ When I am busy

_____ When I have work to do

Measure of Self-Efficacy

Please answer the following questions based on your confidence to exercise with regards to each statement listed below.

0 = Does not apply to me

1 = Not confident at all

2

3

4

5

6

7 = Very Confident

I am confident I can participate in regular exercise when:

_____ I am tired

_____ I am in a bad mood

_____ I feel I do not have the time

_____ I am on vacation

_____ It is raining or snowing

Guided Self-Change Biggest Loser Assessment

Name: _____ Date: ___/___/___

Email: _____ Campus P.O. Box:

Home Phone #: _____ Work Phone #: _____ Cell Phone #:

Home address:

1. Age: _____ 2. Gender (circle one) M F 3. Height _____ 4. Weight

5. Education level (degree completed)

6. Current Marital Status (circle one) Single Married Recent Divorce

7. Current Job Title: _____ 8. Department:

9. Current Living Arrangement: CHECK ALL THAT APPLY

___ Spouse

___ Parents

___ Friends

___ Children: # ___

___ Other Relatives: _____

___ Alone

15. Are you currently using any prescription drugs? ___ No ___ Yes, describe.

16. How many times per week do you exercise? _____ If none, go to the next question.

What types of exercise do you engage in?

17. How would you describe your current eating habits? How many meals per day?
Breakfast?

The next few questions refer to alcohol use. The following is a way to think of different drinks.

- 1 drink = one 12oz can/bottle of regular beer
- = one 5 oz glass of regular (12 %) wine
- = 1 ½ oz of liquor (rum, whiskey, vodka)

20. How often do you have a drink containing alcohol? Circle One

Never Monthly or less 2-4 times/month 2-3 times/week 4 or more times/week

21. How many drinks containing alcohol do you have on a typical day when you are drinking?

Circle one

None 1-2 3-4 5-6 7-9 10 or more

22. How often do you have 5 or more drinks on one occasion? Circle One

Never Less than monthly Weekly Daily or almost daily

23. Have you ever smoked cigarettes? ____ No (if No, you are done with questionnaire)
____ Yes

24. Do you currently smoke cigarettes? ____ No ____ Yes; for how long _____

25. Would you like to give up smoking if you could do so easily? ____ No ____ Yes

26. On the following scale from 1-5, what number best reflects how ready you are NOW to quit smoking?

Not Ready to Change	Thinking of Changing	Undecided	Somewhat Ready	Very Ready
1	2	3	4	5

28. Since you started smoking cigarettes regularly, how many times have you SERIOUSLY tried to

stop smoking? Please be specific.

29. How soon after you wake up do you smoke your first cigarette? Circle One
After 60 min 31-60 min 6-30 min Within 5 min

30. How many cigarettes do you smoke per day? _____

31. When you do drink alcohol, what % of the time from 0% to 100% do you also smoke cigarettes?

_____ %

32. Do you feel cutting back on your alcohol consumption might help you stop smoking?

____ No ____ Yes

33. If you were to stop smoking cigarettes are you concerned about gaining weight?

____ No ____ Yes

Please explain in 250 words or less why you should be chosen to participate in the Biggest Loser Program.

Physiological Data Collection Sheet

Name: _____

Resting Heart Rate: _____

Blood Pressure: _____

Height: _____

Weight: _____

BMI: _____

BIA: _____

Circumferences:

1.) Neck _____ in _____ cm

2.) Chest _____ in _____ cm

3.) Arm _____ in _____ cm

4.) Forearm _____ in _____ cm

5.) Waist _____ in _____ cm

6.) Abdomen _____ in _____ cm

7.) Hip/Buttocks _____ in _____ cm

8.) Thigh _____ in _____ cm

9.) Calf _____ in _____ cm

Rockport

1.) Time _____ min _____ sec

2.) Heart Rate _____

Flexibility

Trial 1

Trial 2

Trial 3

_____in

_____in

_____in

APPENDIX D
IRB INFORMATION



COLLEGE OF HEALTH AND HUMAN SCIENCES

DEPARTMENT OF HEALTH AND KINESIOLOGY

INFORMED CONSENT

My name is Justine Coleman, and I am a graduate student in the Department of Health and Kinesiology at Georgia Southern University. I am conducting this research as part of my thesis project under the direction of Dr. Barry Joyner, Professor and Chair in the Department of Health and Kinesiology.

