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The purpose of this study was two-fold. The first intent was to gain an understanding of the factors that influence physical activity participation for middle school girls who are overweight. Secondly, the researcher wanted to examine the effects of a recreation center's wellness program on the overall physical activity levels and on the determinants of physical activity participation of overweight girls. A mixed-methods design was used to gather data prior to and after participating in a recreation center's wellness program through administration of a modified *Previous-Day Physical Activity Recall*, focus groups, and reflective journals. The participants were ages 11-13 with a BMI greater than the 85th percentile, and were all enrolled in a wellness program at a recreation center in North Carolina. At the start of the program the girls experienced a wide range of barriers to physical activity and, at the completion of the program, significant barriers still existed that were obstacles to participation in physical activity.

DETERMINANTS OF PHYSICAL ACTIVITY OF MIDDLE-SCHOOL OVERWEIGHT GIRLS: THE EFFECTS OF A WELLNESS PROGRAM

By

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CHAPTER I

INTRODUCTION

The percentage of children and adolescents who are overweight and obese is now higher than ever before. Approximately 30.3% of children (ages 6 to 11) are overweight and 15.3% are obese (American Obesity Association, 2005). For adolescents ages 12 to 19, 30.4% are overweight and 15.5% are obese (American Obesity Association, 2005).

Obesity is one of the most serious health problems facing the youth of the United States today. Diabetes, hypertension, and other obesity-related chronic diseases that are prevalent among adults have now become more common in youth (American Obesity Association, 2005). Overweight and obesity are major health problems for youth and the risks of obesity and overweight are well documented (American Obesity Association, 2005; Strauss, & Pollack, 2001; Taylor, et al., 2002; Troiano, & Flegal, 1998). As outlined by the Centers for Disease Control and Prevention (2005), in addition to putting youth at a greater risk for overweight persisting into adulthood, being overweight during childhood, and particularly adolescence, is related to an increase in premature morbidity and mortality in later life. They go on to say that youth who are overweight are at a significantly higher risk of developing moderate to severe asthma compared to their non-overweight peers. Type-2 diabetes in children and adolescents has increased dramatically in a short period of time, and obese children and adolescents are reported to be 12.6 times more likely than non-obese children to have high fasting blood insulin levels, a risk factor

for type 2 diabetes (American Obesity Association, 2005). Persistently elevated blood pressure levels have been found to occur about 9 times more frequently among children and adolescents who are obese than in children who are not obese. Among growing youth, bone and cartilage that are in the process of development are not strong enough to bear excess weight. As a result, a variety of orthopedic complications occur in children and adolescents with obesity. In young children, excess weight can lead to bowing and overgrowth of leg bones. In addition, increased weight on the growth plate of the hip can cause pain and limit range of motion (American Obesity Association, 2005).

In addition to the physiological complications related to overweight and obesity, youth who are overweight or obese report a poor body image, low self-esteem, and cultural stigmatization (Dietz, 1998; French, Story, & Perry, 1995; Tiggemann, 2001). Adolescent females who are overweight have reported experiences with stigmatization such as direct and intentional weight-related teasing, jokes and derogatory name calling, as well as intentional, potentially hurtful comments by peers, family members, employers and strangers (American Obesity Association, 2005).

The increasing rates of obesity and the negative physiological and psychological effects associated with obesity and overweight make obesity and overweight among youth an urgent public health epidemic (Centers for Disease Control and Prevention, 2005; Strauss & Pollack, 2001; US Department of Health and Human Services, 2000). Surprisingly, medical and health professionals know very little about how and why childhood obesity develops. According to Rosenbaum and Leibel (1998), obesity is a complex disease with genetic, metabolic, and behavioral determinants. Scientists have

now begun to identify the specific genes that are involved in obesity, which influence energy intake and energy expenditure; however, despite obesity having strong genetic determinants, the genetic composition of the population does not change rapidly; therefore, the large increase in the prevalence of obesity that has been seen must reflect major changes in non-genetic factors (Hill & Trowbridge, 1998). The challenge is to identify how genes and environmental factors interact to lead to obesity in some individuals. Declines in spontaneous and work related physical activity over the past several decades is one of the major environmental factors thought to contribute to the current epidemic of obesity and overweight among youth (Hill & Trowbridge, 1998).

According to several health organizations (American Heart Association, 2001; US Department of Health and Human Services, 1996, 2000), Americans can substantially improve their health and quality of life by including moderate amounts of physical activity in their daily lives. Benefits associated with physical activity include a reduced risk of premature mortality, coronary heart disease, hypertension, colon cancer, and diabetes (Taylor et al., 2002). Regular participation in physical activity also reduces depression and anxiety, improves mood, and enhances ability to perform daily tasks throughout the life span (Taylor et al., 2002). Females, in particular, also may derive benefits that cause psychological and emotional changes that accompany enhanced physical fitness (Adams-Blair, 2002). For example, Adams-Blair and Fulks (1998) conducted a study that focused on past team sport experience among females who held Chief Executive Officer (CEO) positions of then Fortune 500 companies. Of these successful businesswomen, 50% of the respondents participated at some level in pre-high

school team sports, 49% participated at the high school level, and 31% percent played varsity team collegiate athletics. The results of this study suggest that sports and athletic participation can have an impact on the success of females.

The evidence for physical activity as a prevention strategy and as a strategy in combating overweight and obesity, has led several national health organizations to develop objectives to increase physical activity among youth. *Healthy People 2010*, managed by the Office of Disease Prevention and Health Promotion and the U.S. Department of Health and Human Services, is a statement of national health objectives designed to identify the most significant preventable threats to health and to establish national goals to reduce these threats (US Department of Health and Human Services, 2000). *Healthy People 2010* builds on initiatives pursued over the past two decades. The 1979 Surgeon General's Report, *Healthy People*, and *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* both established national health objectives that served as the basis for the development of State and community plans. The two overarching goals of *Healthy People 2010* are to a) increase quality and years of healthy life, and b) eliminate health disparities. *Healthy People 2010* identified twenty-eight focus areas, one of which is physical activity and fitness. Two important *Healthy People 2010* objectives within this focus area are a) to increase the proportion of adolescents who engage in moderate physical activity at least 30 minutes five or more days a week from 20% to 30% and b) to increase the proportion of adolescents who engage in vigorous physical activity three or more days per week from 64% to 85% (US Department of Health and Human Services, 2000). In order to meet these objectives and

provide motivation for individuals to change their sedentary behaviors, it is necessary to understand the determinants of healthy, physically active behaviors in adolescents. Despite the known benefits of physical activity and national objectives to increase youth physical activity, today's youth are considered the most inactive generation in history (American Obesity Association, 2005) and increasing physical activity among youth to a level that meets *Healthy People 2010* physical activity objectives continues to be a major public health challenge (Robbins, Pender, & Kazanis, 2003; Sallis, Prochaska, & Taylor, 2000). Before programs and interventions that increase the amount of physical activity among youth can be established, health professionals must first gain a better understanding of the determinants of physical activity in youth.

Research Questions

The purpose of this study was to two-fold. The first intent was to gain an understanding of the factors that influence physical activity participation for middle school girls who are overweight or at-risk for overweight. The second intent of this study was to examine the effects of a recreation center's wellness program on the overall physical activity levels and on the determinants of physical activity participation of middle school at-risk for overweight and overweight girls. The following research questions were addressed:

1. What are the perceived facilitators (those that promote physical activity or reduce sedentary behaviors) of at-risk of overweight and overweight middle school girls to participating in physical activity?

2. What are the perceived barriers or obstacles (those that are perceived as discouraging behavioral change) to engaging in physical activity experienced by at-risk of overweight and overweight middle school girls?
3. To what extent will a recreation-based wellness program affect the perceived facilitators of physical activity experienced by at-risk of overweight and overweight middle school girls?
4. To what extent will a recreation-based wellness program affect the perceived barriers or other obstacles to physical activity experienced by at-risk of overweight and overweight middle school girls?
5. To what extent will the physical activity levels of the wellness program participants differ from the beginning of the 6-week program to the end of the six week program?

Definitions

At-risk of overweight: Body Mass Index-for-age (BMI-for-age) 85th percentile to < 95th percentile (Centers for Disease Control and Prevention, 2004)

Body Mass Index (BMI): a number that shows body weight adjusted for height. BMI can be calculated with simple math using inches and pounds, or meters and kilograms. For adults aged 20 years or older, BMI falls into one of these categories: underweight, normal, overweight, or obese (Centers for Disease Control and Prevention, 2004).

BMI-for-age: is a gender and age specific measure of BMI. BMI-for-age is plotted on gender specific growth charts. These charts are used for children and teens 2 – 20 years

of age. In children and teens, body mass index is used to assess underweight, overweight, and risk for overweight (Centers for Disease Control and Prevention, 2004).

Cues to action: strategies to activate one's "readiness" (Janz, Champion, & Strecher, 2002).

Determinants: refer to those factors that influence behavior (Nahas et al., 2003).

- *Facilitators*: those factors that promote physical activity or reduce sedentary behaviors
- *Barriers*: those factors that are perceived as discouraging behavioral change

Exercise: physical activity that is planned or structured. Exercise involves repetitive bodily movement done to improve or maintain one or more of the components of physical fitness—cardiorespiratory endurance (aerobic fitness), muscular strength, muscular endurance, flexibility, and body composition (U.S. Department of Health and Human Services, 1996).

Leisure-time physical activity: exercise, sports, recreation, or hobbies that are not associated with activities as part of one's regular job duties, household, or transportation (U.S. Department of Health and Human Services, 1996).

MET: the standard metabolic equivalent, or MET, level. This unit is used to estimate the amount of oxygen used by the body during physical activity.

- *1 MET* = the energy (oxygen) used by the body as you sit quietly, perhaps while talking on the phone or reading a book.

  The harder your body works during the activity, the higher the MET.

- Any activity that burns 3 to 6 METs is considered moderate-intensity physical activity.
- Any activity that burns ≥ 6 METs is considered vigorous-intensity physical activity (U.S. Department of Health and Human Services, 1996).

Obese: an adult who has a BMI of 30 or higher (Centers for Disease Control and Prevention, 2004).

Overweight: (1) an individual 2-20 years old with a BMI-for-age ≥ 95th percentile; (2) an adult who has a BMI between 25 and 29.9 (Centers for Disease Control and Prevention, 2004).

Perceived barriers: one's belief about the tangible and psychological costs of the advised action (Janz, Champion, & Strecher, 2002).

Perceived benefits: one's belief in the efficacy of the advised action to reduce risk or seriousness of impact (Janz, Champion, & Strecher, 2002).

Perceived severity: one's belief of how serious a condition and its squeals are (Janz, Champion, & Strecher, 2002).

Perceived susceptibility: one's belief regarding the chance of getting a condition (Janz, Champion, & Strecher, 2002).

Physical activity: any bodily movement produced by skeletal muscles that result in an expenditure of energy (U.S. Department of Health and Human Services, 1996).

Regular physical activity: a pattern of physical activity is regular if activities are performed:

- most days of the week, preferably daily;

- 5 or more days of the week if moderate-intensity activities (in bouts of at least 10 minutes for a total of at least 30 minutes per day); or
- 3 or more days of the week if vigorous-intensity activities (for at least 20-60 minutes per session) (U.S. Department of Health and Human Services, 1996).

Self-efficacy: one's confidence in one's ability to take action (Janz, Champion, & Strecher, 2002).

CHAPTER II

REVIEW OF THE LITERATURE

Health Belief Model

The Health Belief Model (HBM), developed by social psychologists Hochbaum, Rosenstock and Kegels working in the U.S. Public Health Services in the 1950s, suggests that health-related behavior can be predicted in terms of certain belief patterns. The development of the HBM grew out of concerns with the limited success of various programs of the U.S. Public Health Service in the 1950s. One such example was the failure of large numbers of eligible adults to participate in tuberculosis screening programs provided at no charge in mobile X-ray units conveniently located in various neighborhoods. The concern of the program operators was with explaining people's behavior by illuminating those factors that facilitated or inhibited positive responses.

Beginning in 1952, Hochbaum (1958) studied probability samples of more than 1200 adults to understand their readiness to obtain X-rays, which included their beliefs that they were susceptible to tuberculosis and their beliefs in the personal benefits of early detection. He found that among individuals who exhibited both belief in their own susceptibility to tuberculosis and the belief that overall benefits would accrue from early detection, 82 percent had at least one voluntary chest X-ray during a specified period preceding the interview. Of the group exhibiting neither of these beliefs, only 21 percent had obtained voluntary X-rays during the criterion period.

Over the years since Hochbaum's study, other investigators have helped to expand and clarify the HBM and to extend it beyond screening behaviors to include preventive actions, illness behaviors, and sick-role behavior (Becker, 1974; Janz & Becker, 1984; Kirscht, 1974; Rosenstock, 1974). In general, it now is believed that people will take action to prevent, to screen for, or to control ill-health conditions if they regard themselves as susceptible to the condition, if they believe it would have potentially serious consequences, if they believe that a course of action available to them would be beneficial in reducing either their susceptibility to or the severity of the condition, and if they believe that the anticipated barriers to (or costs of) taking the action are outweighed by its benefits (Janz, Champion, & Strecher, 2002). Following is a description of the key concepts underlying the HBM as summarized by Janz, Champion, and Strecher (2002).

Perceived Susceptibility

Perceived susceptibility suggests that each individual has his or her own perception of the likelihood of experiencing a condition that would adversely affect one's health. Individuals vary widely in their perception of susceptibility to a disease or condition. Those with a low perceived susceptibility deny the possibility of contracting an adverse condition. Individuals in a moderate category admit to a statistical possibility of disease susceptibility. Those individuals at the high extreme of susceptibility feel there is real danger that they will experience an adverse condition or contract a given disease.

Perceived Severity

Perceived severity refers to the beliefs a person holds concerning the effects a given disease or condition would have on one's state of affairs. These effects can be

considered from the point of view of the difficulties that a disease would create. For instance, pain and discomfort, loss of work time or school time, financial burdens, difficulties with family and friends, relationships, and susceptibility to future conditions may be perceived difficulties.

Perceived Benefits

Taking action toward the prevention of disease or toward dealing with an illness is the next step to expect after an individual has accepted the susceptibility of a disease and recognized that it is serious. The direction of action that a person chooses will be influenced by the perceived beliefs that the benefits will result due to taking that action.

Perceived Barriers

Even though an individual may believe that the benefits to taking action are effective, he or she may not take action due to perceived barriers to participating in healthy practices. These barriers may lead a person away from taking the desired action. Perceived barriers are obstacles to engaging in behavior which might otherwise help to prevent disease and enhance health. Perceived barriers might reflect environmental factors (external barriers), such as a lack of support from friends and family, low resources – both financial and facility, or a lack of time due to other responsibilities. Perceived barriers may also represent more individual, psychologically-based factors (internal barriers), such as a lack of motivation or other interests.

Cues to Action

An individual's perception of the levels of susceptibility and seriousness provide the force to partake in healthy practices. Benefits (minus barriers) provide the motivation

to take healthy actions. However, it may require a 'cue to action' for the desired behavior to occur. These cues may be internal or external. External cues to action may provide how-to information, promote awareness, or serve as reminders, whereas internal cues may be the symptoms of a illness.

Self-Efficacy

Once the focus of the HBM shifted from one-time preventive actions to lifestyle behaviors requiring long-term changes, Rosenstock, Strecher, and Becker (1988) suggested that self-efficacy be added to the HBM as a separate construct from the original concepts of susceptibility, severity, benefits, and barriers. The problems involved in modifying lifelong habits, such as eating high-fat foods and getting little to no exercise are generally far more difficult to surmount than are those for accepting a one-time immunization or a screening test. A lifestyle change requires a good deal of confidence that one can, in fact, alter such component of his or her lifestyles before successful change is possible. Thus, in addition to the previous constructs, people must also feel themselves competent (self-efficacious) to overcome perceived barriers to taking action.

