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## Self-Reported Weight Control Behaviors of Adolescents: Differences Among Age, Gender, Race and Relationships Among Body Image, Exercise, and Sports Participation

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SELF-REPORTED WEIGHT CONTROL BEHAVIORS OF ADOLESCENTS:  
DIFFERENCES AMONG AGE, GENDER, RACE AND RELATIONSHIPS AMONG BODY  
IMAGE, EXERCISE, AND SPORTS PARTICIPATION.

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## **ABSTRACT**

The purpose of this study was to examine the self-reported weight control behaviors of adolescents and report any differences in the variables of age, gender, and race. Also, the relationships between weight control behaviors and exercise, body image, and sports participation were investigated. The hypotheses were that there would be differences in age, gender, and race with weight control behaviors and that there would be relationships between weight control behaviors and exercise, body image, and sports participation. The survey used in this study was the Youth Risk Behavior Survey (YRBS) from the Centers for Disease Control and Prevention, 2005. Age, gender, and race differences were found for frequency of weight control behaviors. In addition, relations were found between weight control behaviors and body image and frequency of exercise and sports participation. Age, race, and gender make a difference in adolescents engaging in weight control behaviors. Also, body image, exercise behaviors, and sports participation are related to adolescents engaging in weight control behaviors.

# CHAPTER 1

## Introduction

Eating disorders have become more and more prevalent among women; especially young athletes. An eating disorder is defined by a person having non normal eating patterns. The person either does not eat food or gorges on food and then expels of it (Salbach, Klinkowski, Pfeiffer, Lehmkuhl, & Korte, 2007). The athletes most at- risk for an eating disorder are those who participated in sports that promoted thinness and leanness. Some factors that might have contributed to developing an eating disorder are the pressure to perform and a low body weight (Salbach, Klinkowski, Pfeiffer, Lehmkuhl, & Korte, 2007). Developing an eating disorder may cause many problems and it may even lead to premature death (Rome et al., 2004). According to Reinking and Alexander (2005), adolescent and emerging adult women athletes are more at-risk for developing an eating disorder than non-athletes. Some of the main sports that promote thinness are distance running, swimming, diving, gymnastics, and dance. Although it has been shown that participating in competitive sports increases self-esteem and decreases depression, it also may encourage disordered eating which may lead to an eating disorder (Reinking & Alexander, 2005).

Eating disorders are most common when women athletes are performing at an elite level. For example, De Bruin, Oudejans, and Bakker (2007) suggested that young gymnasts are the most at risk for an eating disorder. De Bruin et al. (2007) found that 62% of female college gymnasts used some type of method to control their weight; for example, fasting, bingeing, or using laxatives. In addition De Bruin et al. (2007) reported that women college gymnasts often have a more fluctuating body image than those who are not in the sports and that eating disorder occurs more in white female athletes than black female athletes. Different sports can be harmful to a certain type of person. If a person who is a perfectionist and extremely competitive joins gymnastics, they are more likely to develop an eating disorder (Ravaldi, Vannacci, Bolongnesi, Mancini, Faravelli, & Ricca, 2006).

Many young athletes have disturbed eating patterns. This means that they are usually dieting, but may not actually develop an eating disorder. Also, disturbed eating patterns and eating disorders can be a great concern because many health risks may be involved. This is especially a concern for young female gymnasts who may suffer amenorrhea, becoming thin, and premature death (Nordin, Harris, & Cumming, 2003).

Markey (2004) noted that ethnicity may be related to eating disorders in those eating disorders and disturbances were once thought only to be associated with White-middle class females. However, today there are different pathways that may lead to a person developing an eating disorder. First, the dietary patterns that are transferred from generation to generation; this may include food preferences or food restriction. This may lead to unhealthy eating habits. Second, physical appearance is valued differently in different cultures. The preference for slim-body shapes has increased in the world and this may help to influence eating disorders. Finally, the meanings of the symptoms of eating disorders and where they come from is culturally defined. This means that health and illness cannot be viewed objectively, but must be viewed subjectively since every culture is different (Markey, 2004).

## **Statement of Problem**

Due to the increase in eating disorders among adolescents, there needs to be more research done to clarify what individual and social factors may contribute to this phenomenon. There are many influences (i.e. the need to lose weight to be competitive and the desire to have a certain body type) on adolescent's being thin, but many are still not known. For example, many adolescent's engage in weight control or dietary behaviors to lose weight. Many of these behaviors include vomiting after eating, taking laxatives or diuretics, exercising excessively, or fasting from food for a period of time.

## **Purpose**

The purpose of this study was to explore relations between adolescent weight control behaviors and selected demographic variables (e.g., age, gender, and race). In addition, relations between exercise participation, sports participation, and body image among adolescents and weight control behaviors also will be examined.

## **Theoretical Perspective**

Two theoretical perspectives were used in this study. Achievement goal theory (AGT) (De Bruin, Bakker, & Oudejans, 2009) has been used in studying the attitudes towards eating disorders in gymnasts and dancers. This theory also has been pertinent in the field of sports psychology for the past 20 years. Achievement goal theory states that when an athlete is in the achievement setting of trying to perform well in her sport she will have the motivational drive to be competent at the ability (De Bruin, Bakker, & Oudejans, 2009).

Ravaldi et al. (2006) argued that culture has an influence on body image and eating disorders. In many Western cultures, the drive to be thin and lean is reinforced; especially for young girls. In fact, the body image for females in the past decade has become thinner over the years (Ravaldi et al., 2006). In keeping with this perspective, social learning/cognitive theory (Bandura, 1983; Thomas, 2005) was used to explain the on-set of eating disorders of youth. Social learning theory would explain that adolescents may develop disordered eating behavior because adolescent girls and boys learn examples of how to do activities by modeling others. If an adolescent sees another peer purge after he or she eats, then that adolescent might be compelled to do the same when wanting to lose weight or perform better. Within this framework, the adolescent decides if it is the right action or wrong action to take based on her observation of others in order to accomplish the goal of becoming thin and losing weight.