The purpose of this research is to investigate exercise adherence following a weight loss program. The tools and barriers the participants face will be investigated, and their experience involving self-esteem and social physique anxiety.

Participation in this research will include completion of physiological tests that will all take place in the Fitness Assessment Lab of Campus Recreation and Intramurals. Height and weight will be measured using a standard scale with a stadiometer. Resting heart rate will be timed and measured for thirty seconds by palpating at the radial artery. Blood pressure will be measured using a standard cuff and sphygmomanometer. A variety of circumferences will be measured using a standard flexible measuring tape. The neck will be measured just below the Adam's apple. The chest will be measured at the nipple line for females and above the nipple line for males. The arm will be measured at the right side of the body at the greatest circumference of the arm around the bicep. The forearm will be measured at the greatest circumference of the forearm. The abdomen will be measured at the narrowest circumference between the umbilicus and the xyphoid process. The waist will be measured at the level of the umbilicus. The hips/buttocks will be measured at the greatest circumference of the gluteus maximus. The thigh will be measured at the greatest circumference of the right thigh. The gastrocnemius will be measured at the greatest circumference of the right gastrocnemius. Body fat analysis will be measured using a handheld Omron bioelectrical impedance device. The Rockport 1 mile walk will be measured on the indoor track at the RAC, and will be timed using stop watches while heart rate is measured using a polar heart rate monitor for the duration of the test. Hamstring flexibility will be measured with the participants back against the wall and their feet flat against the box. You

will have three trials of the flexibility test that will be accepted if your knees remain straight. Also, you will be asked to complete the following surveys: the Rosenberg Self-Esteem, Social Physique Anxiety Scale, Temptation Not to Exercise Scale, and Self-Efficacy Scale. Prior to the physiological data you will be asked to participate in a focus group with six to eight individuals from the Spring 2008 or Fall 2008 program. The data from the focus group will be recorded and saved on a computer until the data has been transcribed. The focus group will take place at Campus Recreation and Intramurals in the Conference Room, where the focus group will be recorded by two basic digital sound recorders. You will be blinded to the physiological data results until completion and review of the transcripts.

The risk for participation is minimal. There is physical risk involved in the one mile indoor walk which could cause you to faint, feel nauseated, tired, or feel an accelerated heart rate during the activity. These feelings could be exacerbated if one has not recently participated in physical activity. The risk is minimized because you can stop if you are unable to complete the one mile walk and there is no exposure to heat or cold from the outdoor elements that could further exacerbate the possibility for injury. There could be some mental or emotional discomfort from discussing possible failure or relapse from not adhering to exercise through the focus group study and the instrumentation that is administered after the physiological testing. However, you will be encouraged to answer only those questions that you are comfortable answering and participate in physiological tests that were previously conducted during the Biggest Loser. Understand that medical care is available to you in the event of injury resulting from research but that neither financial compensation nor free medical treatment is provided. Understand that you are not waiving any rights that you may have against the University for injury resulting from negligence of the University or investigators. If you feel you need medical assistance please contact:

Georgia Southern University Health Services 912-478-5641

Georgia Southern University Counseling Center 912-478-5541

The benefits to participation will be a better understanding why participants adhere or do not adhere to exercise following a short term weight loss program. The investigation of these variables and the in depth understanding following the focus groups will not only help future health behavior professionals but also the participants and the community.

The duration for the combined time of the focus group, surveys and the physiological data will be 2 to 3 hours. The focus will take place first and could last up to an hour and a half or two hours. Following the focus group participants will sign-up for one , one hour time slot to have the physiological data measured and fill out the surveys.

Only the researcher, Justine Coleman, and her data collection assistants will have access to the information on the participants. All of the information will be kept in the filing cabinet in the Fitness Assessment Lab at Campus Recreation and Intramurals. This is also where all previous physiological and instrumentation data is currently kept that you completed following your respective programs that will be used in the comparison of current measurements. All focus group recordings will be kept on a computer file until fully transcribed, and after completion of the transcription all files will be deleted and the transcriptions will be filed in the secure filing cabinet in the Fitness Assessment Lab at Campus Recreation and Intramurals. All information

will be kept in the filing cabinet for three years, and following three years the information will be archived in a box and kept in the Georgia Southern University archiving office at College plaza on Fair Road for 13 years.