The Health Belief Model has been applied to a broad range of health behaviors and subject populations. Three broad areas can be identified (Conner & Norman, 1996):

1) Preventive health behaviors, which include health-promoting (e.g., diet, exercise) and health-risk (e.g., smoking) behaviors as well as vaccination and contraceptive practices;

2) Sick role behaviors, which refer to compliance with recommended medical regimens, usually following professional diagnosis of illness; and

3) Clinic use, which includes physician visits for a variety of reasons.

Studies have shown that relative to preventive health practices, perceived susceptibility and perceived severity, two components of the Health Belief Model, are not predictors of preventive health practices (Nahas, Goldfine, & Collins, 2003; Tergerson & King, 2002). Therefore, for the purpose of this study, perceived susceptibility and perceived severity will not be examined as components of the Health Belief Model. The two major conclusions of the Health Belief Model that will be addressed are: a) perceived barriers decrease the likelihood of engaging in preventative health practice, especially if perceived barriers outweigh the perceived benefits of doing so; and b) strong cues for action and a high self-efficacy are facilitators of preventive health practices.

Determinants of Physical Activity

Investigators have identified the need for additional studies to examine the determinants of physical activity participation in youth (Allison, Dwyer, & Makin, 1999; Hill & Trowbridge, 1998; Taylor et al, 2002; Zabinski et al, 2003). Childhood and adolescence are critical developmental periods for the promotion of physical activity (Centers for Disease Control and Prevention, 1997); however, for reasons that are unclear, low levels of physical activity appear to be particularly prevalent among preadolescent and adolescent girls. Several studies, showing lower levels of physical activity among adolescent females, have documented sex as a possible predictor of physical activity levels (Allison & Adlaf, 1997). However, few studies have examined

the factors, or determinants, influencing physical activity participation for adolescent females (Robbins, Pender, & Kazanis, 2003). Once determinants of physical activity are better understood, professionals will be able to better address the factors influencing behavior and develop appropriate intervention strategies to promote higher levels of physical activity participation among adolescent females.

Determinants refer to those factors that influence behavior (Nahas, Goldfine, & Mitchell, 2003). They may be biologically determined, or they may exist in the physical or social environment in which we live. In general, determinants can be characterized as facilitators (those that promote physical activity or reduce sedentary behaviors) and barriers (those that are perceived as discouraging behavioral change). Sallis and Owen (1999) categorized the theoretical variables considered to be determinants of physical activity, such as (a) demographic and biological factors; (b) psychological, cognitive, and emotional factors; (c) behavioral attributes and skills; (d) social and cultural factors; (e) physical environmental factors; and (f) physical activity characteristics. Most of these factors are modifiable through intervention (i.e., psychological, cognitive, and emotional factors, behavioral attributes and skills, social factors, and physical environmental factors); therefore, those factors that are modifiable and have been shown to affect the physical activity participation of adolescent girls are discussed in more detail below.

Perceived Benefits of Physical Activity

Perceived benefits increase the likelihood of engaging in physical activity practices. Research concerning the perceived benefits to adolescents from participating in physical activity has produced mixed results. According to a study conducted by the

President's Council on Physical Fitness and Sports (1999), adolescent motivation to be physically active is shaped by many factors, including physical capabilities and sexual attractiveness. This finding is consistent with a study of 535 adolescents by Tergerson and King (2002) that found physical appearance as the primary adolescent motivation to exercise. Females in this study cited the three most likely benefits of physical activity were "to stay in shape," "to lose weight," and "to increase my energy level." According to *Healthy People 2010* (2000), weight management was the main benefit and reason for female involvement in physical activity. Similarly, data from the 1999 Youth Risk Behavior Surveillance Survey conducted by the Centers for Disease Control and Prevention (2000) revealed that 67% of high school females exercised to lose weight or to avoid gaining weight, while only 8% were considered overweight.

Though it is clear that physical appearance is a primary motivator or perceived benefit to adolescent girls for engaging in physical activity, it is unclear whether this motivator is the same for girls who are overweight. To date, there is no data relative to the perceived benefits of physical activity of overweight, adolescent girls. To increase physical activity levels in overweight, adolescent girls, perceived benefits must be identified and understood.

Perceived Barriers to Physical Activity

Perceived barriers decrease the likelihood of engaging in physical activity practices, especially if perceived barriers outweigh the perceived benefits of doing so (Strecher & Rosenstock, 1997). Research in the area of preventive health behaviors has produced evidence for the HBM's construct of perceived barriers as a basis for

determining physical activity participation among adolescents (i.e., Allison, Dwyer, & Makin, 1999; Brawley, Martin, & Gyurcsik, 1998; Robins, Pender, & Kazanis, 2003; Sallis & Owen, 1999; Tergerson & King, 2002; Zabinski et al.; 2003).

Barriers perceived by girls. Interestingly, female adolescents have cited consistently higher levels of perceived barriers than male adolescents (Allison, Dwyer, & Makin, 1999; Taylor et al., 2002; Tergerson & King, 2002, & Zabinski et al.; 2003). For example, Allison, Dwyer, and Makin (1999) examined perceived barriers to participation in physical activity of a sample (n=1,041) of high school students. Their results showed that gender differences existed in mean levels of perceived barriers, with females rating higher levels than males for 8 of the 9 instances in which significant differences exist (i.e., time – school work, time – other interests, time – family activities, mood, lack of energy, lack of self-discipline, self-consciousness, and stress). Tergerson and King (2002) conducted a similar study of perceived barriers to participation in physical activity among male and female adolescents (n=535) and concluded that perceived barriers to physical activity differed significantly based on whether the respondent was male or female, however, they did not conclude which group experienced more perceived barriers. Similarly, Taylor et al. (2002) assessed differences in physical activity levels and correlates of physical activity among overweight and non-overweight seventh through twelfth graders (n=509). The results showed that with boys, the overweight participants did not differ from the non-overweight participants in fourteen comparison of correlates; however, in girls, six of the fourteen comparisons were significant (i.e., perceived by parents/guardians to be less safe in parks, perceived greater barriers, less

peer support, fewer activity choices, less athletic coordination, and less enjoyment of physical activity). Similar to the previous study, Zabinski et al. (2003) examined barriers to physical activity among overweight children attending a summer fitness camp and a university-based weight loss clinic (n=84). In this study, overweight girls reported higher levels of barriers in all five barrier types identified by the researchers (i.e., body-related barriers, convenience barriers, resource barriers, social barriers, and fitness barriers) than overweight boys.

The above studies that addressed gender differences in regards to perceived barriers to physical activity participation among adolescents offer strong empirical evidence that girls experience a higher degree of perceived barriers to physical activity than boys; however, the reasons for gender differences in regards to perceived barriers are not entirely clear. Allison, Dwyer, and Makin (1999) suggested that the objective life circumstances, or gender specific expectations, of female students influence higher levels of perceived barriers to physical activity. For example, they say that less discretionary time or additional home/family responsibilities by females may be the case. Alternately, females as a whole may simply not be as interested in participating in vigorous physical activity. In order to understand gender differences in perceived barriers, further research on the possible factors influencing perceived barriers is needed, as well as an examination of the perceived benefits of engaging in physical activity, which also could differ by gender.

Major barriers. The reported major barriers to physical activity among adolescents are inconsistent between studies. In many studies, the principle reason given

by adults and adolescents for not being active is lack of time (Allison, Dwyer, & Makin, 1999; Dishman & Sallis, 1994). Sallis and Owen (1999) contend that "lack of time" may also fall under the category of "convenient excuses" for not being physically active. Convincing evidence that "lack of time" is merely a convenient excuse is the fact that watching television is by far the most popular American pastime, with the average American watching four hours of television per day (Edginton, Jordan, DeGraaf, & Edginton, 1995). However, despite the number of hours individuals logged in front of the television, their reported lack of time is attributed to work, school, or household/child-care activities. Researchers estimate that by the time a student completes high school, he or she will have spent more time watching television than attending school (Dietz & Gortmaker, 1985).

Specific to the adolescent population, Allison, Dwyer, and Makin (1999) concluded that time constraints, other interests, and family activities were among the barriers considered most important among adolescent girls. In contrast to the previous study, Robbins, Pender, and Kazanis (2003) found that feelings of self-consciousness and lack of motivation were top barriers to physical activity.

Even more conflicting results related to the major barriers to physical activity are found in literature that examined the barriers to physical activity experienced by overweight youth. In a study completed by Zabinski et al (2003) of barriers among overweight and non-overweight children, it was found that overweight children, especially overweight girls, reported higher body-related barriers to physical activity than overweight boys and indicated body consciousness and concern about others seeing their

bodies while being active as the most common type of barrier to physical activity. One study done by Taylor et al. (2002) assessed differences in physical activity levels and correlates of physical activity among overweight and non-overweight youth and found that overweight youth were more sedentary than the non-overweight youth; overweight girls were more sedentary than non-overweight girls; and overweight girls engaged in less vigorous physical activity than non-overweight girls. They also found that overweight girls perceived greater barriers, less peer support, fewer activity choices, less athletic coordination, and less enjoyment of physical activity than non-overweight girls.

It is worth noting that studies have been done to determine barriers to physical activity; however, there are inconsistent findings relative to the most significant, or the most influential, barriers to physical activity. Even though these studies report findings significant to girls, few studies exclusively address the barriers to physical activity participation among girls (Robbins, Pender, & Kazanis, 2003) and specifically, overweight girls. Since all of the studies above utilized quantitative methods of assessing barriers to physical activity, more qualitative studies are needed so that researchers and practitioners may gain a comprehensive and holistic understanding of barriers to physical activity.

Self-Efficacy Relative to Physical Activity

As a construct of the Social Cognitive Theory (Bandura, 1986), previously the Social Learning Theory (Miller & Dollard, 1941), and recently added as a construct of the HBM, self-efficacy refers to the beliefs one has in hir or her ability to perform a certain behavior in a particular circumstance. These beliefs influence decisions about

whether a behavior will be adopted and maintained and are therefore important in the promotion of physical activity. The application of self-efficacy to research on physical activity centers on the hypothesis that a strong belief in one's ability to be physically active will result in participation in physical activity. Among adults, there has been a relatively consistent positive relationship between self-efficacy and the adoption and maintenance of physical activity; however, results among children and adolescents have not been as consistent; some results have supported self-efficacy as a determinant and others have not (Ryan & Dzewaltowski, 2002).

A review by Sallis, Prochaska, and Taylor (2000) showed that the evidence for self-efficacy as a determinant of physical activity in children and adolescents is mixed. In examining this review, Ryan and Dzwaltowski (2002) report that differences in the types of self-efficacy measured by the studies reviewed may be contributing to the inconsistency in self-efficacy research among children and adolescents. For example, the self-efficacy scale used by Reynolds et al. (1990) among high school students combined questions about engaging in regular physical activity with questions about overcoming barriers to physical activity, while the studies by Stucky-Ropp and DiLorenzo (1993) and DiLorenzo, Stucky-Ropp, Vander Wal, and Gotham (1998) include a self-efficacy scale measuring belief in one's ability to be active relative to peers. A group of studies (Pate et al., 1997; Trost et al., 1996; Trost et al., 1997) examined three types of self-efficacy among fifth-grade students: self-efficacy for seeking social support for physical activity, for overcoming barriers to physical activity, and for being active despite competing activities such as watching television. In an attempt to rectify the problem, more recent

studies (i.e., Tost, Pate, Ward, Sanders, and Riner, 1999; and Motl et al, 2000) used different self-efficacy measures by creating one-dimensional scales that combine barriers-efficacy items with items measuring self-efficacy for seeking support, being active despite competing activities, and engaging in the task of being regularly active. Regardless of their attempt to find a universal measure of self-efficacy, differences in the types of self-efficacy measured continues to contribute to the inconsistency in self-efficacy research among children and adolescents.

For example, Motl et al (2005) only examined barriers self-efficacy (i.e. ability to engage in physical activity regardless of a present barrier) as a predictor of change in two levels of physical activity across a 1-year period among a sample of African American and Caucasian adolescent girls. The authors concluded that self-efficacy is not a predictor of physical activity levels; however, their study only examined one of the many forms of self-efficacy in relation to physical activity. On the other hand, Ryan and Dzewaltowski (2002) found self-efficacy to be a predictor of physical activity after they examined a wide range of self-efficacy types including, physical activity efficacy, barriers efficacy, asking efficacy, and environmental-change efficacy. The strongest predictor of physical activity was environmental-change efficacy, which is self-efficacy for finding and creating environments that support physically active behaviors (Ryan & Dzewaltowski, 2002).

Results indicating self-efficacy as a determinant of physical activity may vary depending upon the type of self-efficacy studied. Additional research is needed to examine the differences between types of self-efficacy to gain a complete understanding

of the relationship between self-efficacy and physical activity. Studies should also determine which type(s) of self-efficacy best predict physical activity behavior.

Weight Status Relative to Physical Activity

Weight status has also been discussed as a predictor of physical activity levels; however, it is unclear whether the determinants of physical activity among non-overweight and overweight youth are similar. Some determinants that impede physical activity may be specific to overweight children. For example, body consciousness, or obsession with one's physical appearance, has been shown to be a barrier for female adolescents in the general population (Allison, Dwyer, & Makin, 1999) and may be an especially important obstacle to physical activity for overweight children, as these children report lower levels of body-esteem compared with normal weight peers (Phillips & Hill, 1998). If weight-related differences in physical activity can be linked to differences in specific determinants of physical activity behavior, these determinants can then be targeted for change through intervention programs designed specifically for the needs of children who are overweight.

As an outcome of being overweight, excess bodyweight may impair functional capacity, particularly in activities that require locomotion or lifting of bodyweight. Alternatively, low physical fitness may contribute to a state of positive energy balance, because impaired functional capacity may reduce the willingness of children to participate in regular physical activity. Lack of physical activity has long been hypothesized to be an important factor in the cause of childhood obesity; however, few studies are available that address the relationship between overweight and physical

activity in adolescent girls (Ward et al., 1997, & Wolf et al, 1993). The studies that examine the relationship between physical activity and overweight, demonstrated lower activity levels in overweight youth, or an inverse relationship between physical activity and weight. For example, Wolf et al. (1993) studied race, ethnicity, and age-related differences in activity, inactivity, and obesity among a multiethnic sample of 552 girls in grades 5 through 12 and found that BMI-for-age was inversely associated with physical activity. Similarly, Ward et al. (1997) studied the relationship between obesity and physical fitness among 558 fifth-grade students and found that obese girls reported significantly lower levels and frequencies of physical activity than non-obese girls.

Knowing the determinants or the factors that influence physical activity, in overweight youth is an important prerequisite to designing effective intervention strategies for this population. Presently, however, our knowledge of the psychosocial and environmental factors that influence physical activity behavior in overweight children is limited. Studies have identified barriers to physical activity, self-efficacy, and other determinants of physical activity as they relate to children and adolescents; however, studies that examine how these variables differ in overweight and non-overweight are limited. According to Robins, Pender, and Kazanis (2003), samples with different characteristics (i.e., weight status) may not have similar correlates of physical activity; therefore, they suggest further investigations need to be conducted using various subgroups. There are few studies that have examined the barriers experienced by non-overweight compared with overweight adolescents. One such study conducted by Trost, Kerr, Ward, and Pate (2001) studied 133 non-obese and 54 obese sixth grade children and

found that, compared with non-obese children, obese children exhibited significantly lower daily accumulations of moderate and vigorous physical activity and participated in significantly fewer 5, 10, and 20 minute bouts of moderate-to-vigorous physical activity. Obese children also reported lower levels of physical activity self-efficacy, were involved in fewer community organizations promoting physical activity, and were less likely to report their father or male guardian as physically active.