## **Research Questions**

1. Are there gender differences among adolescents in their weight control behaviors?
2. Are there race differences (Caucasian, African American, and Hispanic) among adolescents in their weight control behaviors?
3. Are there age differences (younger adolescents and older adolescents) among adolescents in their weight control behaviors?



4. Are self perceptions of body image related to self reports of weight control behaviors among adolescents?
5. Are adolescents reports of exercise behaviors related to their reports of weight control behaviors?
6. Are adolescents reports of their participation in sports related to their reports of weight control behaviors?

## **Hypotheses**

1. There will be a difference between male and female adolescents in their reports of weight control behaviors.
2. There will be a difference between races (Black, White, and Hispanic) in their reports of weight control behaviors.
3. There will be a difference between older adolescents (15 to 18 years) and younger adolescents (12 to 14 years) in their reports of weight control behaviors.
4. There will be a relationship between adolescents' self perceptions of body image and their reports of weight control behaviors.
5. There will be a relationship between adolescents' reports of exercise and their reports of weight control behaviors.
6. There will be a relationship between adolescents' reports of participation in sports and their reports of weight control behaviors.

## **Definition of Terms**

1. Weight control behaviors: according to the YRBS, defined by restricting food within 24 hours, vomiting, taking laxatives, and excessively exercising.
2. Body image: reported if adolescent felt he or she was overweight or not.
3. Exercise behaviors: how many times per week do an adolescent exercise for 20 minutes.
4. Sports participation: how many sports teams does each adolescent participate on?
5. Eating behaviors: the different ways a participant eats.
6. Eating disorder: a physical and psychological disorder that may cause death.

## **Abbreviations**

1. YRBS- Youth Risk Behavior Survey
2. CDC- Centers for Disease Control and Prevention

3. EDI- Eating Disorder Inventory

## **Delimitations**

Due to the use of secondary analysis on existing data, the following delimitations are known:

1. The sample used in this study is limited to the participants who completed the Youth Risk Behavior Survey.
2. The measures used in this study are dependant of those used in the original study examined by the CDC.

## CHAPTER 2

### Literature Review

#### *Age and Weight Control Behaviors*

Depending on the age of a person, they can be apt to engaging in weight control behaviors than young children. Adolescence (12 to 18 years old) is a prime age for development and body image influences. Goni and Rodriguez (2007) examined the variables associated with the risks of developing eating disorders in adolescents. They were specifically looking at three variables associated with eating disorders in adolescence: eating behavior disorders, age (early and late adolescence) and the interaction between physical activity and self-concept. The participants consisted of 740 adolescents: 366 boys and 374 girls between the ages of 12 and 18 years. The mean age among these participants was 14.3 years.

The Eating Disorder Inventory (EDI) was used to measure eating disordered behaviors. This measure is based on 8 subscales: three were measuring the behavior and five were measuring the personality traits. This measure was based on a 6-point Likert scale. The researchers found that there was a significant difference between men and women. The women scored higher on three of the subscales than the men: Body Dissatisfaction, Drive for Thinness, and Total EDI. Other results reported that the older adolescents (ages 15-18) had higher scores on the EDI than the younger adolescents (ages 12-14). In other words, women are more susceptible to eating disorders, but men scored higher on the Bulimia subscale. Older adolescents are more at-risk for disordered eating behaviors (Goni & Rodriguez, 2007).

Kiziltan, Karabudak, Unver, Sezgin, and Unal (2006) studied the unhealthy eating habits among Turkish students. They had two objectives: 1) to examine the occurrence of bulimia in late adolescents, and 2) to study the effects of gender on eating attitudes. The participants were 18 to 24 year old Turkish students from 5 different universities in Turkey (3 private universities and 2 public universities). Sixty-five students were randomly selected from the different universities. Three hundred twenty-five students were invited to participate, but only 300 decided to participate. The final sample size was 300 Turkish students; 150 males and 150 females. The data was collected from one semester (March to June 2004).

A self-administered questionnaire was given to obtain data on the demographic variables of the students. The height, weight, and Body Mass Index (BMI) were collected from each participant. To measure bulimic behaviors the Bulimic Investigatory Test, Edinburgh (BITE) was administered. The BITE is a 33-item Likert scale measuring bulimic behaviors and binge eating. It is made up of 2 subscales: severity scale and symptom scale. The highest score on the symptom scale is 30 and any score above 20 is considered to be highly disordered eating patterns. The dietary intake was assessed using an open-ended interview by dietitians. They found that there were gender differences on four of the scales. The females were more likely to see themselves as normal eaters and to feel bad after

binging. The males were more likely to eat well in front of others and binge later on. All in all, there was a low prevalence of bulimic disorders among Turkish students (Kiziltan et al., 2006).

O'Dea and Abraham (1999) researched the relationships between disordered eating attitudes and different behaviors during early adolescence. The sample consisted of 470 adolescent students; 173 males and 297 females. The participants were taken from 7<sup>th</sup> and 8<sup>th</sup> grades from two secondary schools in Sydney, Australia. The demographic variables from the students were all similar. The researchers measured height and weight of each student. A questionnaire was given to assess demographics, eating behaviors, and weight increases and decreases. Body weight was measured by asking the students if he or she thought their bodies were "too thin", "too fat", or "just right". Also, the students completed the Eating Disorder Inventory (EDI), the State-Trait Anxiety Inventory (STAI), and the Beck Depression Inventory (BDI).