You have the right to ask questions and have those questions answered. If you have questions about this study, please contact Justine Coleman or Dr. Joyner, faculty advisor, whose contact information is located at the end of the informed consent. For questions concerning your rights as a research participant, contact Georgia Southern University Office of Research Services and Sponsored Programs at 912-478-0843.

You do not have to participate in this research. You may end your participation at any time by telling the person in charge, not returning the instrument or discontinuing the physiological tests, and you do not have to answer any questions you do not want to answer.

There is no penalty for deciding not to participate in the study. You may decide at any time that you do not want to participate further and may withdraw without penalty or retribution.

You must be 18 years of age or older to consent to participate in this research study. If you consent to participate in this research study and to the terms above, please sign your name and indicate the date below.

You will be given a copy of this consent form to keep for your records.

Title of Project: Exercise Adherence Following Short Term Weight Loss Programs

Principal Investigator: Justine Coleman, 678-576-1604, jbowman6-gw@georgiasouthern.edu

Faculty Advisor: Dr. Barry Joyner, P.O. 8076, 912-478-0200, joyner@georgiasouthern.edu

Participant Signature

Date

I, the undersigned, verify that the above informed consent procedure has been followed.

Investigator Signature

Date

Instructions: *Please respond to the following as briefly as possible, but keep in mind that your responses will affect the actions of the Board. Clearly label your responses in sections that correspond to the specific information requested. The Narrative should include a step by step plan of how you will obtain your subjects, conduct the research and analyze the data. Make sure the narrative clearly explains aspects of the methodology that provide protections for your human subjects. You may insert your responses in each section on this page in bold text, leaving a space between the question and your answers. Narrative should not exceed 5 pages.*

*The application should be submitted electronically (email attachment) or sent to the Office of Research Services and Sponsored Programs, at P. O. Box 8005, Statesboro, GA 30460, fax (912) 478-0719, and should contain, in this order: a signed cover page (fax, pdf or mail), the project proposal narrative, signed copy of certification of investigator responsibility (CIR) (fax, pdf or mail), human subject training certificate (within the last 3 years), and the informed consent that you will use in your project., the informed consent checklist (optional) Additional information, such as copies of survey instruments, letter of cooperation from institutions where subjects will be accessed (e.g., public schools), advertisements, or any instruments used to interact with participants should be attached at the end of the proposal clearly designated as an Appendix. **For electronic submission:** First complete the proposal narrative in entirety and “Save As” a word document to your computer or disk named “lastname, First initial _propnarr_Year_Month_Date.doc”. Open and complete cover page. Email all documents to IRB@georgiasouthern.edu. Documents that require signature may be faxed to 912-478-0719, mailed or uploaded in PDF. (Electronic submission is not required.)*

Personnel.

During the focus group sessions for the participants an individual who is experienced in qualitative interviews will conduct the session to allow no biases from trainers or persons who were in an administrative roll for the program.

Purpose.

1. Briefly describe in one or two sentences the purpose of your research. The purpose of this research is to investigate exercise adherence following a weight loss program. The tools and barriers the participants faced will be investigated, and their experience involving self-esteem and social physique anxiety.

2. What questions are you trying to answer in this experiment? What role does self-efficacy play in exercise adherence? What is the adherence rate of those who complete the program? What aspects of the program gave the participants the tools to be successful? If the participants were not successful, what do they feel was the reason for their relapse such as obstacles?

What stage of change are participants in compared to where they were a year to a year and a half ago? If the participants have an increased physique anxiety, will there also be a decrease in self-esteem thus producing a feeling of embarrassment due to failure?

Please include your hypothesis in this section. If a participant has increased social physique anxiety and low self-esteem, their adherence rate will be less than those who have low social physique anxiety and high self-esteem. There is a correlation between self-esteem and social

physique anxiety. Those who have higher social physique anxiety and lower self-esteem will be in the beginning stages of change according to the Transtheoretical Model.