Due to limited data related to weight status as a determinant of physical activity, recommendations have been made for further study of subgroups of youth, most notably by weight status (Sallis, Prochaska, & Taylor, 2000; Sallis et al., 1992).

Social Support

Whereas perceptions of barriers may hinder physical activity, perceived support may facilitate children's physical activity. Among interpersonal factors influencing physical activity, social support for physical activity from family, friends, or program staff is probably the most clearly established determinant (Sallis & Owen, 1999). Social support can be direct and tangible (e.g., getting a ride to an exercise class) or informational (e.g., talking about physical activity and encouraging a friend to participate). Studies have shown the importance of social support in enhancing physical activity in adolescents.

Parental support, through active involvement during treatment, is integral to overweight children's weight loss success (Golan, Weizman, Apter, & Fainaru, 1998). Among community samples of children across the weight spectrum, parental support seems to be consistently positively related to greater amounts of physical activity among

older children (DiLorenzo et al., 1998; Sallis, Prochaska, & Taylor, 2000). Parental verbal support (e.g., encouragement) and instrumental support (e.g., transportation to physical activity) are positively related to children's activity levels (Hovell, Kolody, & Sallis, 1996; Sallis et al., 1992). Peer influences also become increasingly important as children age, and peers have been shown to influence the amount of physical activity in which children engage (Bungum & Vincent, 1997; Smith, 1999). Overweight children experience higher rates of stigmatization and social isolation compared with non-overweight children (Dietz, 1995; Goldfield & Chrisler, 1995); however, there has been little research into whether overweight children perceive less support for physical activity from parents and peers. For example, Zabinski et al. (2003) found that overweight children report receiving lower levels of adult support for physical activity than non-overweight children, but they did not report on the level of support received from peers. Due to a lack of knowledge regarding social support for overweight adolescents, more research is needed to determine the perceived support levels of overweight adolescents.

Community Physical Activity Interventions

Scientific evidence suggests that physical activity is key to eliminating obesity in youth and has prompted school and community organizations to offer interventions to increase the amount and intensity of physical activity of children and adolescents. Several studies have examined interventions to promote physical activity in children and adolescents, but have produced mixed results. For example, Stone, McKenzie, Welk, and Booth (1998) conducted a review of studies from 1980 to 1997 testing physical activity interventions in school and community settings and identified 22 school-based studies

and seven community-based studies. They found that studies with the best results used randomized designs, valid and reliable measurements, and more extensive interventions. Similarly, a review of physical activity interventions conducted by Ringuet and Trost (2001) yielded nine school-based studies and one community-based study. They found that these interventions produced moderate increases in physical activity. In contrast to these findings, Pate et al. (2003) tested the effects of a community-based physical activity intervention designed to increase physical activity in youth and found that the intervention did not have a significant effect on physical activity and identified social barriers (i.e., "not like each other") as the primary barrier to continued participation, thus, a greater understanding of the barriers experienced by overweight children and adolescents is needed in order to create successful interventions.

It is important to note that a vast majority of the interventions studied were conducted in a school or classroom setting. Schools are an efficient vehicle for providing physical activity instruction and programs; however, there is an urgent need for studies testing community-based physical activity intervention strategies for youth (Ringuet & Trost, 2001; Stone, McKenzie, Welk, & Booth, 1998). Ringuet and Trost (2001) suggest that broader community-based programs are needed for several reasons. First, children and adolescents spend considerable amount of time in community settings that are suitable for physical activity. Second, community-based programs have the opportunity to involved parents and other positive role models from the community who can strongly influence physical activity behavior. Third, community activities involved children in more informal activities that are not affected by the pressures of grades and competition.

Finally, many community organizations already have the facilities and programs in place to provide opportunities for increased physical activity.

Purpose

According to the Health Belief Model, the presence of perceived barriers decreases the likelihood of engaging in preventive health practices, especially if perceived barriers outweigh the perceived benefits of doing so (Strecher & Rosenstock, 1997). By enhancing our understanding of the factors that promote or interfere with physical activity of overweight adolescent girls, community recreation professionals will be better able to develop and implement interventions and programs in supportive environments for girls to initiate and sustain regular physical activity, thereby decreasing overweight, obesity, and negative health consequences.

Due to inconsistency in the literature relative to determinants of physical activity in youth, especially female overweight adolescents, the purpose of this study is to determine the perceived benefits and perceived barriers or obstacles to physical activity of middle school, overweight and at-risk for overweight girls both before and after participating in a recreation center's wellness program.

CHAPTER III

METHODOLOGY

Participants

The sample used for the study was a convenient sample. The subjects were participants in a wellness program for middle school girls conducted at a local recreation center in North Carolina. Body mass index for age (BMI-for-age) was calculated to determine which girls would be included in the study. The Centers for Disease Control and Prevention's (CDC) BMI Table for Children and Adolescents (CDC, 2000) along with the CDC's Body Mass Index-for-Age Percentiles: Girls, 2-20 Years (CDC, 2000) were used to determine the BMI-for-age value for each participant. All participants with a BMI-for-age greater than the 85th percentile, meaning that they were at-risk for being overweight, or greater than the 95th percentile, meaning that they were overweight, were recruited to participate in this research study. Of the 24 girls who were registered as participants of this program, 17 had a BMI-for-age that placed them either at-risk for overweight or were overweight. Data was collected from all 24 participants; however, the participants with a BMI-for-age less than the 85th percentile were excluded from the data analysis making the final sample size 17.

Program Description

The wellness program was administered over the course of 6 weeks, from January 30, 2006 through March 9, 2006. The participants met for one hour, twice a week during

the study period. As determined by the recreation center director, the first meeting of each week included an educational session that focused on topics such as physical activity, nutrition, self-esteem, and eating disorders. The second meeting of each week included a physical activity session that provided the participants opportunities to be physically active while learning new ways to incorporate physical activity into their daily lives. Physical activity sessions involved fitness related pursuits, such as yoga, hip-hop dancing, Tai Chi, and various recreational games that have the potential of becoming life-long physical activities.

Measures

The four research questions were measured using three separate approaches: focus groups, reflective journaling, and modified Previous Day Physical Activity Recall (PDPAR).

Focus Groups

Two sets of focus groups were used in this study to address the research questions. The pre-focus group was implemented prior to the beginning of the wellness program, and the post-focus group occurred at the completion of the program. A focus group is a qualitative, group interview facilitated by a moderator in which purposive selection of participants, a thoughtfully constructed interview guide, and attention to environmental factors are used to obtain participants' perspectives of a specific area of study in a permissive, non-threatening situation (Miller & Iris, 2002). Focus groups have been described as having advantages over interviews for gathering certain types of qualitative data (Hennessy & Heary, 2005). Advantages of focus groups can be

summarized as follows: greater openness in participants' responses; reduced pressure on individuals to respond to every question; flexibility to be used alone or in combination with other research methods; and reduced cost over interviews with the same number of individuals (Hennessy & Heary, 2005).

In addition to these advantages, there are additional reasons why focus groups are particularly successful with children. These advantages can be summarized as follows: creates a safe peer environment and replicates the type of small group setting that children are familiar with from their school experiences; equalizes the power imbalance between adult and children that exists in one-on-one interviews; encourages sharing of ideas and may allow for participants to easily remember experiences when they can relate to others; and acknowledges the participants as experts (Hennessy & Heary, 2005).

The pre-focus group addressed the participants' current activity levels, perceived facilitators of physical activity, obstacles/barriers that prevent them from being physically active and past experiences with physical activity. The post-focus group addressed some of these same topics (i.e., perceived benefits, perceived obstacles, social support), in addition to their experiences with the wellness program. The pre-focus group guide (see Appendix A) developed by the researcher consisted of 10 items based on Research Question #1 and Research Question #2. Sample questions included "what are the reasons you currently participate or would consider participating in physical activity?" and "what are the reasons you or other girls your age do not participate in physical activity?" Prompts such as "would you explain further? and "can you give me an example of what you mean?" were used to encourage participants to discuss their thoughts in more detail

and to provide justification for their responses. The post-focus group guide (see Appendix B) developed by the researcher consisted of 12 items based on Research Question #3 and Research Question #4. Sample questions included "do you feel that this program has helped you to find ways to incorporate physical activity into your daily routine?, if so, how?, and "if you feel that your physical activity levels have increased since beginning this program, what parts of this program have helped you to increase your physical activity levels?"

In order to secure validity and reliability of the focus group discussion, trained moderators were used to ensure the groups were comfortable and at ease, to listen to the responses in order to gain insight and understanding of feelings and to keep the group discussion focused on the topic of interest. Moderators consisted of graduate assistants from the Recreation, Tourism, and Hospitality Department at The University of North Carolina at Greensboro. Each moderator participated in a one-hour training during which they were introduced to the focus group guide, learned and practiced probing techniques, and learned more about their specific roles during the focus group sessions. One moderator read prompts to the participants based on the focus group guides, kept participants on task, and facilitated group sessions. The second moderator took notes on the nonverbal behaviors of the subjects, the emotional climate of the group, the enthusiasm of the participants, and the reactions of the participants to the issues discussed.

The group discussion was recorded using an audio-taping device. Although videotapes capture the nonverbal behaviors of the participants, one was not used because

the presence of a camera is thought to be intrusive and may affect spontaneity (Krueger, 1994).

Reflective Journaling

Reflective journaling was also used as a method of addressing the four research questions. Reflective writing involves personal analysis of personal experiences and feelings. The reflective journal serves as a mirror to reflect the participant's thoughts and feelings. Reflective journaling has been researched extensively as a tool for creating learning experiences (Hampton & Morrow, 2003; Hubbs & Brand, 2005; Kessler & Lund, 2004). The rationale for using reflective journaling is grounded in the General Learning Theory. According to education theorist John Dewy (1938), an effective learning experience must engage the student or participant in an intensely personal way. Drawing from Dewey's notion of active learning, Kolb (1984) highlighted the reflective process as a necessary part of engaging the learner or participant. Kolb posited a four-stage model: (a) concrete experience, (b) reflective observation, (c) abstract conceptualization, and (d) application. According to Kolb, reflective journaling, selectively guided by the facilitator or researcher, can help the student or participant progress through Kolb's four stages. In stages one and two of Kolb's model, respectively, the student's or participant's entry may begin with a description of, and subsequent reflection on, a specific experience, for example, experiences with social support for physical activity. In stage three, the student or participant may explore explanations or questions regarding the personal meaning of the experience. Finally, in

stage four the student or participant applies new meanings, understandings, or interpretations of the event.

Reflective journaling questions for the present research study were developed based on Kolb's theory of learning. The intent of the reflective journaling assignments was to gain an understanding of the experiences, thoughts and attitudes of the middle school girls related to physical activity and the learning experienced as part of the wellness program. Reflective writing has been noted by Moon (1999) as a reliable and valid method in obtaining participants' feelings, attitudes, and thoughts. Six reflective journaling assignments were given to participants over the 6-week program period (See Appendices C-H). The reflective journaling assignments were distributed after the completion of each weekly educational session and were returned to the researcher upon completion of that educational session. Participants were asked to respond to various questions related to the wellness program, barriers or obstacles they experience to physical activity, and perceived facilitators of physical activity. Sample questions included "why are middle school girls in the United States not getting enough physical activity?, what are the stumbling blocks to increasing physical activity in girls?, and "how strongly do you agree or disagree that each of the following is helpful in encouraging you to participate in physical activity outside of physical education class? Please explain your answer. having a friend to participate in physical activity with?"....

Previous Day Physical Activity Recall (PDPAR)

The researcher also measured participants' physical activity with a modified version of the Previous-Day Physical Activity Recall (PDPAR) (Weston, Petosa, & Pate,

1997) as a pre-test and post-test measure (See Appendix I). As suggested by the Health Belief Model, when the participants' perceived barriers to physical activity are reduced and their perceived benefits of physical activity are increased, the likelihood of engaging in physical activity will increase. If this theory holds true, and the participants experienced an increased in physical activity facilitators and a decrease in physical activity barriers, there will be an increase in physical activity from the pre-test to the post-test.

The PDPAR required respondents to recall the main activity completed during each 30-minute block of time beginning at 3:00 p.m. and ending at 11:30 p.m. of the previous day. The instrument lists 35 common activities and describes four intensity levels (very light, light, medium, and hard). To aid respondents in selecting the appropriate intensity, the intensity levels are described in the recall, and cartoon illustrations are used to show activities performed at the various intensities. Participants recorded their main activity for each 30-minute block and rate its intensity.

The scoring for the PDPAR required the use of a modified specialized grid for use with the PDPAR (Weston, Petosa, & Pate, 1997) in which metabolic equivalent task (MET) values corresponding to each level of intensity are listed for each of the 35 activities appearing on the instrument (See Appendix J). One MET is defined as the ratio of the activity metabolic rate to the resting metabolic rate (Pate et al., 2003). For activity numbers that required a write-in response, a MET value based on the reported intensity of that activity will be obtained from the *Compendium of Physical Activities* (Ainsworth, Haskell, & Leon, 1993). The Compendium was designed to be useful for investigators

who collect data on physical activity by diary, recall, or direct observation methods. The physical activity data may be used to describe activity patterns of populations, to study determinants of physical activity, or to investigate the relations between physical activity, health, and disease (Ainsworth, 1993). In situations where the combination of an activity type and intensity combination was considered incompatible (e.g., the activity of "meal" and the intensity rating of "hard"), the cell in question was assigned the MET value of the adjacent less intense cell or the adjacent more intense cell, depending on the activity. If a participant were to make four or more incompatible responses, it will be assumed that she did not understand the rating scale, and the recall will be considered invalid; however, in the present research study, no participants made four or more incompatible responses.

The PDPAR has been shown to be a valid and reliable instrument when tested with middle-school and high-school studies with inter-rater reliability and test-retest reliability at 0.99 and 0.98 ($p < 0.01$) and validity at 0.88 ($p < 0.01$) (Weston, Petosa, Pate, 1997).

Data Collection

The researcher collected the data along with the assistance of four focus group moderators. The researcher scheduled the focus groups, journaling, and PDPARs to be conducted during the scheduled wellness program times. Before commencing the research process, the researcher described the research process to the participants and the participants' parents during the program orientation. During this orientation the participants signed a Children's Assent Form (See Appendix K) and their parent or

guardian signed a Parental Consent Form (See Appendix L). Demographic data was made available to the researcher via wellness program registration forms that program participants completed prior to beginning the wellness program.

Data Analysis

Focus Groups

The data collected from the pre- and post-focus groups were transcribed verbatim. Data collected from program participants who had a BMI-for-age below the 85th percentile were excluded from analysis. Focus group data was analyzed based on recommendations made by Hennessy and Heary (2005). Within, two days of the focus group sessions, the primary researcher met with the moderators for an initial reading of the transcript in order to identify and summarize major emerging themes. Next units of information were found that became the basis for defining categories. Next, the units of information were categorized according to common features. Categorization was done by 'cutting' and 'pasting' units from the transcripts into new files representing the emerging categories.

Reflective Journaling

Data analysis for the journaling assignments was conducted in the form of content analysis. Content analysis is a process of analyzing qualitative assignments by making inferences through systematically identifying characteristics of written information (Henderson & Bialeschki, 2002). For this study, data was systematically reviewed and categorized into topics related to the four research questions.