The participants completed the surveys in the classroom. If any students were absent on that day, they would complete the survey at a later day. The results were analyzed by conducting a series of analysis of covariance tests. Postpubertal females were more likely to not eat between meals to lose weight than prepubertal females. Postpubertal males were more likely than prepubertal males to want to build up their bodies and lose weight. The more mature females had more thoughts of their bodies being "too fat" (O'Dea & Abraham, 1999).

Zullig, Ubbes, Pyle, and Valois (2006) used the Centers for Disease and Control's Youth Risk Behavior Survey to explore the relationships among weight perceptions, breakfast eating, and dieting behaviors in high school adolescents. The sample consisted of 4597 public high school students around the United States. Most of the students were between the ages of 14 and 17 years. A majority of the sample was Caucasian followed by African American and Hispanic/Latino. The main races studied were White and Black males and females.

The researchers divided the results into four groups: White females, Black females, White males, and Black males. With the White females, there were significant associations with not eating breakfast and dietary behaviors and weight perceptions. These females who did not eat breakfast were 1.4 times more likely to engage in different dietary behaviors than White females who did report eating breakfast. The only significant relationship in Black females was not eating breakfast and fasting to lose weight. The Black females who did report fasting to lose weight increased their odds by 1.77 times of not eating breakfast than Black females who did not fast to lose weight. In White males, those who reported negative weight perceptions and negative eating behaviors were 2.4 times more likely to not eat breakfast than other White males who did not report these behaviors. For Black adolescent males, the results mirrored the White males. All in all, the White females were more likely to engage in losing weight than Black females. Males in general, just wanted to lose weight (Zullig et al., 2006)

Thomas, Keel, and Heatherton (2005) conducted a study on the prevalence of eating disorder attitudes and behaviors among adolescent ballet dancers (n=239) between 13 and 18 years of age. The sample was recruited from five different geographic regions around the United States. The dancers were mainly White with small percentages of Black, Asian, Hispanic, and American Indian. The main instrument used to measure eating disorders was the Eating Disorder Inventory. This measure consisted of a 26-item self-report containing scales to measure the Drive

for Thinness, Bulimia, Perfectionism, Maturity Fears, and Interpersonal Distrust. Also, the dancers had to report their current height, weight, and whether they have engaged in any bulimic behaviors.

The researchers found that the scores on Drive for Thinness and Perfectionism differed significantly. Students who attended schools nationally and locally had a significant higher score on these subscales than the schools that were regional. Rates of eating disorders that were self-reported differed significantly across school type. Of the students that attended the national professional ballet company, one-third reported eating disorders. Self-induced vomiting was three to four times more likely to occur with students at the national ballet company (Thomas, Keel, & Heatherton, 2005).

### *Culture/Ethnicity and Weight Control Behaviors*

Culture and ethnicity have different influences on weight control behaviors among adolescents. Many areas of one's culture can contribute to what a person eats and how he or she eats. Becker, Burwell, Gilman, Herzog, and Hamburg (2002) investigated the affect of television on Fijian adolescent girls developing eating disorders. This study was the first to investigate this culture among this research area, so there was not any literature that had been done. The design used to conduct this study was multiwave-cross-sectional in two different samples of Fijian adolescent girls. The first wave occurred in 1995 (when television was first introduced to this area of Fiji) and the second wave in 1998. Fiji was the area selected because of its low prevalence of eating disorders since the 1990's. In this culture, losing weight and the ideal skinny is not promoted. The sample of the study was comprised of Fijian adolescent girls in grades 5 to 7 from two secondary schools. Written consent was obtained from all the subjects and their parents. Sixty-three participants were in the first wave and 65 in the second wave in 1998 (N=128).

All the participants filled out the Eating Attitudes Test-26. This is a survey of 26 items to assess bingeing and purging behaviors. A score of 20 or above on the test was considered high. In the 1998 survey, there were a few additional questions added to ask about body image. Results show that the mean age in 1995 was 17 years and in 1998 was 16.9 years. There was not much difference in the ages of both waves. The scores on the EAT-26 differed significantly between both groups. In the first wave, 12.7% scored higher than a 20 on the test compared to 29.2% in the second wave. This difference is because of the length of exposure time to television. The second wave was exposed to television for 3 years and the first wave for only one month since television was so new back then. Self-induced vomiting and dieting were the biggest factors in the second wave. Also, the percentage of subjects who used self-induced vomiting in 1995 was 0% compared to 12% in 1998. Episodes of binge-eating were not different between the two waves (Becker et al., 2002)

Franko, Streigel-Moore, Barton, Schumann, Garner, Daniels, Schreiber, and Crawford (2004) examined eating concerns in Black and White adolescent girls. These researchers retrieved their sample from the National Heart, Lung, and Blood Institute Growth and Health Survey (NGHS). This is a three years longitudinal study. For this current study, Franko and colleagues (2004) used year 3 of the study when the Eating Disorder Inventory for Children was used. At year 3, the sample included 2,228 adolescent girls (1,155 Black girls and 1,073 White girls).

Each participant was assessed at each site or at home. The participants were read self-report surveys to obtain good comprehension of the responses. On the Eating Disorder Inventory for Children (EDI-C) there were some items that were the same from the original EDI and some items that were significantly changed for children. The girls responded on a 6-point Likert scale, but for scoring purposes “sometimes, never, and rarely” were given a 0. The researchers found that there were many similarities between the White and Black adolescent girls on the EDI-C. There was one unique factor found for each group. For White girls, they scored higher on the perfectionism scale and the Black girls scored higher on the body dissatisfaction scale of the EDI (Franko et al., 2004).