The jurisdiction of the IRB requires that we ensure the appropriateness of research. It is unethical to put participants at risk without the possibility of sound scientific result. For this reason, you should be very clear on how participants and others will benefit from knowledge gained in this project. **There has been an increase in the media that portrays weight loss programs. One of the most popular programs is the Biggest Loser. There have been several recreation departments and health clubs that have adopted a more realistic concept to the Biggest Loser. Information for those participants should be created and disseminated based on their current knowledge and ability. This information will hopefully impact their lives, so that they are motivated and feel that they can commit to a healthy and active lifestyle. This research will take a post program approach to investigate the long term effects of the tools that participants learned during the program, and what aspects were more helpful than others.**

3. What current literature have you reviewed regarding this topic of research? **Obesity is becoming an increasingly serious disease. There are many sources that define obesity scientifically as having a BMI that is greater than or equal to 30 kg/m² (Wadden, & Didie, 2003). Obesity not only affects the health of an individual, but it also effects those individuals' interactions with persons and groups. The reasoning for people becoming obese vary. Hunter, Weisner, Bamman, & Larson, 1998), found that there is a fall in energy intake, but the obesity prevalence is rising because of the decrease in energy expenditure. Many sources have found that obese individuals feel that they have been treated poorly by coworkers, family members, educational settings, and health care settings (Puhl, & Brownell, 2006; Hebl, & Turchin, 2005). In a study conducted on people living in rural Australia some reasons for gaining weight have been sedentariness, economic, environmental, lack of self-discipline, knowledge gaps on energy imbalance, and mental health issues (Heading, 2008).**

In a society that to an extent places importance on one's appearance, there could be an increase in one's Social Physique Anxiety. This disorder tends to be prevalent in people who are dissatisfied with their bodies and have eating disorders, and SPA is strongly associated with exercising and dieting (Atlan & Gencoz, 2008). Body image dissatisfaction can lead to health problems such as being overweight, poor dietary habits, and depression (Forrest, & Stuhlderer, 2007). Exercise is an important factor in improving SPA, and committing to an exercise program enhances participation which diminishes anxiety that one might feel (Chu, Bushman, & Woodward, 2008).

Outcome.

Please state what results you expect to achieve? **I expect to discover the positive aspects from the weight loss programs, but also the areas of weakness that need improvement. With programs becoming prevalent nationwide there should be research done to bring to light important issues to benefit future participants. The ultimate goal of producing these weight loss programs are to promote a healthy lifestyle with tools to carry on long term. By doing both a qualitative study and quantitative follow-up of their current measurements I hope to have a more in depth understanding of the feelings of the participants. The instruments to**

measure Social Physique Anxiety and self-esteem are important, but they do not give explicit detail regarding the issues these participants face.

Who will benefit from this study? How will the participants benefit (if at all). Remember that the participants do not necessarily have to benefit directly. The results of your study may have broadly stated outcomes for a large number of people or society in general. **Future participants who participate in weight loss programs of this design will benefit from the behavioral tools they take from the program. The personal trainers and administrative coordinators will know what resources in terms of education and people can develop the experience of the weight loss program.**

Describe your subjects.

Give number of participants, approximate ages, gender requirements (if any). Describe how they will be recruited, how data will be collected (i.e., will names or social security numbers be collected, or will there be any other identification process used that might jeopardize confidentiality?), and/or describe any inducement (payment, etc.) that will be used to recruit subjects. Please use this section to justify how limits and inclusions to the population are going to be used and how they might affect the result (in general). **Fourteen participants have successfully completed the Biggest Loser Program at Georgia Southern University. The focus groups interview questions and the physiological tests that are going to be conducted only pertain to those who completed the program. This study does not include different weight loss programs, but is specifically based on one specifically. Therefore, this study may not be generalizable for all populations. All former faculty participants will be asked to be a part of the Biggest Loser Exercise Adherence Study. The group is comprised of three males and eleven females. Their ages range from 23 to 65. Although there are only three males the purpose of this study is not to compare to gender experiences within the weight loss program. The participants will be contacted by email and phone to participate in the study and schedule if they choose to participate in both the physiological testing and the focus groups interviews. They will not be offered payment to participate in the study.**

Methodology (Procedures).