Previous-Day Physical Activity Recall (PDPAR)

Based on the MET level obtained from the modified version of the specialized grid designed for use with the PDPAR (See Appendix J) and from the *Compendium of Physical Activities* (Ainsworth, Haskell, & Leon, 1993), each 30-minute block was assigned a rate of relative energy expenditure ($1MET=1kcal \cdot kg^{-1} \cdot h^{-1}$); one MET is also defined as the energy expenditure for sitting quietly. The intensity of activities in the modified specialized grid and the modified version of the *Compendium of Physical Activities* is classified as multiples of one MET or the ratio of the associate metabolic rate for the specific activity divided by the resting metabolic rate (RMR) (Ainsworth et al, 1993). For example, a 2-MET activity requires two times the metabolic energy expenditure of sitting quietly. These values were used to derive estimates of pre- and post-PDPAR total daily energy expenditures for each individual participant and for the combined group. Assigned MET levels were also used to determine the number of 30-minutes blocks in which relative energy expenditure was four METs or greater (moderate to vigorous physical activity). The data was analyzed using SPSS 14.0. The Wilcoxon test, the nonparametric equivalent of the paired-samples (dependent) t test, was used to test whether or not a significant difference existed between the results of the Pre-PDPAR and the Post-PDPAR. Nonparametric analyses were warranted because of small sample sizes.

CHAPTER IV

RESULTS

The purpose of this study was two-fold. The first intent was to gain an understanding of the factors that influence physical activity participation for middle school girls who are overweight or at-risk for overweight. Secondly, this study sought to examine the effects of a recreation center's wellness program on the overall physical activity levels and on the determinants of physical activity participation of middle-school at-risk for overweight and overweight girls. The researcher completed the study with a mixed-method research design (Tashakkori & Teddlie, 1998) that employed pre and post focus groups, reflective journaling, and a pre and post modified *Previous-Day Physical Activity Recall* (PDPAR). The sample was composed of participants of a wellness program at a North Carolina recreation center who were either overweight or at-risk for overweight. The data collected addressed the five research questions stated below:

6. What are the perceived facilitators (those that promote physical activity or reduce sedentary behaviors) of at-risk of overweight and overweight middle school girls to participating in physical activity?
7. What are the perceived barriers or obstacles (those that are perceived as discouraging behavioral change) to engaging in physical activity experienced by at-risk of overweight and overweight middle school girls?

8. To what extent will a recreation-based wellness program affect the perceived facilitators of physical activity experienced by at-risk of overweight and overweight middle school girls?
9. To what extent will a recreation-based wellness program affect the perceived barriers or other obstacles to physical activity experienced by at-risk of overweight and overweight middle school girls?
10. To what extent will the physical activity levels of the participants differ from the beginning of the 6-week program to the end of the six week program?

The remainder of this chapter is divided into five sections based on the five research questions. The first section includes results of the pre-focus groups and the reflective journals as they relate to perceived facilitators of physical activity. The second section includes results of the pre-focus groups and reflective journals as they relate to perceived obstacles or barriers to physical activity. The third section includes results of the post-focus groups and reflective journals as they relate to the effects of the wellness program on perceived facilitators of physical activity. The fourth section includes results of the post-focus groups and reflective journals as they relate to the effects of the wellness program on perceived barriers of obstacles to physical activity. Finally, the fifth section includes results of the pre-post PDPAR and post-focus groups as they relate to level of physical activity participation.

As described in Chapter 3, two pre-focus groups took place at the recreation center in North Carolina on January 30, 2006 at 7:00 pm and 7:30 pm lasting for approximately 30 minutes each. A total of 19 girls participated in two pre-focus groups –

10 in one group and nine in the other group; however, responses were analyzed for only 14 of the 19 girls based on the BMI-for-age criteria of the 85th percentile or above. Appendix M provides a summary of the 14 girls who participated in the pre-focus groups and who met the BMI-for-age criteria.

Pre-Focus Groups

The pre-focus group data were audio-recorded, transcribed verbatim, reduced, and organized. Within two days of the focus group sessions, the primary researcher met with the moderators for an initial reading of the transcript in order to identify and summarize major emerging themes. Next, units of information were found that became the basis for defining categories. The units of information were then categorized according to common features. Categorization was done by 'cutting' and 'pasting' units from the transcripts into new files representing the emerging categories.

Reflective Journals

The reflective journals took place at the recreation center immediately following the six educational sessions on Monday nights. The girls had approximately 15 minutes to complete the journals and were asked to return the journal responses to the researcher when completed. There were a total of six journal entries over the course of the wellness program. Journal entry responses were analyzed only if the participant met the BMI-for-age criteria of the 85th percentile or above. The number of completed responses for each journal topic varied based on the number of girls present for the educational session each night. Appendix M provides a list of the girls who completed each journal entry and who met the BMI-for-age criteria.

Respondents

A total of 24 middle school girls participated in this study (See Table 1); however, only 17 of the 24 girls met the BMI-for-age criteria of greater than or equal to the 85th percentile; therefore, data were analyzed for 17 participants. Not all of the 17 participants who met the criteria for data analysis completed all research methods due to absences (i.e., participation in sports/clubs, theatrical performances at school, illness, etc.). Participation rates for each of the research methods will be discussed in greater detail within this chapter. Participants ranged in age from 11 to 14 years. At the start of the program, all participants were either at-risk for overweight (BMI-for-age at or above 85th percentile) or overweight (BMI-for-age at or above 95th percentile).

Table 1

Participants' Personal Profile

Name	Age	Race	Pre BMI	Pre-Weight Status	Post BMI	Post-Weight Status
Mary	13	African American	41.8	OW	41.4	OW
Karen	11	White	25.3	OW	25.3	OW
Elizabeth	11	White	23.3	AR	23.1	AR
Sharon	11	African American	24.0	AR	23.6	AR
Kelly	11	African American	27.5	OW	27.5	OW
Cathy	13	White	29.1	OW	28.6	OW
Roxanna	12	White	25.3	AR	25.0	AR
Kim	13	White	26.7	OW	26.7	OW
Marlene	14	White	23.5	AR	23.0	NR
Cynthia	11	White	23.5	AR	23.1	AR
Martha	12	Hispanic	26.4	AR	24.0	AR
Amy	12	White	32.5	OW	30.4	OW
Katharine	12	White	24.5	AR	24.5	AR
Gail	13	Indian	24.0	AR	24.2	AR
Katie	11	White	23.9	AR	23.9	AR
Melinda	12	African American	35.8	OW	35.0	OW
Tammy	12	African American	54.0	OW	51.0	OW

Note. Pseudonyms used to maintain the anonymity of participation

OW = Overweight
AR = At Risk of Overweight
NR = Normal

Research Question #1

What are the perceived facilitators (those that promote physical activity or reduce sedentary behaviors) of at-risk of overweight and overweight middle school girls to participating in physical activity?

Pre-Focus Groups

The themes from the responses of the participants to the focus group questions related to physical activity facilitators addressed physical activity as a form of recreation, physical activity as a way to improve overall health, family and friend support for physical activity, positive physical activity role models, and physical characteristics and personality traits that are conducive to physical activity participation.

Physical activity as a form of recreation. When asked about free time interests, all participants expressed participation in at least one free time activity that was active. The most popular physical activity was basketball, with six of the fourteen girls participating in basketball. Other physical activities mentioned included softball, soccer, football, volleyball, cheerleading, step team, gymnastics, dance class, riding bikes and playing outside. While all of the girls expressed that they participated in at least one organized physical activity, only two girls stated participating in unorganized physical activity (i.e., riding bikes and playing outside).

Physical activity as a way to improve overall health. The responses of the participants related to improving health focused mostly on weight loss. For example, when asked about reasons for participating in physical activity, Sharon replied, "I want to lose the fat on my side," and later added, "I want to be able to wear a bathing suit again."

The participants also addressed the psychological benefits of physical activity, for example, Mary said, "You might want to, like, try to, like, get healthier, get more energy and things, like, so that you don't get all stressed out." Martha added, "To gain self-esteem," and Kim said, "Just to have fun."

Social support for physical activity. Some of the participants mentioned participating in physical activity with friends and family. For example, Karen said, "My brother and me ride bikes together and when it comes to riding bikes, I am better than him." When asked about reasons for participating in physical activity, Karen stated, "Maybe your friends are on the team so you want to play too." Roxanna said, "Maybe your friends want you to."

Positive physical activity role models. When asked about the sponsors of the organized physical activities that the girls participate in, most of the girls were unsure of the sponsors of the community physical activity programs; however, they were very familiar with the physical activity programs at school. For example, when asked about the sponsors of physical activity clubs, groups, or teams, all of the girls responded with names of female teachers at school. For example, when explaining the step team, Mary affirmed, "Ms. E. sponsors our step team, but some people's moms help out." The girls also expressed a strong attachment their teacher-coaches-physical activity sponsors. For example, when explaining the running club, Katie said, "Ms. Parrish is our sponsor; she is a strong runner; I hope one day I can run like her."

Physical characteristics and personality traits that are conducive to physical activity participation. Some physical characteristics and personality traits are more

conducive to participation in specific types of physical activity than others. When asked if the girls thought they were good at the physical activities they participate in, some of the girls mentioned their physical characteristics or personality characteristics that help to make them successful in the physical activities that they participate in. For example, Martha stated, "I think I am good at basketball because I'm taller than the other girls." Mary referred to her personality traits when she said, "I am good at cheerleading because like, because I am like really peppy and all of that. Plus I have a lot of spirit; girls who have spirit are good cheerleaders."

Journal #1: Reasons for Participating in Physical Activity

The first journal addressed reasons for participating in physical activity. The assignment gave a list of nine different reasons for participating in physical activity and asked the girls to respond as to whether or not these were reasons they personally would participate, or consider participating, in physical activity. The girls were also given an option to write in other reasons for participating in physical activity that were not identified in the journal assignment.

Physical activity as a way to improve overall health. All of the girls agreed that participating in physical activity was a good way for them to get in shape. Martha said, "I want my jeans to fit me right again." Similarly, Gail replied, "I want to look better in jeans and to wear tighter shirts." Other girls were specific about the types of physical activity that they do to get in shape. For example, Karen wrote, "Yes, I participate in physical activity every weekend for about a hour and a half on a Bowflex machine and run on a treadmill." Most respondents addressed physical activity as a way to be healthy;

Melinda affirmed, “I exercise to get in shape. I do this because I want to be healthy and I don’t want any health problems.”

The girls all agreed that they participate in physical activity or would participate in physical activity to lose weight. Ten of the 14 girls who completed the first journal expressed that they were not happy with their weight. Gail said that she wanted to lose weight “… because I want to look better; not all chubby looking.” Kelly said, “I participate in physical activity because I want to look like other people.”

The girls recognized physical activity as a way to increase energy levels. Katie explained, “If you are active, you could get pumped up and ready to play, but afterwards your energy levels might drop because you have played a lot.”

Some of the respondents recognized that physical activity is a way to relief stress; however, they personally did not participate in physical activity to relief stress, instead, they would relieve stress in negative ways. For example, Katie replied, “I should be more active to relieve stress because being fat makes me mad and sometimes if I am stressed, then I will eat for the fun of it.” Other girls mentioned that they take their stress out on others. For example, Katie said, “Being active is a good way to let out stress instead of taking it out on someone or something, like I do sometimes.” Similarly, Karen replied, “I need to reduce my stress because whenever I’m in stress, it’s hard for me to control myself.”

The girls expressed that being active is a good way to lose weight, thus improving their self-esteem. For instance, Mary explained, “I feel since I’m a little overweight that makes me feel kind of bad so if I lose a little weight and get fit I will feel better about

myself." Similarly, Gail explained, "When I am active I will lose weight and then I can look in the mirror and like myself." Some of the respondents explained the negative reactions they receive from their peers regarding their weight. For example, Melinda said, "Sometimes people can be cruel because of someone being overweight. So I want to be active so I can lose weight and improve my self-esteem." A little differently, Katie said, "I actually feel very good about myself; when somebody tells me I'm fat, I just walk away because I'm on a healthy diet and exercise now and will hopefully lose weight."

Physical activity as a form of recreation. All of the respondents expressed that physical activity can be fun. For example, Katharine said, "I can get a lot of laughs with friends exercising and it won't even be like exercising, it will be having a good time with friends." Another girl expressed that she would like to have more physical activity opportunities that are fun by saying, "I need something fun in my life other than basketball."

Social support for physical activity. The respondents' answers were split when they were asked about being physically active to be accepted by friends or peers. Some of the girls thought that they should be accepted for who they are. For example, Gail replied, "I want to be accepted for who I am and not what I look like." Similarly, Melinda said, "If they don't want to accept me for who I am, then that's them, not me. One day they will need friends and it will all come back on them." Other respondents felt as though being physically active would help them to be accepted by friends and peers. For instance, Karen said, "I think that if I lose about 15 pounds I'll have a better chance of having more friends and not as much peer pressure." Another girl replied, "I feel

excluded from all of my friends because all of my friends are smaller than me and can exchange clothes but they are all too small for me." Mary exclaimed, "Being active in this program will help me keep up in P.E. class. I used to get teased in P.E. so this will make it easier to keep up."

Journal #3: Facilitators of Physical Activity

The third journal addressed facilitators of physical activity, as described in Chapter 2. The assignment gave a list of eight different things that may encourage physical activity participation and asked the girls to respond as to whether or not these were helpful in encouraging them to participate in physical activity outside of physical education class. The girls were also given an option to write in other facilitators of physical activity that were not identified in the journal assignment.

Transportation and access to physical activity. Many of the participants recognized the need for transportation to participate in organized physical activities and most of the girls named their mothers as the main transporter. It was mentioned that people should try to walk more often as a form of transportation. Mary affirmed, "It's good to walk or ride bikes to locations too."

All of the girls agreed that having organized physical activities outside of school encouraged them to participate in physical activity. Two girls mentioned playing basketball at the recreation center and one girl mentioned playing sports in general at the recreation center.

Social support for physical activity. The participants all agreed that having a friend to participate in physical activity with was encouraging. They saw their friends as

support, for example, Cathy said, “You could help each other.” Respondents also saw their friends as a good form of motivation, as Martha affirmed, “You could motivate each other to keep doing hard activities.” The respondents also expressed that companionship makes physical activity more enjoyable, for example, Mary said, “It’s fun to have friends to do things with.” A couple of girls gave examples of some unstructured physical activity that they do with their friends. Amy replied, “On the weekends, my friend comes over and we play hide-and-go-seek in the woods with a bunch of other people.” Similarly, Kelly affirmed, “Me and my friend go with each other home everyday from school and play outside if it isn’t cold.”

Many of the girls stated that having a parent or guardian who is physically active helps them to be more physically active. Some of the girls stated that their parents are not physically active, but they seemed to recognize the benefits of having a parent who is physically active. For example, Katharine stated, “We could do physical activity together.” One respondent mentioned that her mother is enrolled in a similar wellness program at the recreation center.

Media and the Internet. Some of the girls agreed that reading about physical activity in magazines is encouraging. Cathy stated, “Magazines show you different exercises to do.” Katie replied, “See other people who are physically active gets me motivated to do it.” Kim said, “I read magazines to learn how other people lose weight.” Some of the girls felt as though they already knew enough about physical activity so there was no need to read about it in a magazine. For example, Kelly replied, “I already

know about physical activity." Amy responded, "We already have to read so much in our textbooks; I don't want to read anymore."

Responses were mixed about using the internet as a way to learn more about physical activity. Katharine was leery of using the internet; she affirmed, "Not everything on the internet is true!" A couple of girls stated that they rarely use the internet. Other girls said that they looked up other things on the internet. On the other hand, some of the respondents said they went to specific sport-based websites and those sites motivated them to want to be better in specific sports. One respondent said that she went to a website that shows how to do different exercises and that helped her learn how to do different types of exercises.

The girls seemed to be more encouraged to participate in physical activity by watching programs on television rather than surfing the internet. For example, Katharine said, "Watching people exercise on TV makes me want to get up and do it."

Research Question #2

What are the perceived barriers or obstacles (those that are perceived as discouraging behavioral change) to engaging in physical activity experienced by at-risk of overweight and overweight middle school girls?

Pre-Focus Groups

The responses of the participants to questions related to physical activity barriers addressed lack of participation in year-round physical activities, lack of participation in unorganized physical activities, laziness/shyness/embarrassment, other interests or responsibilities, low self-efficacy, lack of transportation, and lack of opportunities.