Moya, Fleitlich-Bilyk, and Goodman (2006) researched briefly the risk of eating disorders in adolescents from Southeast Brazil. The sample consisted of 1,251 school children ages ranged from 7 years to 14 years in Brazil. The mean age was 11 years and females made up a majority of the sample. The psychiatric symptoms were measured using the Development and Well-Being Assessment (DWBA) which has been validated in Brazil and in Britain. There were 18 adolescents who were considered “at-risk” for eating disorders based on the criteria of symptoms from the DSM-IV for anorexia and bulimia. Twenty percent of the girls and 0.8% of the boys in the “at-risk” group reported prevalence. Also looking at socioeconomic status, the higher prevalence occurred in the higher SES children.

Pernik, Nichols, Rauh, Kern, Ji, Lawson, and Wifely (2006) investigated disordered eating among a multi-racial sample of high school athletes. The sample was recruited from six high schools in Southern California. The participants were made up of 513 female athletes who ranged in age from 13 to 18 years. Inclusion criteria were that the girls must be involved in one of the team sports at their school. There were six racial groups that were assessed: White, Hispanic, African American, Asian, Filipino, and “Other”. Due to the small reporting’s of Asian, Filipino, and “Other”, the final sample only included 277 Caucasian, 103 Latina, and 73 African American high school athletes (N= 453). The main sports looked at were track and field, tennis, volleyball, cross country, swimming, soccer, softball, lacrosse, and field hockey. Parental consent was obtained and the study received approval from the Institutional Review Board.

To measure eating disorder attitudes among the athletes, the Eating Disorders Examination Questionnaire (EDE-Q) was used. This was a self-report measure assessing the past 4 weeks of eating/dietary behaviors from the athletes. There were four subscales: dietary constraint, eating concern, shape concern, and weight concern. The survey was given during the third or fourth weeks of the competitive season. They found that Body Mass Index (BMI) was highest among the African American adolescent girls. Over the whole sample, 89 of the athletes were considered having disordered eating. The majority was among the Caucasian (51) adolescents followed by Hispanic (24) then African American (14). There was no significant difference between ethnicities when it came to being “at-risk” (Pernik et al., 2006).

Regan and Cachelin (2006) examined and documented the frequency of eating disorder behaviors (i.e. vomiting, using laxatives, and binge eating) in a multi-ethnic community sample. The sample was conveniently sampled from colleges, community, work, and church organizations around urban Los Angeles. The sample size was 1225 men and women of four different ethnicities (805 women and 420 men). The ethnicities included Hispanic (43.4%), Asian/ Asian American (24.4%), Black (16.2%), and Caucasian (16%). The mean age for the participants was 24 years and the participants could not have previously had an eating disorder.

The participants were asked three questions: “Where they had engaged in binge eating, whether they had vomited, or whether they had used laxatives or diet pills?” The researchers showed that binge eating was common among all ethnicities; however, more women reported having episodes of binge eating than men. For self-induced vomiting, there was no difference among ethnicities among men; even more, there was an ethnic difference with the women. Asian women were the least likely to engage in self-induced vomiting followed by Hispanic, Caucasian, and African American women. Again, Asian women were the least likely to report using laxatives or diet pills (Regan & Cachelin, 2006).

### *Gender and Weight Control Behaviors*

Although the majority of eating disorders occur with women, they also can occur with males. Muisé, Stein, and Ambass (2003) found results that supports that males can develop eating disorders as well. They found that many males have body dissatisfaction, even young males. It has been shown that obesity is a huge risk factor with males developing an eating disorder. The adolescent boys who are most at risk for developing an eating disorder are obese. In a study of adolescent male athletes, researchers found that 36.7% of the male eating disorder patients admitted to being involved in sports that used weight control to better their performance.

McCabe and Ricciardelli (2006) investigated the attitudes of eating behaviors and attitudes in adolescent boys and girls when it comes to weight loss. Extreme weight loss behaviors is defined by any person being driven by exercise dependence, food supplements, drive for thinness, or bulimia. The researchers conducted the study over a 16 month period, so every 8 months a questionnaire was given to the participants. The sample consisted of 847 adolescent boys and girls: 411 boys and 436 girls. The mean age for both gender was 13 years. The participants were recruited from 10 high schools that represented different socioeconomic statuses and different cultural backgrounds so that the sample could be representative of adolescents. The data was collected at three different times within the 16-month period.

The four independent variables: exercise dependence, food supplements, drive for thinness, and bulimia were all measured in different ways. Exercise dependence was measured using the Exercise Dependence Scale. This is a 9-item 4 point Likert scale asking adolescents questions answering “never” to “always”. Food supplements were assessed using the Food Supplements Scale based on 9 items on a 4-point scale. Drive for Thinness and Bulimia were measured using the Eating Disorder Inventory-2 (EDI-2). Both variables were assessed with 7 items on a 6-point Likert scale. McCabe and colleague found that the girls scored higher on exercise dependence, drive for thinness, and bulimia. Food supplements were the highest with the boys, and depression and body image importance were the strongest predictors of these behaviors. For girls, they had the same predictors except for body dissatisfaction (McCabe & Ricciardelli, 2006).

Sim and Zeman (2006) examined if difficulties in emotion regulation distinguished between disordered eating and body dissatisfaction. They hypothesized that the older girls would have higher disordered eating patterns, higher Body Mass Index (BMI), and greater body dissatisfaction. The sample consisted of 234 adolescent girls with a mean age of 12 years in the sixth, seventh, and eighth grades. The girls were recruited from 4 public middle schools; the

majority is Caucasian from middle class families. At the time, 19.2% of girls reported that they were on a diet.