Enumerate specifically what will you be doing in this study, what kind of experimental manipulations you will use, what kinds of questions or recording of behavior you will use. If appropriate, attach a questionnaire to each submitted copy of this proposal. Describe in detail any physical procedures you may be performing.

For purposes of the focus group portion of this study, participants will be randomly placed into two groups that will have 6-8 individuals. During the focus group meeting, all participants will sign the informed consent document. Following the focus group, the participants will sign-up for one, one hour time slot to complete the physiological data. The focus group and the physiological data collection will take place at Campus Recreation and Intramurals.

Instrumentation

The Rosenberg Self-Esteem scale will be administered in this study (See Appendix C). In the study conducted by Cairney and colleagues (2009), the scale is shown to be reliable in measuring both college age individuals ($R = 0.94$) and adults who are sixty-five years of age or older ($\alpha = 0.85$). According to Cairney, et al. (2009) the greater the

combined numerical value of the survey the greater self-esteem an individual encompasses. Based on past research that was reviewed by Adler and Stewart (2004), both reliability (internal consistency and test-retest) and validity (convergent and discriminant) exist for the Rosenberg Self-Esteem Anxiety Scale.

The second survey is the Social Physique and Anxiety Scale (See Appendix C). This scale was developed to measure the amount of anxiety one experiences when their body is evaluated. In 2001, Motl and Conroy evaluated the 7 – item scale and verified “tight” cross validity and stated researchers could confidently use the scale (Scott, Burke, Joyner, & Brand, 2004). In former studies conducted by Scott and colleagues (2004), this instrument was found to be reliable in measuring college age individuals ($R = 0.94$). The greater the combined score the greater one’s anxiety.

The third instrument that will be administered is the Temptation Not to Exercise Scale which has been proven to have content and internal validity (Jackson, 1970). This instrument is a ten item scale and will ask the participants to rate the questions from which they feel extremely tempted the most 100 % to not tempted at all 0 % (Hausenblas, et al, 2001).

The final instrument that will administered to the participants will be the 5 item self efficacy which was originally developed to measure one’s ability to continue exercise despite a variety of situations (Marcus & Owen, 1992). There is a seven point scale that ranges from *not confident at all* (1) to *very confident* (7) and *this does not apply to me* (0). The greater the combined score on the instrument the greater the self-efficacy one possesses. This is instrument has an internal consistency of .82 (Marcus, Selby, Niaura, & Rossi, 1992).

Resting heart rate will be measured using a standard stop watch and will be taken by measuring the beats at the radial artery on the right side. The participant will be seated and be asked to remain quiet and relax. The measurement will take place for thirty seconds and the count will be doubled to formulate a sixty second resting heart rate.

Blood pressure will be taken with the Mabis Caliber Signature Series Aneroid Adjustable Sphygmomanometer (Waukegan, IL) to measure for diastolic and systolic pressure of the brachial artery. A Lumiscope Sprague Rappaport Style Stethoscope, Model 200-415 (East Rutherford, NJ) will be used to listen for the diastolic and systolic blood pressure.

Height and weight will be measured to the nearest 0.5 cm and 0.5 kg, using a Detecto 439 Eye-Level Physician Scale (Webb City, MO). Participants will be instructed to remove shoes and excess clothing before weighing takes place. In order to blind participants to the results of the height and weight, they will be required to face away from the scale.

Circumference measurements will be taken following the height and measurement data. Participants will be instructed to wear tightly fitted clothing that they wore for previous circumference measurements during the program. Circumference measurements will be taken using a basic tape measure at the neck, shoulders, chest, arm, abdomen, waist, hip/buttocks, thigh, and gastrocnemius. All girth measurements were taken at the right side of the body.