Lack of participation in year-round physical activities. Most of the organized physical activities that the girls participate in, are only seasonal activities (i.e., basketball, step team, volleyball, soccer, softball, football, cheerleading). In other words, when the seasons for these activities come to a close, most of the girls become sedentary. Therefore, a lack of year-round organized physical activities is a barrier to these girls remaining active year-round.

Lack of participation in unorganized physical activities. As mentioned previously, only two of the girls in the pre-focus groups reported that they participate in unorganized physical activity. For those girls with resource barriers (i.e., money, facilities, transportation), unorganized physical activities are the best ways to get physical activity.

Laziness/shyness/embarrassment. A few of the girls mentioned that they were too lazy to participate in physical activity. Shyness was also a factor for a couple of girls. Embarrassment seemed to be a common occurrence for many of the girls. For example, Gail said, "I'm not very good at a lot of the things we do in P.E. so I get embarrassed when we do those things." Martha stated, "I am embarrassed of the way I look in a bikini, but everyone wears bikinis so I don't swim anymore."

Other interests or responsibilities. Many of the girls reported having other recreational interests or hobbies, for example, taking on the phone, watching TV, surfing the internet, writing music, reading, hanging out with friends, drama club, and chorus. Many of the girls mentioned other responsibilities like doing homework and tending to younger siblings while parents are at work.

Low self-efficacy. Many of the girls who participated in the pre-focus groups have low self-efficacies, including, low barriers self-efficacy, self-efficacy for seeking support, being active despite competing activities, and engaging in the task of being regularly active. For example, Karen stated that she was unable to participate in physical activity because she had to watch her younger brother until 7:30 every evening. If she had been self-efficacious, she would have found ways to possibly include him in her physical activity rather than not be active at all. A few girls stated transportation problems, for example, Cathy said:

> My mom is a substitute over at Dillard and she usually doesn't get home until 4:30 and then she's gotta go straight to cooking dinner and tending to my little sister who is only two, so she doesn't have time to take me to do active things.

While many of the girls mentioned transportation problems to participate in physical activity, not one mentioned pursuing other alternatives, such as getting a ride with a friend or car pooling.

Lack of opportunities. The respondent were all from a very small, rural community; however, despite being small, the girls were able to list a wide variety of places to be physically active, including, the recreation center, the YMCA, school, the walking trails, local parks, and at church. Only one girl, Tammy, stated, "There really isn't much to do here."

Journal #2: Reasons for Not Participating in Physical Activity

The second journal addressed barriers, or reasons for not participating in physical activity, as described in Chapter 2. The assignment gave a list of 12 different things that

may discourage or prevent physical activity participation and asked the girls to respond as to whether or not these were factors that discouraged them from participating in physical activity. The girls were also given an option to write in other barriers to physical activity that were not identified in the journal assignment.

Other interests or responsibilities. Some girls reported having a lack of time for physical activity. Melinda stated, "I have a lot of homework to do and I don't have a way to be active." Other girls reported a lack of time due to busy family schedules, for example, Sharon said, "I'm always running around with my mom and aunt visiting family and stuff." Other girls felt as though their days are full of physical activity. Kelly replied, "I always be doing physical stuff." One girl felt as though she had too much time; Martha stated, "Time is not an issue for me. I am always bored because I have too much time."

Most of the girls reported having other interests that took time away from participating in physical activity; however, others reported that they still made time to be active. For example, Katharine stated, "I like to talk to friends, but I still make time for physical activity."

Lack of enjoyment. All of the girls reported finding enjoyment in physical activity. Sharon said, "I love to participate in all activities and I will at least try them all once."

Too tired. Some respondents indicated being tired after a long day of school. Other respondents indicated having a lot energy. Katharine asserted, "I'm normally hyped and ready to go." Similarly Kim stated, "I have A LOT of energy."

Not motivated. All of the girls felt as though they were highly motivated to be physically active. These statements are in contrast to one's made during the pre-focus groups when the girls stated laziness and lack of energy as reasons for not participating in physical activity.

Lack of facilities. All of the girls felt as though they have access to facilities where they can be physically active. Roxanna said, "The recreation center is a place with a lot of physical activities." A few girls stated that they could be active at home. Kelly replied, "I go outside and run if I don't have anywhere else to go."

No one to be active with. Most of the girls felt as though they have people to be physically active with. Melinda stated that she likes to exercise with her sister and Sharon said that she participates in physical activity with her family. A few girls reported difficulties in finding people to be active with. For example, Tammy explained, "I can not be active with my family because my family is lazy like me." Roxanna stated, "My favorite activity is basketball, but none of my friends like basketball."

Too hard. Most of the girls felt as though sometimes physical activity can be hard; however, they all recognized the need for high intensity physical activity. For example, Roxanna explained, "I hate to run, but I know it is good for me." Tammy rationalized, "Some physical activity can be hard, but once you get used to it, it gets easier."

Too out of shape. Most of the girls felt as though they were too overweight to be physically active. Tammy explained, "I am out of shape and sometimes physical activity is not fun for me."

Others will make fun of me. A couple of girls expressed embarrassment and instances of being picked on because of their weight; however, most girls, like Cathy, said, "Of their peers, they are not like that."

Rather watch TV, play video games, or be on the computer. Most of the girls, like Cathy, would rather have fun outside, which is in contrast to what was reported in the pre-focus groups. Roxanna stated, "I want to lose weight and I can't do that watching TV all of the time."

Journal #5: Why Aren't Girls Getting Enough Physical Activity?

The girls were given a short description about the lack of physical activity in middle school girls and then were asked to give reasons why middle school girls are not getting enough physical activity. The responses had similar themes, including, other interests, other responsibilities, and lack of participation in unorganized physical activity.

Other interests or responsibilities. When asked about reasons why middle school girls do not participate in physical activity, many of the girls stated other interests as barriers to participating in physical activity for girls their age. For example, Kim explained, "They play around on the computer, and talk to friends on the phone. They don't stay in shape cuz they worry about other things." Karen explained further, "They spend most of their time shopping, watching TV, and giving themselves pedicures and manicures."

Many of the girls said that homework took up a lot of time outside of school, thus, it prevented them from being active. Cathy stated, "They have too much stuff to do, like a lot of homework. And by the time they get their homework done it's too late.

Lack of participation in unorganized physical activity. The girls recognized their peers' lack of participation in unorganized physical activity. Sharon observed, "The girls are sitting around in the house doing nothing and eating up everything they see. They also don't go outside much and run around outside when it's nice out and they have the chance." Karen suggested, "They need to spend time after school walking, jogging, or doing sit-ups with a friend."

Research Question #3

To what extent will a recreation-based wellness program affect the perceived facilitators of physical activity experienced by at-risk of overweight and overweight middle school girls?

Post-Focus Group

The post-focus group took place at the recreation center in North Carolina on March 6, 2006 at 7:00 pm and lasted for approximately 45 minutes. A total of 13 girls participated in the post-focus group; however, responses were analyzed for only eight of the 13 girls based on the BMI-for-age criteria of the 85th percentile or above. Appendix M provides a summary of the 14 girls who participated in the post-focus groups and who met the BMI-for-age criteria.

The responses of the participants to the post-focus group questions related to physical activity facilitators were very similar to those in the pre-focus groups. The girls mentioned all of the facilitators for physical activity that were mentioned in the pre-focus groups, including physical activity as a form of recreation, physical activity as a way to improve overall health, family and friend support for physical activity, positive physical

activity role models, and physical characteristics and personality traits that are conducive to physical activity participation. No significant changes were noted between the facilitators of physical activity mentioned in the pre-focus groups to the post-focus group.

Research Question #4

To what extent will a recreation-based wellness program affect the perceived barriers or other obstacles to physical activity experienced by at-risk of overweight and overweight middle school girls?

The post-focus group discussion related to physical activity barriers addressed many of the barriers that had already been addressed in the pre-focus group; however, the girls focused more on physical activity facilitators during the post-focus group than on barriers. For the most part, the girls were able to use the wellness program to address some of their barriers; however, at the end of the program, some of the girls still had barriers that were keeping them from being physically active. A few barriers that seemed to still be issues for the girls were a lack of continuous, organized physical activities, transportation and shyness. Related to transportation, Marlene said, "I can't do a lot of activities because my mom is always busy and my dad hates to drive me places." One of the girls said, "I feel comfortable around everyone now, but when we first started the program, I was shy. I have a hard time around people I don't know very well."

Journal # 6: Influence of the Program

The last journal asked the girls whether or not their perceptions and participation in physical activity had changed since beginning the wellness program and to explain how each component of the wellness program (i.e., education sessions and physical

activity sessions) facilitated this change. The girls' answers showed that they were able to address some of their barriers to physical activity and turn them into facilitators of physical activity. The girls' responses were related to improved self-efficacy, increased enjoyment of physical activity, increased awareness for ways to participate in unorganized physical activity, and improved self-esteem. For example, Katie said, "I practice some of the routines when I am at home." Mary said, "I learned that there are things that I am good at that I thought everyone was good at, but they aren't. That makes me feel proud of myself."

Improved self-efficacy. The girls' responses seemed to reflect a higher level of barriers efficacy at the conclusion of the program, especially in regards to weight status. In other words, the girls seemed to have a stronger belief in their abilities to be physically active despite their weight status. Whereas before, some of the girls felt as though they were too overweight to participate in physical activity, these girls now perceived a greater ability to be active regardless of weight status. For example, in Journal #3, Tammy explained, "I am out of shape and sometimes physical activity is not fun for me." At the conclusion of the program, she responded:

> I learned that I can exercise everyday. I learned how much weight I should lose to be healthy and that I don't have to kill myself doing hard exercise. I can exercise everyday, and I do, by walking a mile almost everyday.

Some of the girls also seemed to have higher task self-efficacy at the completion of the program. For example, in Journal #3, Cathy said, "I'm not good at any sports where I have to run." At the conclusion of the program, Cathy explained, "I run a mile

everyday. I thought I wasn't a good runner, but I am one of the only girls in this class who can run a mile without stopping. I guess I am doing better than I thought."

Increased enjoyment of physical activity. Many of the girls mentioned that they learned that physical activity can be fun. For example, Katie exclaimed, "I had FUN because we did physical activity that was fun." Similarly, Kim explained, "You can exercise in a fun way so there is no excuse for not being active!"

Increased awareness for ways to participate in unorganized physical activity. Many for the girls noted an increase in the amount of time they spend participating in unstructured, unorganized physical activity. For example, some of the girls mentioned running, walking, and applying some of the techniques learned in the program. Karen wrote, "I practice the hip-hop dancing at home. I also do sit-ups like we do on Thursdays at home. I practice the eight different cheering jumps and three different dances on the weekend."

Improved self-esteem. A few of the girls made comments related to feeling better about themselves because of things they had learned about themselves in the wellness program. Katie said, "I learned how to be more healthy and not to be worried if you are fat because sometimes, skinny people are more unhealthy than fat people." Mary also noticed improvements in her self esteem; "These sessions have taught me how to deal with my self-esteem problems and how to cope with my weight while trying to get healthier."

Research Question #5

To what extent did the physical activity levels of the participants differ from the beginning of the 6-week program to the end of the six week program?

A modified pre-PDPAR, completed on February 2, 2006, and a modified post-PDPAR, completed on March 9, 2006, were used for participants to report after-school physical activity. Seventeen girls completed the pre- and post-PDPAR; however due to the criteria of 85th percentile or above for BMI-for-age, only 14 of the girls' pre- and post-PDPARs were analyzed. See Appendix M for a list of girls who completed the pre- and post-PDPAR. See Table 2 for individual mean scores on the pre- and post-PDPAR.

Using the modified version of the PDPAR as a pre and post measure of physical activity, the researcher was able to determine each participant's after-school physical activity level, both before the program and after the program. Descriptive data for the pre- and post-PDPAR are shown in Table 3.

Table 2

Individual Mean Scores on the Pre- and Post-PDPAR

Name	Age	Race	Pre PDPAR	Post PDPAR
Mary	13	African American	2.21	4.15
Karen	11	White	3.41	2.53
Elizabeth	11	White	2.44	2.21
Sharon	11	African American	1.82	2.03
Kelly	11	African American	2.79	2.09
Cathy	13	White	1.82	2.71
Kim	13	White	1.47	1.91
Marlene	14	White	2.15	1.62
Martha	12	Hispanic	1.82	2.06
Amy	12	White	1.50	1.91
Katharine	12	White	2.59	1.74
Katie	11	White	2.50	1.35
Melinda	12	African American	1.65	2.71
Tammy	12	African American	3.12	2.29

Note. Pseudonyms used to maintain the anonymity of participation

Table 3

Descriptive Data for the Pre-PDPAR and Post- Activity Varibles PDPAR Physical

Variable	Pre-PDPAR (N=14)		Post-PDPAR (N=14)	
	M	SD	M	SD
Mean METs	2.24	0.60	2.24	0.67
# 30-min blocks ≥ 3 METs	3.58	3.69	1.93	1.86
# 30-min blocks ≥ 6 METs	0.71	1.27	1.21	1.19

Mean Metabolic Equivalent Tasks (MET)

MET values were averaged for each participant to derive an estimate of mean relative energy expenditure during the after-school period. Pre-PDPAR MET means ranged from 1.47 to 3.41 with an overall group mean of 2.24 (*sd* = .60). Post-PDPAR MET means ranged from 1.35 to 4.15 with an overall group mean of 2.24 (*sd* = .67). The Wilcoxon test was used to test for significant difference; no significant difference was found between the pre-PDPAR MET means and the post-PDPAR MET means ($Z = -.251$, $p > .05$). Pre-PDPAR MET means were not significantly different from post-PDPAR MET means.

Moderate to Vigorous Physical Activity

The number of 30-minute time blocks in which relative energy expenditure was 3 METs or greater (indicating moderate-to-vigorous physical activity) were counted to determine participation in moderate-to-vigorous physical activity (MVPA). As reported during the pre-PDPAR, the participants' numbers of MVPA time blocks ranged from zero to 12 with a mean of 3.58 (*sd* = 3.69). As reported during the post-PDPAR, the

participant's numbers of MVPA time blocks ranged from zero to six with a mean of 1.93 (*sd* = 1.86). The Wilcoxon test was used to test for a significant different; no significant difference was found in the results ($Z = -1.90$, $p > .05$). The amount of pre-PDPAR time blocks that represented MVPA was not significantly different from the amount of post-PDPAR time blocks.

Vigorous Physical Activity

The number of 30-minute time blocks in which relative energy expenditure was 6 METs or greater (indicating vigorous physical activity) were counted to determine participation in vigorous physical activity (VPA). As reported during the pre-PDPAR, the participants' numbers of VPA time blocks ranged from zero to four with a mean of 0.71 (*sd* = 1.27). As reported during the post-PDPAR, the participants' numbers of VPA time blocks ranged from zero to three with a mean of 1.21 (*sd* = 1.19). The Wilcoxon test was used to test for a significant different; no significant difference was found in the results ($Z = -0.87$, $p > .05$). The amount of pre-PDPAR time blocks that represented VPA was not significantly different from the amount of post-PDPAR time blocks.

PDPAR Summary

The results of the pre-and post-PDPAR showed no significant differences in physical activity participation of the participants as a group; however, it is important to note that some of the participants did have changes. For example, Karen noted the amount of time spent in VPA, from not participating in VPA at all during the pre-PDPAR to recording three time blocks of VPA during the post-PDPAR. Her activities changed

from watching television to playing softball and running/jogging when she got home from softball.

Some participants showed a decline in physical activity from the pre-PDPAR to the post-PDPAR. For example, Kelly went from reporting two time blocks spent doing vigorous physical activity during the pre-PDPAR to not participating in vigorous physical activity at all during the post-PDPAR. She reported participating in the step team at school during the pre-PDPAR; however, when she completed the post-PDPAR, the season for the step team had come to a close so she replaced the time previously spent in vigorous physical activity with napping and watching TV.