To measure body dissatisfaction and eating behaviors, the researchers used the Body Dissatisfaction scale of the Eating Disorder Inventory. This was a 9-item 3 point Likert scale. Disordered eating was measured using the Eating Attitudes Test-26 (EAT-26) and assessed using 26 items. This scale has good internal consistency and has been used in many other studies. Negative affect was measured using the Global Negative Emotionality Scale from the Differential Emotions Scale-IV. This assesses negative affect using 36 items on a 5 point Likert scale (“1”= rarely to “5”= often). Emotional awareness was measured using the Emotion Expression Scale for Children using 16 items on a 5-point scale. Coping was measured by using the Coping with Negative Emotion Scale-Coping factor based on a 3-point scale. The researchers found that girls in the older age group had significantly higher body dissatisfaction than the youngest group. There were no age differences in disordered eating. The girls who scored higher on disordered eating measure reported higher negative affect (Sim & Zeman, 2006).

Ata, Ludden, and Lally (2007) examined how gender related to eating behaviors and attitudes in adolescents boys and girls. They hypothesized that girls were expected to reported negative eating attitudes and behaviors more than the boys, and the factors associated with negative eating behaviors would differ among boys and girls. The sample consisted of 177 adolescent girls and boys from eighth to twelfth grades. The age ranged from 13 to 19 years, and they were from three high schools in the Northeast United States. More than half of the sample was female and about 97% of the sample was Caucasian.

All of the measures used were self-reports. Eating attitudes and behaviors was measured using the Eating Attitudes Test. Body image was measured using the Contour Drawing Rating Scale (CDRS) consisted of 9 drawings of girls and 9 drawings of boys. They had to rate how underweight or overweight they thought each drawing was. To measure body esteem, the Body Esteem Scale was used. Each participant had to rate how they felt about each body part (16 body parts). The researchers found that the girls scored significantly higher on the EAT than the males. The males scored higher on the body image scale compared to the females (Ata, Ludden, & Lally, 2007).

Beato-Fernandez, Rodriguez-Cano, Pelayo-Delgado, and Calaf (2007) investigated if there are gender-specific pathways of psychological distress in early adolescence toward the development of abnormal eating behaviors and substance abuse. They hypothesized that psychological distress would be predictive of drug use in boys and abnormal eating behaviors in girls. The sample consisted of 1,076 adolescents from a secondary school in rural Spain. The age of these adolescent boys and girls was 13 years. This study was part of another longitudinal study that was already done.

Substance abuse was measured using a self-report questionnaire asking four types of questions (“no reported use, used once per year, used once per week, or used once daily”). These were dichotomous variables based on “yes” or “no” answers. Psychological distress was assessed using the Spanish version of the General Health Questionnaire. Eating behaviors was measured using the Eating Attitudes Test (EAT) and the Bulimic Investigatory Test Edinburgh. The Spanish versions of both tests have been validated. Self-esteem was measured using the Rosenberg Self-esteem Scale. Researchers found that the adolescent boys had more issues with



the drug use and the girls had more issues with the abnormal eating behaviors. Using cigarettes while have abnormal eating behaviors was more common among the girls than the boys (Beato-Fernandez et al., 2007).

### *Body Image and Weight Control Behaviors*

De Bruin, Oudejans, and Bakker (2007) studied the relationship between body image and dieting behavior in female gymnasts. The sample consisted of 153 adolescent girls. They were between the ages of 13 and 20 years old. The sample was made up of 17 elite gymnasts, 51 non-elite gymnasts, and 85 teenage school girls. They found that both groups of gymnasts (elite and non-elite) who were tested wanted to lose more weight than the control group. The elite gymnasts were the most frequent to have disturbed dieting behaviors. In the elite group of gymnasts, 47.1% engaged in more pathogenic methods of dieting; for example, bingeing, fasting, vomiting, pills, and laxatives. Compared to the non-elites and controls, only 25.5% and 32.1% confessed to engaging in one of the dieting methods.

Crissey and Honea (2006) studied the role of sport participation on body image and weight control behaviors among adolescent girls. The researchers used the Cultural Resource Theory (CRT) to guide their research in this area. The CRT states that sports participation is going to influence the body images among these girls, even from other cultures. Sports participation can objectify the body images of the girls from other cultures. They hypothesized that girls who participate in stereotypically female sports are more likely to think they are overweight, try to lose weight, and use multiple methods to lose the weight. Also, they hypothesized that girls who participated in stereotypical male sports were less likely to think they were overweight and less likely to try to lose weight.

The sample for this study came from the National Longitudinal Study of Adolescent Health (ADDHEALTH). The sample included 7,214 adolescent girls from ages 14 to 18 years old. The three dependant variables being assessed were overweight perception, trying to lose weight, and weight loss strategies. The independent variable is sports participation. The sports were divided into two categories: female and male sports. Female sports included cheerleading, dance, tennis, volleyball, and swimming. Typical male sports were basketball, baseball, football, field hockey, soccer, track, and wrestling. Crissey and Honea found that athletes in the female sports were more likely to want to lose weight, think they are overweight, and use methods to lose weight compared to nonathletes. The associations for weight loss were not as high for non White athletes. These results show that White girls may have more body image issues and weight perception issues than other races (Crissey & Honea, 2006).

Hausenblas and Downs (2001) conducted a meta-analysis on body image issues between athletes and nonathletes. The total sample of studies looked at was N=78. A small effect was found that athletes had a more positive body image when compared to nonathletes. The researchers found that there was no difference between male or female athletes or nonathletes. There was no difference between the type of sports (aesthetic, ball game, and endurance sports). Also, athletes in college sports had a better body image of themselves than athletes who participated in recreational sports.