Circumference of the neck will be taken at the widest circumference of the neck below the Adam’s apple. Following the neck measurements, the researcher will measure

the shoulders at the broadest point of the shoulders. The chest circumference of both the males and females will be measured at the nipple line following around the torso. The measurements of the arm will be measured between the acromion and the olecranon processes in the anatomical position (Latin, 2001). The faculty member will then place their arm by their side and the researcher will measure the forearm at the point of maximum girth with the palm facing forward (Latin, 2001). The circumference of the waist will be measured at the narrowest portion of the torso that is below the xiphoid process but above the umbilicus (Latin, 2001). The abdomen measurement is always measured at the level of the umbilicus (Latin, 2001). Immediately following the abdomen, the researcher will measure the hips and buttocks at the largest circumference above the gluteal fold (Latin, 2001). The thigh will then be measured at the largest circumference with the legs apart, and finally the gastrocnemius will be measured at the maximum girth between the knee and the ankle (Latin, 2001).

Due to the possible size of the participants, measurement of body fat was not practical using the Jackson Pollack skin fold methods. Therefore, to remain consistent with former research of the participants, a hand to hand body fat analyzer will be used (Omron Body Fat Analyzer HBF-306, Body Logics: Burningshills, Illinois) to determine body composition. The researcher will input the data into the analyzer based on data already collected from the participants including: weight, height, age, and gender. The participant will then lightly grip the hand analyzer, and the researcher will press the start button to begin the analysis of the body composition. When four bars light then bottom of the screen, the participants can release the analyzer and the researcher can record the body fat percentage results. In order to blind participants to the result of this study, a piece of nontransparent black paper will be taped over the screen.

Cardiovascular endurance will be measured using the Rockport 1 Mile Walk test as replicated by Byars, Greenwood, Greenwood, and Simpson (2003). Participants will walk on the two outside lanes on an indoor track nine times to complete one mile. Heart rate and time will be measured by a Polar Heart Rate Monitor (Westburg, NY). As subjects complete the one mile walk, the researcher will immediately record both elapsed time and final exercise heart rate. Reliability coefficients (test-retest) associated with the original maximally paced test were reported to be 0.93 for heart rate and 0.98 for walking time, and the Rockport 1 Mile Walk Test has been cross validated in many samples (Byars, et al, 2003). In order to blind participants to the result of the study, the researcher will not allow them to wear watches or any timing devices during the one mile walk, and the researcher will record his or her walking time on the recording sheet.

Flexibility will be the final test administered to the former participants. Flexibility will be measured using the Acuflex 1, Nove Products (Rocktown, IL). Flexibility of the hamstrings will be measured by the double leg modified sit-and-reach test in inches using the Acuflex Box. Participants will remove their shoes. With their hips, back, and shoulders against the wall they will push the top of the box three times. The legs of the participants had to remain straight for the duration of the test and the bottom of his or her feet will be in contact with the box. His or her hands will be overlapped and the box will be aligned with the finger tips. The greatest of the three attempts will be recorded. The sit-and-reach test produces reliable scores in middle-aged men and women from trial to trial at one test session, ICC=0.99 for men, and an ICC=0.98 for women from test to test session (Lemink,

Kemper, Greef, Rispen, & Stevens, 2003). Although the modified sit-and-reach test was used to measure flexibility of the Biggest Loser participants, this test is not used for national testing (Neiman, 2003). In order to blind the participants to the results of the test, two research assistants will hold a blanket above the Acuflex box.

Procedures

The participants will be contacted prior to the date of the measurements and the research team will encourage them to limit exercise the day before the study and to refrain from eating 2-3 hours before the study.

Former participants of the Biggest Loser program will agree to be a part of the exercise adherence program on a voluntary basis. They will have the option to withdraw at any point during the study and ask questions regarding the study. Before the participants can participate in the study they must sign an informed consent. They must participate in all focus group programs and answer questions from the Social Physique Anxiety Survey (SPAS) and the Rosenberg Self-Esteem scale, Temptation to Not Exercise instrument, and Self-Efficacy instrument. In addition, to note changes in demographic information all participants will complete the original application that they filled out for acceptance into the weight loss program. This information will also include details such as current lifestyle behaviors and their current exercise behaviors. Question sixteen of the application will ask them how many times per week they exercise and the modality of exercise they are engaging in (Appendix C). All scores from the scales will be compared to scores received in the initial application process, and the application reports will also be compared.