Summary

Although the results of the modified PDPAR showed no significant changes in the physical activity participation of the respondents, the results of the focus groups and reflective journals showed that the girls have begun to address some of the barriers that previously kept them from participating in physical activity, and to make some changes regarding their physical activity participation. For example, the showed an increase in enjoyment of physical activity, an increase in their participation in unorganized physical activity, and an increase in overall self-esteem. It was also evident through the PDPAR results, which were supported by comments made during the focus groups and reflective journals that at the completion of the wellness program, there were still many barriers that these girls were faced with that were preventing them from leading active lifestyles.

CHAPTER V

CONCLUSION

Health Belief Model

For the purpose of this study, perceived barriers, perceived benefits, cues for participation, and self-efficacy were examined as constructs of the Health Belief Model. According to Dishman (1994), for most people, the perceived threat of a disease and the perceived severity of a disease are not the major motivations for participating in physical activity.

It is difficult to determine whether this study supports or refutes the examined components of the Health Belief Model. At first glance, it would seem as though this study does not support the Health Belief Model, due to the notion that some of the girls were able to reduce some of their barriers, but still did not increase their physical activity participation. However, after a careful examination, it may be that the girls' experienced barriers were so much greater than their perceived facilitators at the start of the program, that much more attention to the barriers is needed before the perceived barriers will reach a level that is lower than the perceived facilitators. If this is the case, it would appear as though this study does support the Health Belief Model. Dishman (1994) contends that the more likely explanation for the problems with this model is related to the fact that people have a diverse array of motives for being physically active. More research is

needed to determine the efficacy of the Health Belief Model in explaining physical activity participation.

Researchers should also examine Sallis and Owen's (1999) categorization of the theoretical variables considered to be determinants of physical activity participation, which include: (a) demographic and biological factors; (b) psychological, cognitive, and emotional factors; (c) behavioral attributes and skills; (d) social and cultural factors; (e) physical environmental factors; and (f) physical activity characteristics.

Conclusions

The purpose of this study was two-fold. The first intent was to gain an understanding of the factors that influence physical activity participation for middle school girls who are overweight or at-risk for overweight. Secondly, the researcher wanted to examine the effects of a recreation center's wellness program on the overall physical activity levels and on the determinants of physical activity participation of middle-school, at-risk for overweight and overweight girls.

Based upon the five research questions, several conclusions may be made concerning the determinants of physical activity participation in middle school girls who are overweight or at-risk-for-overweight, and concerning the effects of the wellness program on physical activity participation and the determinants of physical activity participation. First, middle-school girls who are overweight or at-risk for overweight understand the benefits of participating in physical activity. They view physical activity as a way to improve upon and maintain overall health and as a way to have fun with their friends and family.

Second, middle-school overweight and at-risk for overweight girls experience a wide range of barriers to physical activity, both perceived and real. Some of the most significant barriers revealed in this study were body-related barriers, low self-efficacy, other interests and responsibilities, lack of participation in unorganized physical activity, and a lack of participation in year-round organized physical activities.

Third, even though the girls had a good understanding of physical activity facilitators prior to participating in the wellness program, the wellness program served as a reminder of the benefits of physical activity. For example, Katie said, "We learned the food guide pyramid in school, but I didn't know that physical activity is a new part of the pyramid." The wellness program's physical activity sessions on Thursdays also served as a way for the girls to learn new ways to be physically active while at home, and hopefully, in years to come.

Fourth, the girls were able to identify and work on addressing some of the barriers they faced to physical activity. Some of the barriers they addressed through the wellness program were finding ways to be physically active that are enjoyable, a lack of participation in unorganized physical activity, and a low self-esteem. Significant barriers recognized by the participants at the end of the wellness program that were still obstacles to participation in physical activity were a lack of continuous, organized physical activities and a lack of transportation.

Finally, as a group, the participants did not show a significant change in their amount of physical activity participation during the 6-week program; however, individually some of the participants did increase their participation in unorganized

physical activities. Those participants who experienced a decline in physical activity participation were members of an organized step team at school that ended during the wellness program. Instead of finding other ways to be active, these girls became sedentary once the step team ended.

Discussion

Perceived Facilitators

This study revealed a number of different facilitators that encourage middle-school, overweight and at-risk for overweight girls to be physically active. The most frequently mentioned reasons for being physically active were related to being healthy and losing weight. Similarly, Tergerson and King (2002) found that "staying in shape" and "weight loss" were the reported top two benefits of physical activity in adolescents. Based on these findings, they recommended the need for extensive health education on body image, healthy dietary intake, and safe and appropriate weight loss strategies in order to deter adolescents from using "quick fixes" as a form of weight loss. The participants in the current study seemed to recognize the need for a healthy, balanced diet and physical activity to lose weight in a healthy manner. For example, Karen stated:

> One time when I was in the third grade I used to almost starve myself because I wanted to lose about 10 pounds. Now I know that this was stupid and that if I want to lose weight, I need to exercise and eat right to get healthy and feel good about myself.

Similar to another study that examined self-efficacy of overweight adolescents, this study found that the respondents had low levels of physical activity self-efficacy. Parallel to a study completed by Trost, Kerr, and Pate (2001), the respondents were not

confident in their ability to overcome barriers to physical activity and to choose physical activity pursuits over sedentary ones.

In concurrence with Garcia et al. (1995), exposure to role models who are physically active helped the girls establish positive social norms for physical activity and provided support in remaining active. Most of the girls in the previous study who reported having physically active role models, who encouraged them to be physically active, mentioned coaches, teachers, and club sponsors, all from school. Similar to findings of Anderssen and Wold (1992) and Tergerson and King (2002), this study found that peers were one of the most common cues to participation in physical activity in middle school overweight girls. Many of the girls mentioned participating in physical activity with friends or joining sports teams or physical activity groups because of a friend. With this said, it is not surprising that all of the girls in the wellness program joined the program with at least one friend or family member.

Perceived Barriers

The findings from this study indicate that, overall, middle school overweight and at-risk for overweight girls experience a dynamic and wide range of barriers to physical activity. Similar to other reports (Allison, Dwyer, & Makin, 1999; Kientzier, 1999; Robins, Pender, & Kazanis, 2003; Sallis & Owen, 1999), the most frequently occurring barriers were a lack of time due to other interests and other responsibilities. The girls in the study reported having many other interests including, reading, writing music, chorus at school, and hanging out with friends. They also reported other responsibilities such as caring for siblings and homework. Despite the respondents reported lack of time due to

these other interests and responsibilities, it is interesting to note the amount of time the participants spent watching television, talking on the phone, or playing on the computer. Pre-PDPAR results showed that the girls spent an average of 3.5 hours watching TV, playing on the computer, or talking on the phone during a typical after-school day, while they only spent an average of one-hour on all of their other interests and responsibilities, including reading, hanging out with friends, and doing homework. As suggested by Nahas, Goldfine, and Collins (2003), lack of time for physical activity due to other interests and responsibilities may be a "convenient excuse" for not being physically active. They note that despite the number of hour's individuals log in front of the television, their reported lack of time is mostly attributed to school or other responsibilities.

Body-related barriers were also reported as significant obstacles to physical activity participation by the girls in this study. Body related barriers have been shown to be a barrier for female adolescents in the general population and based on results from this study and a study completed by Zabinski et al. (2003), may be an especially important obstacle to physical activity participation for overweight children, as these children report lower levels of body-esteem compared with normal weight peers (French, Story, & Perry, 1995; Phillips & Hill, 1998).

The respondents of this study refuted the results of a previous study involving adolescent physical activity patterns and health habits. Unlike the reports of Aarnio (2003), who reported that participation in organized sports was related to persistent physical activity participation, the participants in the current study who reported

participation in organized sports were not also associated with persistent physical activity participation. Instead, the respondents who participated in organized activities, for example, the step team at school, became inactive once the organized activity came to an end. Therefore, for the respondents of this study, a lack of participation in continuous, year-round, physical activities was a significant barrier to persistent physical activity participation.

In contrast to a study completed by Trost, Ward, and Pate (2001), participants in the current study reported high levels of participation in community-based physical activities. Unlike the study of Trost, Ward, and Pate (2001) that reported higher levels of unorganized physical activity participation than organized physical activity participation in obese youth, the current study found the opposite. The respondents reported involvement in organized physical activity; however, all of these activities were seasonal activities and when the seasons end, they did not continue to be active by engaging in unstructured physical activity.

Effects of the Wellness Program

Even though the results of the PDPAR did not show an increase in physical activity for the respondents, many of the respondents indicated an increase in unstructured physical activity from the pre- to the post-PDPAR. As reported in the focus groups and reflective journals, some of the participants were also beginning to address some of the barriers they faced to physical activity. For example, they improved their body-image esteem, physical activity self-efficacy, and their enjoyment of physical activity. Due to the short length of the wellness program session and the difficulties in

making a major lifestyle change, like being persistently physically active, it is not surprising that the girls only made limited progress. Fortunately, most of the girls who participated in the studied wellness program session signed up to participate in another session of the program.

Limitations

Limitations to this study should be noted. First, a total of 17 middle school, overweight or at-risk for overweight girls participated in this study. It is possible that the small amount of data received would be insufficient to fully address these issues. In addition, respondents were all girls and residents of a rural community. Consequently, results cannot be generalized to boys and larger populations.

Second, all data were self-reported, thus the potential for socially desirable responses exists. In some circumstances, respondents may be tempted to give the socially desirable response rather than describe what they actually think, believe, or do.

Third, due to time constraints, conclusions regarding the physical activity participation of the respondents from pre-program to post-program were based on one self-reported pre-PDPAR and one self-reported post-PDPAR and therefore may not be representative of each subject's usual activity behavior. Typically, the PDPAR is given anywhere from 3 to 5 times to gage an accurate representation of physical activity participation; however, due to time constraints in this study, this was not possible.

Fourth, conclusions in this study are limited to treatment-seeking overweight and at-risk for overweight adolescent girls, and it is unknown whether these results can be generalized to the majority of overweight and at-risk for overweight girls. As noted by

Zabinski et al. (2003), comparisons are lacking between treatment-seeking and nontreatment-seeking overweight adolescent girls on barriers to and facilitators of physical activity.

Finally, another possible limitation encountered by the researcher was related to the familiarity between the researcher and the participants due to the researcher's involvement in the wellness program's facilitation. Thus, the participants may have responded to the focus group questions, reflective journaling questions, and PDPAR based on how they felt the researcher would have liked them to respond.

Implications and Recommendations for Practitioners

The findings of this study carry important implications for practice in the fields of public health and community recreation. First, local community centers are encouraged to offer programs after school, on weekends, and during the summer for middle school girls interested in becoming physical active, but not necessarily interested in playing only organized sports. After-school, summer break, and weekend activities could provide young girls with alternatives to activities such as watching television, surfing the internet, or playing video games. To increase perceptions of physical activity self-efficacy among overweight girls, physical activity intervention programs should: (a) provide enjoyable, developmentally appropriate activities that enable the participants to experience success; (b) focus on lifetime activities such as swimming, walking, jogging, or biking to establish a pattern of healthy behavior; (c) offer continuous physical activities that will give the girls opportunities to be persistently physically active; (d) create suitable physical activity substitutes for seasonal organized physical activities, such as creating a step club where

step team participants can continue to be active as well as teach skills to others; (e) create opportunities for participants to observe influential others (i.e., parents, peers, and role models) perform physical activity; and (f) reduce any feelings of shyness, anxiety, and stress associated with participation in physical activity by significantly reducing or eliminating competition or grading; (g) provide a take-home template of physical activities that will promote continuous physical activity participation.

Similar to Zabinski et al. (2003), overweight girls in this study reported a high level of body-related barriers to physical activity. Weight control or other health-promoting interventions for overweight girls may need to encourage physical activity that minimizes body awareness and fosters better body-esteem among overweight girls. Helping girls learn to appreciate their bodies for what they can do, rather than how they look, may help to reduce feelings of self-consciousness, embarrassment, or shyness that may prevent participation in activity.

Physical activity interventions should address overcoming barriers (identifying and finding alternatives) to physical activity participation. Barriers to be addressed should include lack of time, dislikes, and lack of transportation. Interventions should also focus on increasing social support. Class participants, friends, and family members should be involved in discussing goals, reinforcing behavior, and checking accomplishments. Practitioners should offer evening and summer programs that adolescents and their parents can participate in together, promoting the concept of family recreation.

Practitioners may also want to investigate the possibility of partnering with schools, churches, and other community-based organizations to provide after-school physical activity programs, thus making physical activity opportunities more accessible. When marketing physical activity interventions practitioners should address issues of insecurity and psychological safety. For example, brochures and other printed media should include photos of girls from all weight statuses having fun in safe environments. Recruiting for intervention participants should involve face-to-face interaction. Practitioners should speak at Parent Teacher Association (PTA) meetings, Rotary meetings, etc to recruit participants for physical activity programs.

Now, more than ever, adolescents have opportunities to aspire to not only male athletes but also to female athletes. Unfortunately, due to limited access to female athletes (i.e., restricted coverage of women's sporting events on television) adolescents are not exposed to female athlete role-models. To address this issue, practitioners should invite women athletes and sport teams to be involved with physical activity interventions.

Implications and Recommendations for Future Research

Future research should further explore the determinants of physical activity participation of middle school overweight and at-risk for overweight middle school girls while taking into account several factors. First, researchers may want to explore factors related to family make-up and physical activity participation. Societal factors such as an increase in the prevalence of single parent homes, an increase in the number of working mothers/fathers, and heightened concern for children's safety when outside of the home may affect the barriers experienced by adolescents.

Researchers should examine cultural and ethnic factors. For example, Kimm et al. (2002) studied factors associated with physical activity participation in Caucasian and African American girls and found that living in a single-parent household was a risk factor for a decline in activity among Caucasian girls but not African American girls. Future studies would benefit from larger sample sizes that are representative of the target population. Within these studies, researchers may examine sub-groups based on the demographics, including household size, location of residence, family type, and ethnic and cultural backgrounds. For example, research may compare the involvement of overweight girls in physical activity based on location of residence (i.e., urban vs. rural).

Future studies would benefit from longitudinal designs that are better suited to capturing patterns in children's levels of physical activity consistent with the developmental process. In addition, utilization of longitudinal design will enable researchers to examine the predictive value of the determinants of physical activity participation. Although research focusing on physical activity participation in youth has increased rapidly, the physical activity patterns in determents of overweight girls has received little attention. Future research should continue to focus on ways to enhance physical activity facilitators and decrease physical activity barriers, perceived and real, of adolescent overweight and at-risk for overweight girls.

Finally, research is needed to develop more effective techniques to promote physical activity in youth. Treatment and prevention programs should be developed outside the clinical setting, in the schools and community. Efficacy research is needed to determine the effects of community-based physical activity programs. Research on

physical activity barriers and facilitators may also benefit from randomized trials that implement interventions targeting specific high-ranking barriers, such as body-related barriers among overweight children, or targeting the increase of family and peer support, and then evaluation physical activity outcomes. Development and evaluation of such programs should be a high research priority (Hill & Trowbridge, 1998).

Summary

As the epidemic of children who are overweight continues to rise in the United States (Hill & Trowbridge, 1998), research needs to focus on the most effective means of reducing and preventing obesity. Interventions that focus on increasing facilitators while reducing barriers to physical activity may be the most promising. This may be an especially important treatment focus for overweight girls, who report the highest relative levels of physical activity barriers and the lowest levels of facilitators and adult support for physical activity.

Research has shown a wide array of determinants of physical activity participation, the facilitators of participation, and the barriers to participation in adolescent overweight girls. Additional research is needed that will contribute more information on the factors that influence physical activity adoption and maintenance for this group. There are many factors that may be explored in order to grasp the understanding of determining physical activity participation, or lack thereof. Only once practitioners and researchers have a thorough understanding of these determinants can we begin to develop effective interventions.