Ricciardelli and McCabe (2001) studied Stice's model in adolescent males and females. Stice's model proposes two pathways (i.e. dietary restraint and negative affect) that mediate

body dissatisfaction and bulimic behavior in adolescents. The sample from the study included 267 girls and 199 boys between the ages of 12 to 16 years. The mean age of girls was 14, and the mean age of boys was about 14 years. The participants were from two public schools in Melbourne, Australia in grades 7 to 10. The majority of the sample was middle class and Anglosaxon (Caucasian).

The Stunkard Figure Drawings were used to see if the adolescents' wanted to be thinner than their actual body image. Body dissatisfaction was measured using the Body Dissatisfaction sub-scale of the Eating Disorder Inventory-2. Dietary restraint was assessed using the Drive for Thinness sub-scale on the EDI-2. Negative affect was measured using the Depression, Anxiety, and Stress Scale. The participants had to report whether they had symptoms of depression, stress, or anxiety over the past 3 weeks. Bulimic behavior was measured using the Bulimia-Test Revised. The researchers showed that on the body image drawings that 29% of boys and 77% of girls wanted to be thinner. For girls, dietary restraint and negative effect were mediators for bulimic behaviors and body dissatisfaction. For boys who wanted to be thinner, only negative affect was a mediator and for boys who wanted to be bigger, dietary restraint was found to partially mediate the relationships (Ricciardelli & McCabe, 2001).

#### *Participation in Sports and Weight Control Behaviors*

Female college athletes are at-risk for developing an eating disorder or disordered eating behaviors (Reinking & Alexander, 2005). Some of the sports in college promote leanness and thinness. Reinking and Alexander (2005) examined 146 college female undergraduates. 82 of the participants were college athletes and the other 64 were not athletes in collegiate sports. The college athletes were divided into lean sports and non lean sports. Symptoms of eating disorders were assessed by using the Eating Disorder Inventory II. This measure involves Likert scale responses to 91 items. They found that the lean-athlete group had the lowest mean actual body weight.

The researchers discovered that the athletes had lower scores in body dissatisfaction and ineffectiveness. There was no difference between the 2 groups in body weight, but the nonathletic group had significantly lower desired body weight. Both groups were classified as at-risk for developing an eating disorder: athletes (7.1%) and nonathletes (12.9%). In the athletic group, 25% of the lean-sport group was at-risk compared to 2.9% of the non-lean sport group. Although female athletes did not show greater risk for an eating disorder than the nonathletic women, the females who participated in the lean-sports had a greater risk (Reinking & Alexander, 2005).

Engel and colleagues (2003) studied the relationship between college elite student athletes lives and disordered eating. The researchers investigated many different variables that may be related to athletes developing disordered eating: type of sport, coaching, demographics, etc. The total sample size was 1445 elite college athletes; 562 were female and 883 were male. The athletes in this sample were from 11 different schools and 11 sports: football (384), basketball (84), track (282), gymnastics (148), swimming (190), wrestling (97), cross country (168), crew (48), tennis (10), Nordic skiing (16), and volleyball (14). The average age of the sample was 20 years and the majority of the participants were Caucasian. All of the participants were members of the Division I National Collegiate Athletic Association (NCAA).

Five measures were used to gather data on the variables being measured. Eating-related attitudes was measured using two subscales of the Eating Disorder Inventory -2: Drive for Thinness and Body Dissatisfaction. Self-esteem was measured using the Rosenberg Self-Esteem Scale. The Purge Index was used to gather data on how many times the participants used purging methods. These items were measured on a 0 to 3 scale. The Restriction Index was used to see how many times the participants' restricted food on a 0 to 3 scale; five questions were asked to gather this information. The Binge Index is a standardized score that comes from one question: the number of times participants endorsed binge eating in the past month. All of these self-report scales are reliable and valid (Engel et al., 2003).

Engel and his colleagues (2003) found that women had a greater drive for thinness than men. This shows that gender plays a role in developing disordered eating. Also, sport was the only athletic variable that predicted drive for thinness. Gymnastics, swimming, and basketball were the sports to show a higher drive for thinness compared to football, cross country, and wrestling. Again, women scored higher on the body dissatisfaction scale than men. Track, cross country, and wrestling athletes reported lower body dissatisfaction. On the Purge Index, women, gymnasts, and wrestling reported more purging incidents. On the Restriction Scale, women, Whites, wrestlers, and gymnasts reported higher restriction of food. The cross country athletes performed more bingeing incidents than any of the other sports (Engel et al., 2003).

Kirk, Singh, and Getz (2001) investigated the prevalence of eating disorder behaviors among female college athletes and non-collegiate athletes. They hypothesized that the different sports would have a relation with eating behaviors of the athletes. Kirk and associates conducted the study with a small sample of female athletes (N=232) ranging in ages from 16 to 25 years attending a rural state university in southwestern Virginia. Eating disorder behaviors were measured by the Eating Attitudes Test-26 (EAT-26). This self-report measure reports on the participants' attitudes towards food and diet patterns using 26 items on a Likert scale of 1 (always) to 6 (never).

Kirk et al. (2001) found there were no significant differences between the two groups in demographic variables. A score of below 20 on the scale states a lower risk at developing an eating disorder. In the collegiate athlete group, 10.2% scored greater than 20 and the noncollegiate group had 30 women score above 20. The noncollegiate group had a greater risk of developing an eating disorder. Unfortunately, the results did not support the hypothesis that female college athletes would be at greater risk for developing an eating disorder than the non-college athletes (Kirk et al., 2001).