The focus groups will take place in the Conference Room at Campus Recreation and Intramurals in the Conference Room. The focus group has the potential to last between an hour and a half and two hours. Following the focus groups, each Biggest Loser participant will be retested on the fitness tests that were administered during the weight loss program. The participants will sign up for single one hour slots from 12-5 p.m. Monday through Thursday at the Fitness Assessment Lab at Campus Recreation and Intramurals, and he or she will be blinded to the results. This will keep participants from discussing weight or exercise issues after the focus group meeting. Results of this study will be kept confidential and kept locked in the filing cabinet.

Focus Group Procedure

A series of semi-structured interview questions will be delivered by the same qualified interviewer for both groups. The session will be tape recorded for the duration of the focus group. In addition, a Power Point with definitions for exercise adherence, self-efficacy, and exercise adherence will be displayed behind the facilitator as a visual definition of each word as the questions are asked. Due to the fact that this study only pertains to those whom have completed the program, the identities of the individuals are known. The participants will be told by the focus group facilitator that they can withdraw from the focus group at any time, that the interviews will be digitally recorded, they will remain anonymous on the recording, they can ask about the procedures at any time, the interviews will be transcribed and they can request a copy of the transcription to review, they will not receive compensation for participating in the focus group or physiological procedures, and finally the transcription will be reviewed by the researcher, a computer program (NVivo), a team of researchers to identify themes, and the participants to ensure

that this is the true experience of the focus groups. The initial questions for the focus groups will consist of:

- “What are your thoughts on the relationship between self-efficacy and exercise adherence?”
- “When you think of the tools that you learned within the Biggest Loser program, what comes to mind?”
- “When you think about obstacles that kept you from exercise adherence, what comes to mind?”
- “Describe your experience with social physique anxiety.”
- “When you think about your experience in this program what comes to mind?”

In addition to the semi-structured questions that will be asked, the interviewers will ask additional probing questions to develop clearer more concise answers that could initially be answered vaguely (Kreuger, 1994). These additional questions could follow the following examples:

- “You mentioned feeling _____. Could you further explain that feeling?”
- “You described your experience like this _____. Could you further explain?”

There will be two separate focus groups, in order for the responses of all participants to be described in an in-depth manner. This does not mean that the probing questions will be the same between each focus group because the probing questions are based on the answers of the participants.

Following the completion of the focus group participants will sign –up for one one hour time slot to complete the physiological measurements.

All participants if they choose to participate will first participate in the focus groups then have their physiological measurements measured and finally

Data Analysis

The change in physical variables, Social Physique Anxiety Scales, and Rosenberg Self-Esteem scales for each of the participants will be recorded and analyzed using SPSS 17.0. The measurements of the former Biggest Losers physiological data will be compared to their current measurements using dependent t-tests ($\alpha = .05$). All past physiological data that was recorded during the Spring and Fall 2008 that will be used for comparison to the current physiological measurements is kept in the Fitness Assessment Lab at campus Recreation and Intramurals. A correlation between social physique anxiety and self-esteem will be conducted.

Special Conditions:

Risk. *Is there greater than minimal risk from physical, mental or social discomfort? Describe the risks and the steps taken to minimize them. Justify the risk undertaken by outlining any benefits that might result from the study, both on a participant and societal level. Even minor discomfort in answering questions on a survey may pose some risk to subjects. Carefully consider how the subjects will react and address ANY potential risks. Do not simply state that no risk exists. Carefully examine possible subject reactions. If risk is no greater than risk associated with daily life experiences state risk in these terms. There is minimal physical risk involved in the one mile indoor walk. The risk is*

further minimized because the participants can stop if they are unable to complete the one mile walk. They could potentially faint, feel light headed, nauseated; however the risk is minimal. There could be some mental or emotional discomfort from discussing possible failure or relapse from not adhering to exercise through the focus group study and the instrumentation that is administered after the physiological testing. However, these risks are minimal and the benefits do outweigh the risks. The benefits are understanding why participants adhere or do not adhere following a short term weight loss program. The investigation of these variables and the in depth understanding following the focus groups will not only help future health behavior professionals but also the participants and the community.