REFERENCES

Aarnio, M. (2003). Leisure-time physical activity in late adolescents. Journal of sports science and medicine, 2(2), 1-41.

Adams-Blair, H. R. (2002). The importance of physical education and sports in the lives of young females. *International Sports Journal, 5*, 45-50.

Adams-Blair, H. R., & Fulks, D. (1998). The incidence of team sport experience among highly successful U.S. businesswomen. Unpublished manuscript.

Ainsworth, B. E., Haskell, W. L., & Leon, A. S., et al. (1993). Compendium of physical activities: Classification of energy costs of human physical activities. *Medicine and Science in Sports and Exercise, 25*, 71-80.

Allison, K. R., & Adlaf, E. (1997). Age and gender differences in physical inactivity among Ontario teenagers. *Canadian Journal of Public Health, 88*, 177-180.

Allison, K. R., Dwyer, J.M., & Makin, S. (1999). Perceived barriers to physical activity among high school students. *Preventive Medicine, 28*, 608-615.

American Heart Association. *Exercise (physical activity) and children: AHA scientific position.* Dallas, Tex: American Heart Association; 2001.

American Obesity Association. (2005). *American obesity association fact sheets: Obesity in youth*. Retrieved January 1, 2006, from American Obesity Association Web site: http://www.obesity.org/subs/fastfacts/obesity_youth.shtml

Anderssen, N., & Wold, B. (1992). Parental and peer influences on leisure-time physical activity in young adolescents. *Research Quarterly for Exercise and Sport, 63*, 341-348.

Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice Hall.

Becker, M. H. (Ed.). (1974). The health belief model and personal health behavior. *Health Education Monographs, 2*, entire issue.

Centers for Disease Control and Prevention. (2000). Youth risk behavior surveillance – United States, 1999. *Morbidity and Mortality Weekly Report, 49*(SS05), 1-96.

Centers for Disease Control and Prevention. (2004, December 16). *BMI – Body Mass Index: Home*. Retrieved January 11, 2006, from http://www.cdc.gov/nccdphp/dnpa/bmi/

Centers for Disease Control and Prevention. (2005a, October 28). *Physical activity for everyone: Physical activity terms*. Retrieved January 11, 2006, from http://www.cdc.gov/nccdphp/dnpa/physical/terms/index.htm

Centers for Disease Control and Prevention. (2005b, December 7). *Overweight and obesity*. Retrieved January 20, 2006 from http://www.cdc.gov/nccdphp/dnpa/obesity/

Dewey, J. (1938). *Experience and education*. New York: Simon and Schuster.

Dietz, W. H. (1995). Childhood obesity: Prevalence and effects. In K. D. Brownell & C. G. Fairburn (Eds.) *Eating Disorders and Obesity* (pp. 869-873). New York: Guilford Press

Dietz, W. H. (1998). Health consequences of obesity in youth: Childhood predictors of adult disease. *Pediatrics, 101*, 518-525.

DiLorenzo, T. M., Stucky-Ropp, R. C., Vander Wal, J. S., & Gotham, H. J. (1998). Determinants of exercise among children II: A longitudinal analysis. *Preventive Medicine, 27*, 470-477.

Dishman, R. K. (1994). Introduction: Consensus, problems, and prospects. In R. K. Dishman (Ed.) *Advances in exercise adherence*. Champaign, IL: Human Kinetics.

Dishman, R. K., & Sallis, J. F. (1994). Determinants and interventions for physical activity and exercise. In C. Bouchard, J. Shephard, & T. Stephens (Eds.) *Physical activity, fitness and health: International proceedings and consensus statement*. Champaign, IL: Human Kinetics.

Falkner, N. H., Neumark-Sztainer, D., Story, M., Jeffery, R. W., Beuhring, T., & Resnick, M. D. (2001). Social, educational, and psychological correlates of weight status in adolescents. *Obesity Research, 9*(1), 32-42.

French, S. A., Story, M., & Perry, C. L. (1995). Self-esteem and obesity in children and adolescents: A literature review. *Obesity Research, 3*(5), 479-490.

Garcia, A. W., Broda, M. N., Frenn, M., Covial, C., Pender, N. J., & Ronis, D. L. (1995). Gender and developmental differences in exercise beliefs among youth and prediction of their exercise behavior. *Journal of School Health, 65*(6), 213-219.

Golan, M., Weizman, A., Apter, A., & Fainaru, M. (1998). Parents as the exclusive agents of change in the treatment of childhood obesity. *American Journal of Clinical Nutrition, 67*, 1130-1135.

Hampton, S. E., & Morrow, C. (2003). Reflective journaling and assessment. Journal of *Professional Issues in Engineering Education & Practice, 129*(4), 186-189.

Henderson, K. A., & Bialeschki, M. D. (2002). *Evaluating leisure services: Making enlightened decisions (2nd ed.).* College Park, PA: Venture Publishing.

Hennessy, E., & Heary, C. (2005). Exploring children's views through focus groups. In S. Greene & D. Hogan (Eds.), *Researching children's experience: Approaches and methods* (pp. 236-252). London: Sage Publications.

Hill, J. O., & Towbridge, O. L. (1998). Childhood obesity; Future directions and research priorities. *Pediatrics, 101*(3), 570-574.

Hochbaum, G. M. (1958). *Public participation in medical screening programs: A sociopsychological study* (PHS publication no. 572). Washington, DC: U.S. Government Printing Office.

Hovell, M. F., Kolody, B., & Sallis, J. F. (1996). Parent support, physical activity, and correlates of adiposity in nine year olds: An exploratory study. *Journal of Health Education, 27*, 126-129.

Hubbs, D. L., & Brand, C. F. (2005). The paper mirror: Understanding reflective journaling. *Journal of Experiential Educationl, 28*(1), 60-71.

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly, 11*(1), 1-47.

Janz, N. K., Champion, V. L., & Strecher, V. J. (2002). The health belief model. In K. Glanz, B. K. Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed., pp. 45-66). San Francisco, CA: John Wiley & Sons, Inc.

Kessler, P. D., & Lund, C. H. (2004). Reflective journaling: Developing an online journal for distance learning. *Nurse Educator, 29*(1), 20-24.

Kientzier, A. L. Fifth-and seventh-grade girls' decisions about participation in physical activity. *Elementary School Journal, 99*, 391-414.

Kirscht, J. P. (1974). The health belief model and illness behavior. *Health Education Monographs, 2*, 2387-2408.

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.

Miller, A. M., & Iris, M. (2002). Health promotion attitudes and strategies in older adults. *Health Education and Behavior, 29*(2), 249-267.

Miller, N., & Dollard, J. (1941). *Social Learning and Imitation*. New Haven, CT: Yale University Press.

Moon, J. (1999). Starting to write a learning journal. In *Learning journals: A handbook for academics, students and professional development* (pp. 77-90). London: Kogan Page.

Motl, R. W., Dishman, R. K., Trost, S. G., Saunders, R., Dowda, M., Felton, G., Ward, D. S., & Pate, R. R. (2000). Factorial validity and invariance of questionnaires

measuring social-cognitive determinants of physical activity among adolescent girls. *Preventive Medicine, 31*, 584-594.

Motl, R. W., Dishman, R. K., Ward, D. S., Saunders, R. P., Dowda, M., Felton, G., et al. (2005). Comparison of barriers self-efficacy and perceived behavioral control for explaining physical activity across one year among adolescent girls. *Health Psychology, 24*(1), 106-111.

Nahas, M. V., Goldfine, B., & Collins, M. A. (2003). Determinants of physical activity in adolescents and young adults: The basis for high school and college physical education to promote active lifestyles. *Physical Educator, 60*(1), 42-56.

Pate, R. R., Saunders, R. P., Ward, D. S., Felton, G., Trost, S. G., & Dowda, M. (2003). Evaluation of a community-based intervention to promote physical activity in youth: Lessons from active winners. *American Journal of Health Promotion, 17*(3), 171-182.

Pate, R. R., Trost, S. G., Felton, G. M., Ward, D. S., Dowda, M., & Saunders, R. (1997). Correlates of physical activity behavior in rural youth. *Research Quarterly for Exercise and Sport, 68*(3), 241-248.

Phillips, R. G., & Hill, A. J. (1998). Fat, plain, but not friendless: Self-esteem and peer acceptance of obese pre-adolescent girls. *International Journal of Obesity and Related Metabolic Disorders, 22*, 287-293.

President's Council on Physical Fitness and Sports. (1999). Adolescence: A 'risk factor' for physical inactivity. *President's Council on Physical Fitness and Sports Research Digest, 3*(6).

Reynolds, K.D., Killen, J. D., Bryson, S. W., Maron, D. J. , Taylor, C. B. , Maccoby, N., et al. (1990). Psychosocial predictors of physical activity in adolescents. *Preventive Medicine, 19*, 541-551.

Ringuet, C. J., & Trost, S. G. (2001). Effects of physical activity intervention in youth: A review: *International Sport Medicine Journal*, *2*(5), 1-10.

Robbins, L. B., Pender, N. J., & Kazanis, A. S. (2003). Barriers to physical activity perceived by adolescent girls. *Journal of Midwifery and Women's Health, 48*(3), 206-212.

Rosenbaum, M., & Leibel, R. L. (1998). The physiology of body weight regulation: Relevance to the etiology of obesity in children. *Pediatrics, 101*, 525-539.

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs, 2*, 328-335.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education Quarterly, 15*(2), 175-183.

Ryan, G. J., & Dzewaltowski, D. A. (2002). Comparing the relationships between different types of self-efficacy and physical activity in youth. *Health Education and Behavior, 29*(4), 491-504.

Sallis, J. F., Alcaraz, J. E., McKenzie, T. L., Hovell, M. F., Kolody, B. & Nader, P. R. (1992). Parental behavior in relation to physical activity and fitness in 9-year-old children. *American Journal of Diseases of Children, 146*(11), 1383-1388.

Sallis, J. F., & Owen, N. (1999). *Physical activity and behavioral medicine*. Thousand Oaks, CA: SAGE Publications.

Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise, 32*, 963-975.

Smith, A. L. (1999). Perceptions of peer relationships and physical activity participation in early adolescence. *Journal of Sport and Exercise Psychology, 21*, 329-350.

Stone, E. J., McKenzie, T. L., Welk, G. J., & Booth, M. L. (1998). Effects of physical activity interventions in youth: Review and synthesis. *American Journal of Preventive Medicine, 15*(4), 298-315.

Strauss, R. S., & Pollack, H. A. (2001). Epidemic increase in childhood overweight, 1986-1998. *Journal of American Medical Association, 286,* 2845-2848.

Strecher, V., & Rosenstock, I. (1997). The health belief model. In K. Glanz, F. Lewis, & B. Rimer (Eds.), *Health behavior and health education: Theory, research, and practice* (2nd ed.). San Francisco: Jossey-Bass.

Stucky-Ropp, R. C., & DiLorenzo, T. M. (1993). Determinants of exercise in children. *Preventive Medicine, 22*, 880-889.

Tashakkori, A., & Teddlie, C. (1998). Mixed methodology: Combining qualitative and quantitative approaches. In L. Bickman & D. J. Rog (Series Eds), Applied social sciences research methods series (Vol. 46, pp.). Thousand Oaks, CA: Sage.

Taylor, W. C., Sallis, J. F., Dowda, M., Freedson, P. S., Eason, K., & Pate, R. R. (2002). Activity patterns and correlates among youth: Differences by weight status. *Pediatric Exercise Science, 14*, 418-431.

Tergerson, J. L., & King, K. A. (2002). Do perceived cues, benefits, and barriers to physical activity differ between male and female adolescents? *Journal of School Health, 72*(9), 374-380.

Tiggemann, M. (2001). The impact of adolescent girls' life concerns and leisure activities on body dissatisfaction, disordered eating, and self-esteem. *The Journal of Genetic Psychology, 162*(2), 133-142.

Troiano, R. P., Flegal, K. M. (1998). Overweight children and adolescents: Description, epidemiology, and demographics. *Pediatrics, 101*(3), 497-504.

Trost, S. G., Kerr, L. M., Ward, D. S., & Pate, R. R. (2001). Physical activity and determinants of physical activity in obese and non-obese children. *International Journal of Obesity, 25*, 822-829.

Trost, S. G., Pate, R. R., Dowda, M., Saunders, R., Ward, D.S., & Felton, G. (1996). Gender differences in physical activity and determinants of physical activity in rural fifth grade children. *Journal of School Health, 66*(4), 145-150.

Trost, S. G., Pate, R. R., Saunders, R., Ward, D. S., Dowda, M., Felton, G. (1997). A prospective study of the determinants of physical activity in rural fifth-grade children. *Preventive Medicine, 26*, 257-263.

U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.

U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

U.S. Department of Health and Human Services. *Promoting Better Health for Young People Though Physical Activity and Sports: A Report to the President from the Secretary of Health and Human Services and he Secretary of Education.* Washington, DC: US Dept of health and Human Services, US Dept of Education; 2000.

Ward, D. S., Trost, S. G., Felton, G., Saunders, R., Parsons, M. A., Dowda, M., et al. (1997). Physical activity and physical fitness in African American girls with and without obesity. *Obesity Research, 5*(6), 572-577.

Weston, A. T., Petosa, R., & Pate, R. R. (1997). Validation of an instrument for measurement of physical activity in youth. *Medicine and Science in Sports and Exercise, 29*(1), 138-143.

Wolf, A. M., Gortmaker, S. L., Cheung, L., Gray, H. M., Herzog, D. B., & Colditz, G. A. (1993). Activity, inactivity, and obesity: Racial, ethnic, and age differences among schoolgirls. *American Journal of Public Health, 83*(11), 1625-1627.

Zabinski, M. F., Saelens, B. E., Stein, R. L., Hayden-Wade, H. A., & Wilfley, D. E. (2003). Overweight children's barriers to and support for physical activity. *Obesity Research, 11*(2), 238-246.

APPENDIX A

PRE-FOCUS GROUP GUIDE

Pre-Focus Group Guide

General:
What do you like to do in your spare time?

What is your favorite type of physical activity? (i.e., sports, dancing, or games).

How often do you currently participate in non-structured physical activity (i.e., riding bikes, walking, playing games with friends)?

How often do you participate in community physical activity clubs or groups (i.e, sports, dance, gymnastics, biking/hiking clubs, YMCA's, karate, etc). Who is sponsoring these activities that you participate in? If you do not participate in community activities, why not?

Self-efficacy:
Do you think you are good at any of the types of physical activity that you participate in? Why or why not?

How sure are you that you can….

- Find people to be active with?
- Find a park or facility near your house where you can be active?
- Ride your bike or walk to school or to a friend's house instead of having to wait for a ride?
- Ask your parents to engage in physical activity with you?
- Ask your friends to engage in physical activity with you?

Facilitators:
What are the reasons you currently participate or would consider participating in physical activity?

What helps you or would help you to participate in physical activity more often?

Barriers:
What are the reasons you or other girls your age do not participate in physical activity?

How many hours per day do you spend watching TV, playing video games, or using the computer?

APPENDIX B

POST-FOCUS GROUP GUIDE

Post-Focus Group Guide

Name some types of physical activity that you participate in.

What are the reasons why you participate in physical activity?

What are some things that inhibit you, or discourage you from participating in physical activity (i.e., No transportation, don't like the way you look when you are active, no one to participate in physical activity with, lazy, other interests, etc.)?

Has your amount of daily physical activity changed since beginning this program? Are you more active, less active, or about the same?

If you feel that you are more active, what do you do more of that you didn't do before?

If you feel that your physical activity levels have not increased since the beginning of this program, what part of this program should be changed or what should be added to help you to increase your physical activity levels?