### *Exercise and Weight Control Behaviors*

Jensen and Steele (2009) briefly examined the relations between physical activities, weight concerns during physical activity, and body dissatisfaction in preadolescents. They hypothesized that body dissatisfaction would moderate the relationship between weight criticism and physical activity. There were 376 participants who were from a Midwestern state in the fifth and sixth grades from 6 elementary schools. About half of the sample was male and the other half female. The majority of the sample was European American. Body dissatisfaction was assessed by using 7 drawings along a continuum. Physical activity was measured using the Self-Administered Physical Activity Checklist (SAPAC). Weight criticism was assessed using the

Weight Criticism during Physical Activity (WCA) scale. This scale assessed the child's frequency of teasing during PA.

Jensen and Steele (2009) found that for girls as body dissatisfaction increased so did physical activity. Weight concerns were not associated with the number of physical activities. The interaction between body dissatisfaction and weight concerns were associated with physical activity. For boys, there were not associations found between body dissatisfaction, weight criticisms, and physical activity.

Grave, Calugi, and Marchesini (2008) examined the prevalence of compulsive exercising to control weight and shape in eating disorders. The participants included 165 female patients with an eating disorder of clinical severity. All the patients were voluntary. The Institutional Review Board gave consent and parental permission was obtained for patients 17 years and younger. The Eating Disorder Examination (EDE) was given to assess eating disorders and body weight concerns. The Eating Disorders Inventory- Perfectionism Scale was used to measure perfectionism in the patients. The participants were divided into two groups: compulsive exercisers and noncompulsive exercisers. The compulsive exercisers were given the Intense Exercising to Control Weight or Shape from the EDE self-report measure. The researchers found that a majority of the patients were clinically diagnosed with anorexia nervosa (AN). The compulsive exercisers (45.5%) had higher scores in restraint, weight concern, and shape concern.

De Bruin, Woertman, Bakker, and Oudejans (2009) studied the relationships sports motivation with body image, dieting behaviors, and self-esteem. They had 3 hypotheses: 1) girls participating in sports out of weight-related motives will have a more negative body image than non-weight related motives and nonathletes, 2) Weight-related sports participants would have a higher frequency of dieting, 3) weight-related participants would score lower on self-esteem than the other participants. The sample included 140 girls from the Netherlands that ranged in age from 13 to 18 years. The mean age of the girls was 15.3 years.

Sports participation was measured by asking which main and side sports the adolescents participated in. Body Image was assessed using the Multidimensional Body Image Questionnaire by assessing the perceived body images of the participants. Weight control behaviors were measured using a 9-point Likert scale. Self-esteem was measured using the Rosenberg Self-Esteem Scale using ten items on a 5-point scale. Researchers found that out of the whole sample, 116 girls participated in sports. The majority participated in nonweight related sports. All of the hypotheses were supported by the results. They showed that girls in weight-related sports had a more negative body image, more dietary frequency, and lower self-esteem compared to the other participants (De Bruin et al., 2009).

### Summary/Conclusions

In conclusion, many factors contribute to the engagement of weight control behaviors among adolescents. Because adolescents are so vulnerable in their peer relationships, they can be easily influenced by them. Also, they think that having the ideal weight is crucial during this period of development. Although weight control behaviors are increasing in male adolescents, they are still more prevalent in female adolescents. Relationships of age and race have also been reported in the literature. In addition, sports participation, frequency of exercise and body image have been found to be related to weight control behaviors of adolescents.

## CHAPTER 3

### Method

#### *Sample*

The sample of this study consisted of 13,791 high school students from a nationally known survey, the Youth Risk Behavior Surveillance Survey (YRBSS) by the Centers for Disease Control and Prevention (CDC, 2005). The sample was randomly selected by the classes they were enrolled in during school. The adolescents ranged from ages 12 to 18 years of age; however, 99% of the sample was between 14 and 18. The students were almost equally split between males and females. The students were surveyed from 203 high schools around the United States, but only 195 schools participated in the study. The majority of the sample was Caucasian followed by African American and Hispanic or Latino. The average age of the students was 17. (See Table 1 for demographic data).

#### *Procedure*

The students were given a self-report survey, Youth Risk Behavior Survey (YRBS) from 2005. The survey was randomly given to the students in the core classes (i.e. history, English, math). Parental consent was obtained. The people that were excluded were students that did not meet the age range and who were not enrolled in high school classes (CDC, 2005). For ANOVA analyses, creating a new variable (WCBQN) was necessary to identify the frequency of weight control behaviors utilized by participants. This variable was created by adding up responses to questions QN66 to QN70, yes=1 and no=0 asking them to indicate whether they had participated in these weight control behaviors. Hence, the range of possible scores was from 0 to 5 for each participant. Because of missing data only 584 participants gave answers to all 5 questions related to weight control behaviors. (See Appendix B for survey questions).

#### *Measures*

The independent variables in the present study were three demographic variables: gender, race, age, and variables of adolescents' self-perceptions of body image, adolescents' reports of exercise, and adolescents' reports of participation in sports. Gender was coded as female or male. Race was coded as: Black or African American, Hispanic or Latino, or White. Ages were grouped into 2 categories: younger adolescents (12 to 14) and older adolescents (15 to 18). Self perception of body image was assessed on a continuum asking the how they felt their body looked (i.e. overweight, extremely overweight, stay the same). Exercise was measured by asking how many times per week did the adolescent exercise on a continuum from 0 day to 7 days per week. Sports participation was assessed by asking how many sports each participant engaged in. (see Appendix for demographic sheet and sample items related to variables noted above).