Has your attitude toward physical activity changed since the beginning of this program, in other words, do you enjoy participating in physical activity or value physical activity more than you did before you started this program? Describe your current feelings towards physical activity.

What was your favorite part of this program? Why?

What was your least favorite part of this program? Why?

Do you plan to enroll in another session of this program? If so, why do you want to continue this program? If not, why not?

Would you recommend this program to your friends? Why or why not?

APPENDIX C

REFLECTIVE JOURNAL #1

Name:_____ Date:_____

Reflective Journal #1

How strongly do you agree or disagree that each of the following is a reason why you participate in physical activity or would consider participating? Please explain your answers.

1. **to get in shape?**
   _____
   _____
   _____

2. **to lose weight?**
   _____
   _____
   _____

3. **to increase energy levels?**
   _____
   _____
   _____

4. **to reduce stress?**
   _____
   _____
   _____

5. **to improve self-esteem?**
   _____
   _____
   _____

6. **to become strong?**
   _____
   _____
   _____

7. **to do something fun?**
   _____
   _____
   _____

8. **to be accepted by friends or peers?**

_____
_____
_____

9. **to feel good about myself?**

_____
_____
_____

10. **Other reasons for participating in physical activity?**

_____
_____
_____

APPENDIX D

REFLECTIVE JOURNAL #2

Name:_____ Date:_____

Reflective Journal #2

How strongly do you agree or disagree that each of the following is a reason why you <u>do not participate</u> in physical activity or <u>would not consider</u> participating in physical activity? Please explain your answers.

11. do not have time to participate in physical activity?

_____
_____
_____

12. do not like to participate in physical activity?

_____
_____
_____

13. want to do other things instead of physical activity?

_____
_____
_____

14. too tired?

_____
_____
_____

15. not motivated?

_____
_____
_____

16. do not have a place to be physically active?

_____
_____
_____

17. do not have anyone to be physically active with?

_____
_____
_____

18. physical activity is too hard?

_____
_____
_____

19. do not know how to be physically active?

_____
_____
_____

20. too out of shape to be physically active?

_____
_____
_____

21. others will make fun of me if I can't keep up or am not good?

_____
_____
_____

22. would rather watch TV, play video games, or be on the computer?

_____
_____
_____

23. Other reasons for <u>not</u> participating in physical activity?

_____
_____
_____

APPENDIX E

REFLECTIVE JOURNAL #3

Reflective Journal #3

How strongly do you agree or disagree that each of the following is helpful in encouraging you to participate in physical activity outside of physical education class? Please explain your answer.

1. Having organized physical activities outside of school?
   _____
   _____
   _____

2. Having a friend to participate in physical activity with?
   _____
   _____
   _____

3. Having transportation to and from physical activity locations?
   _____
   _____
   _____

4. Having a parent who exercises?
   _____
   _____
   _____

5. Being reminded of health benefits of physical activity?
   _____
   _____
   _____

6. Reading about exercise in magazines?
   _____
   _____
   _____

7. Reading about exercise on the internet?
   _____
   _____
   _____

8. Other?

_____
_____
_____

APPENDIX F

REFLECTIVE JOURNAL #4

Name: _____ Date: _____

Reflective Journal #4

A recent study found that the majority of preadolescents and adolescent girls are unhappy with their body weight and shape. Some people feel that pictures of underweight models in magazines and TV have a strong impact on girls' perception of their weight and shape. Do you agree or disagree with this statement? Why or Why not?

APPENDIX G

REFLECTIVE JOURNAL #5

Name: _____ Date: _____

Journal #5

The report card on the fitness of American school children including teens is not good. Up to 50 percent are not getting enough physical activity to develop healthy hearts and lungs. Some students get as little as one hour of physical education a week, and only 2 percent of students who took the President's Fitness Test passed. Even more alarming is the fact that physical inactivity is worse for girls than it is for boys.

So why are middle-school-aged girls in the United States not getting enough physical activity? What are the stumbling blocks to increasing physical activity in girls?

APPENDIX H

REFLECTIVE JOURNAL #6

Name: _____ Date: _____

Journal #6

How have each of the following components of this program changed your perceptions and/or your participation in physical activity?

1. **Education Sessions (Monday nights)?**

   _____

   _____

   _____

2. **Physical Activity Sessions (Thursday nights)?**

   _____

   _____

   _____

If your perceptions and/or your participation in physical activity have not changed, please explain why you think they have not.

_____

_____

_____

APPENDIX I

PREVIOUS-DAY PHYSICAL ACTIVITY RECALL (PDPAR)

MODIFIED

Previous-Day Physical Activity Recall (PDPAR) Modified

Name:_____

Date:_____

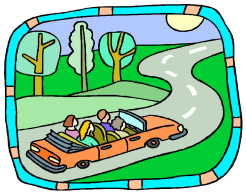
Previous Day Physical Activity Recall
Activities Scale

On the next page is a scale which records the main activities you did yesterday. Please be certain to write on the scale the day of the week that "yesterday" was.

1. For each time period write in the number(s) of the main activities you actually did in the boxes on the time scale.
2. Then rate how physically hard these activities were. Place an "X" on the rating scale to indicate if the activities for each time period were:

Very Light: Slow breathing, little or no movement.



Light: Normal breathing, regular movement.

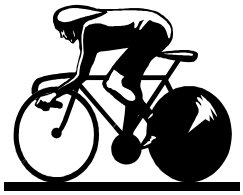



Medium: Increased breathing, moving quickly for short periods of time.




Hard: Hard breathing, moving quickly for 20 minutes or more.






The day of the week that I did these activities was _____.

Activity Numbers

Eating
1. Meal
2. Snack
3. Cooking

Sleep/Bathing
4. Sleeping
5. Resting
6. Shower/bath

Transportation
7. Ride in car, bus
8. Travel by walking
9. Travel by bike

Work/School
10. Job
    (list)_____
11. Homework/paperwork
12. House chores
    (list)_____

Spare Time
13. Watch TV
14. Go to movies/concert
15. Listen to music
16. Talk on phone
17. Hang around
18. Shopping
19. Play video games
20. Surf the Internet
21. Other
    (list)_____

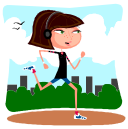
Physical Activities
22. Walk
23. Jog/run
24. Dance (for fun)
25. Aerobic dance

26. Swim (for fun)
27. Swim laps
28. Ride bicycle
29. Lift weights
30. Use skateboard
31. Play organized sport
32. Did individual exercise
33. Did active game outside
34. Other
    (list)_____

1. Put Activity numbers in this column.

2. Put an "X" to rate how hard these activities were.






	Activity Numbers	Very Light	Light	Medium	Hard
3:00-3:30					
3:30-4:00					
4:00-4:30					
4:30-5:00					
5:00-5:30					
5:30-6:00					
6:00-6:30					
6:30-7:00					
7:00-7:30					
7:30-8:00					
8:00-8:30					
8:30-9:00					
9:00-9:30					
9:30-10:00					
10:00-10:30					
10:30-11:00					
11:00-11:30					

APPENDIX J

SPECIALIZED GRID FOR USE WITH THE PDPAR

MODIFIED

Modified specialized grid used to assign MET levels to each 30-Min block for PDPAR

Activity Types	Activity Mode	Number	Very Light	Light	Medium	Hard
Eating						
	Meal	1	1.5	1.5	1.5	1.5
	Snack	2	1.5	1.5	1.5	1.5
	Cooking	3	2.0	2.0	2.0	2.0
Sleep/Bathing						
	Sleeping	4	1.0	1.0	1.0	1.0
	Resting	5	1.0	1.0	1.0	1.0
	Shower/Bath	6	2.0	2.0	2.0	2.0
Transportation						
	Ride in car, bus	7	1.5	1.5	1.5	1.5
	Travel by walking	8	3.0	3.0	4.5	4.5
	Ravel by bike	9	3.0	3.0	4.5	4.5
Work/School						
	Job (List)	10		Taken directly from Compendium		
	Homework/Paperwork	11	1.5	1.5	1.5	1.5
	House chores (List)	12		Taken directly from Compendium		
Spare Time						
	Watch TV	13	1.5	1.5	1.5	1.5
	Go to movies/concert	14	1.5	1.5	1.5	1.5
	Listen to music	15	1.5	1.5	1.5	1.5
	Talk on phone	16	1.5	1.5	1.5	1.5
	Hang around	17	1.5	1.5	1.5	1.5
	Shopping	18	2.0	3.0	3.0	3.0
	Play video games	19	1.5	1.5	1.5	1.5
	Surf the internet	20	1.5	1.5	1.5	1.5
	Other (List)	21		Taken directly from Compendium		
Physical Activity						
	Walk	22	3.0	3.0	4.5	4.5
	Jog/Run	23	6.0	6.0	9.0	12.0
	Dance (for fun)	24	3.0	3.0	4.5	4.5
	Aerobic dance	25	5.0	5.0	8.0	11.0
	Swim (for fun)	26	3.0	3.0	4.5	4.5
	Swim laps	27	5.0	5.0	8.0	11.0
	Ride bicycle	28	3.0	3.0	4.5	4.5
	Lift weights	29	4.0	4.0	6.0	6.0
	Use skateboard	30	3.0	3.0	4.5	4.5
	Play organized sport	31	5.0	5.0	8.0	11.0
	Did individual exercise	32	5.0	5.0	8.0	11.0
	Did active game out side	33	3.0	3.0	4.5	4.5
	Other (List)	34		Taken directly from Compendium		

Modified From "Validation of an Instrument for Measurement of Physical Activity in Youth," By A. T. Weston, R. Petosa, and R. R. Pate, 1997, *Medicine and Science in Sports and Excersie,29*(1), p. 139.

APPENDIX K

CHILDREN'S ASSENT FORM

Children's Assent Form

I am doing a study to try to learn about your attitudes towards leisure-time physical activity, both before participating in the "Livin' It Up" program and after participating in the "Livin It Up" program. I am asking for your help because we don't know very much about the reasons why girls your age choose to either participate in leisure-time physical activity or to not participate in leisure-time physical activity.

If you agree to be in this study, you will participate in focus groups at the beginning and at the end of the "Livin It Up" program. When in the focus groups you will be asked to answer questions related to physical activities that you like to do, reasons why you may not participate in physical activity, and the benefits that girls your age may gain from participating in physical activity.

If you agree to be in this study, you will also be asked to complete eight reflective journaling assignments at the beginning of each week. You will have time to complete these during the educational sessions. You may be asked questions related to the "Livin' It Up" program.

If you agree to be in this study, you will also be asked to complete a physical activity recall at the beginning of the program and at the end of the program. The recall will ask you questions about what you did after school the previous day.

There are no risks to you. All of the information that is gathered will be handled confidentially and kept for five years in a locked file.

You can ask questions at any time that you might have about this study. You can call me, Brandy Langley, at (336) 337-8514. If you have any questions about being a Human Participant you can call Mr. Eric Allen at (336) 256-1482. Also, if you decide at any time not to finish, you may stop whenever you want. Remember, these questions are only about what you think. There are no right or wrong answers because this is not a test.

By signing this paper you are saying that you have read this sheet, or had it read to you, and you want to be in this study. If you don't want to be in this study, don't sign this paper. Remember, being in this study is up to you, and no one will be mad if you don't sign this paper or even if you change your mind later.

Signature of Participant_____ Date_____

Signature of Investigator_____ Date_____

APPENDIX L

PARENTAL CONSENT FORM

The University of North Carolina at Greensboro

Parent/Guardian Consent Form for Child's Participation in a Research Study

Project Title: Determinants of Leisure-Time Physical Activity in Middle School Overweight Girls: The Effects of a Wellness Program.

Project Director: Brandy Langley, Graduate Student

Participant's Name:_____

Your child is invited to participate in a research study that will examine the perceived obstacles and perceived benefits of middle school girls to participating in leisure-time physical activity. Your child was selected for this study based on her participation in the "Livin' It Up" program at the Madison-Mayodan Recreation Center. We ask that you read this form and ask any questions you may have before agreeing to have your child participate in this research study. Your child will also receive a short oral presentation that will explain their rights as a participant and sign their consent to be in this study.

The purpose of this study is to examine the perceived benefits and perceived obstacles to physical activity of middle school, overweight girls both before and after participating in the "Livin' It Up" wellness program. This research study will use three methods of gathering information: pre and post focus groups, reflective journaling, and pre and post completion of a physical activity recall.

1. The focus group discussions will be recorded using an audio-taping device. A moderator will ask the group questions relative to their leisure-time physical activity participation, obstacles to leisure-time physical activity participation, and benefits to leisure-time physical activity participation. An assistant moderator will take notes on the emerging themes and overall group dynamics, such as nonverbal behaviors, the emotional climate, the enthusiasm of participants, and the reactions of the individuals to issues.

2. Eight reflective journaling assignments will be given to participants as handouts after each weekly educational session and returned to the researcher upon completion. Participants will be asked to response to various questions related to the wellness program, barriers they experience to physical activity, and perceived benefits to physical activity.

3. The Previous-Day Physical Activity Recall (PDPAR) will be administered as pre and post tests. The PDPAR is a recall of the previous day's level of physical activity. It specifically targets the after school hours by asking the child to report their activity levels for each 30 minute block of time after school.

There are no foreseeable risks involved with this study.

Despite the known benefits of physical activity, increasing physical activity among youth to a level that meets health-related physical activity guidelines continues to be a major public health challenge (Sallis, Prochaska, & Taylor, 2000). For physical activity objectives to be met and for youth to increase physical activity, attitudes towards physical activity participation must be better understood. Through this research study the researcher will gain insights, new hypotheses, and a better understanding of the benefits and barriers to physical activity with this age group. With this new understanding, appropriate programs can be developed and implemented to meet the physical needs of this population.

By signing this form, you agree that you understand the procedures and any risks and benefits involved in this research. You are free to refuse to participate or to withdraw your consent to participate in this research at any time without penalty or prejudice; your participation is entirely voluntary. Your decision

whether or not to participate in this study will not affect your current or future relations with The University of North Carolina at Greensboro or the Madison-Mayodan Recreation Center. Your privacy will be protected because you will not be identified by name as a participant in this project. All of the data from this study will be kept private and confidential in a locked file. After five years of storage in the locked file, the data will be destroyed.

The University of North Carolina at Greensboro Institutional Review Board, which insures that research involving people follows federal regulations, has approved the research and this consent form. Questions regarding your rights as a participant in this project can be answered by calling Mr. Eric Allen at (336) 256-1482. Questions regarding the research itself will be answered by Brandy Langley by calling (336) 337-8514. Any new information that develops during the project will be provided to you if the information might affect your willingness to continue participation in the project.

By signing this form, you are agreeing to participate in the project described to you by Brandy Langley.

Participant is _____ years old.

_____ _____

Custodial Parent(s)/Guardian Signature Date

APPENDIX M

PARTICIPATION IN RESEARCH METHODS LOG

Participation in Research Methods Attendance Log

Name	Pre-Focus Group	Pre-PDPAR	Journal #1	Journal #2	Journal #3	Journal #4	Journal #5	Journal #6	Post-Focus Group	Post-PDPAR
Mary	X	X	X		X		X	X	X	X
Karen	X	X	X			X	X	X	X	X
Elizabeth		X								X
Sharon	X	X		X	X	X	X	X	X	X
Kelly	X	X	X	X	X	X	X	X	X	X
Cathy	X	X	X	X	X	X	X	X	X	X
Roxanna	X		X	X	X	X				
Kim	X	X	X	X	X	X	X	X	X	X
Marlene		X								X
Cynthia	X		X		X					
Martha	X	X	X	X	X	X	X			X
Amy	X	X	X		X	X				X
Katharine	X	X	X	X	X					X
Gail	X		X							
Katie	X	X	X				X	X	X	X
Melinda	X	X	X	X			X			X
Tammy	X	X	X	X			X	X	X	X

X = Completion of Research Method