The dependent variable was the adolescents' reports of weight control behaviors. The dependent variable was operationally defined as whether or not the adolescent engaged in using laxatives, vomiting, restricting food for 24 hours or excessively exercising by the Youth Risk Behavior Survey. The YRBS asked many questions about risky behaviors adolescents may engage in; for example, dieting behaviors and drug use. At the end, the scores were added up to

obtain a composite score for each risky behavior. The range of behaviors from the 584 participants was from 0 – 5: mean= 1.23, median= 2, mode= 1. This measure was useful because it is a nationally recognized survey by the Centers for Disease and Control (CDC, 2005).

## **Hypotheses**

1. There will be a difference between male and female adolescents in their reports of weight control behaviors. (Anova)
2. There will be a difference in race (Black, White, and Hispanic) in their reports of weight control behaviors. (Anova)
3. There will be a difference between older adolescents (15 to 18 years) and younger adolescents (12 to 14 years) in their reports of weight control behaviors. (Anova)
4. There will be a relationship between adolescents' self perceptions of body image and their reports of weight control behaviors? (correlation)
5. There will be a relationship between adolescents' reports of exercise and their reports of weight control behaviors. (correlation)
6. There will be a relationship between adolescents' reports of participation in sports and their reports of weight control behaviors. (correlation)

## CHAPTER 4

### Results

#### *Subject Characteristics*

The purpose of this study was to explore relations between adolescent weight control behaviors and certain demographic variables such as age, gender, and race and other influences such as exercise, sports participation, and body image among adolescents. The National Youth Risk Behavior Survey was administered to 13,791 high school students to examine their weight control behaviors. Of this sample, 6,858 were female students and 7,006 were male students from various areas of the country. The ages of the participants ranged from 12 to 18 years-of-age. The age most represented in this study was 17 ( $n=3,670$ ) and the median age was 15 ( $n=3,175$ ). Twelve year old students were least represented with only 0.1% of total sample. Caucasian students were among the most highly represented racial group followed by African American and Hispanic/Latino participants. Of the total sample size, 3,688 students described themselves as slightly overweight. Refer to Table 1 for breakdown of demographic variables.

#### *Age, Race, and Gender Differences in Weight Control Behaviors*

The findings of this study were presented for each of the hypotheses. First, the hypothesis will be stated followed by a reporting of the results. SPSS, version 9 was the software used to analyze data. The significance level used for this study was .01.

Table 2 presents one-way ANOVAs used to examine differences in weight control behaviors in adolescents based on age, race, and gender. Weight control behaviors included the total frequency of five weight control behaviors for each participant (see methods). Hence, the

Table 1: Gender, race, and age variables by frequency and percentage of sample.

Variable		Frequency	%	
Male				
Female				
		6,664	50.5	
Caucasian		7,193	49.5	
African American				
Hispanic		6,122	61.9	
		3,347	14.9	
12 year olds		2,069	9.6	
13 year olds				
14 year olds		14	0.1	
15 year olds		14	0.1	
16 year olds		1,184	10.3	
17 year olds		3,175	26.4	
18 year olds		3,538	26	
		3,670	23.4	
		2,272	13.6	



Table 2

Gender, race, and age variables for weight control behaviors

(*N*=584)

Source	df	F	Mean Square	*p
Gender	1	964.050	1181.655	0.000
Race	7	12.501	16.338	0.000
Age	1	5.910	7.760	0.000

---

\*  $p < .01$

range of these behaviors could be from 0 to 5. There were gender, age, and race differences in participant reports of weight control behaviors.

**Hypothesis 1:** *There will be a significant difference between male and female adolescents and their reports of weight control behaviors.*

The first hypothesis concerning gender differences was supported,  $F(1, 583) = 964.050$ ,  $p = .000$ . Females reported greater frequencies ( $M = 1.54$ ) of these weight control behaviors than males ( $M = .905$ ).

**Hypothesis 2:** *There will be a significant difference between race (Caucasian, African American, and Hispanic) and their reports of weight control behaviors.*

The second hypothesis concerning racial differences was supported,  $F(7, 577) = 12.501$ ,  $p = .000$ . Hispanic participants reported greater frequencies ( $M = 1.28$ ) of these weight control behaviors followed by Caucasians ( $M = 1.26$ ) and African Americans ( $M = 1.03$ ).

**Hypothesis 3:** *There will be a significant difference between younger adolescents (12 to 14 years old) and older adolescents (15 to 18 years old) in their reports of weight control behaviors.*

The third hypothesis concerning age differences in weight control behaviors was supported,  $F(1, 583) = 5.910$ ,  $p = .000$ . Older adolescents reported higher frequencies of weight control behaviors ( $M = 1.23$ ) than younger adolescents ( $M = 1.07$ ).

In conclusion, older Hispanic female students seemed to engage in these weight control behaviors more frequently than other racial, gender, and age groupings. That is, in the last 30 days they had not eaten for 24 hours to lose weight, taken diet pills or liquids to lose weight, and vomited or used laxatives to lose weight.

#### *Comparisons of Body Image, Exercise, and Sports Participation among Reported Weight Control Behaviors*

Correlational analyses were used to examine relationships between independent variables of body image, exercise, and sports participation and self-reported weight control behaviors among participants. The significance level is at .01.

**Hypothesis 4:** *There will be a relationship between self-perceptions of adolescents' body image and their report of weight control behaviors.*

The fourth hypothesis was supported. Adolescents' self-reports of body image (a continuous variable from wanting to stay the same weight to being extremely overweight) was significantly related to each of the five weight control behaviors that was measured. These weight control behaviors were exercising to lose weight ( $r = .269$ ,  $p = .000$ ), eating less food or calories ( $r = .365$ ,  $p = .000$ ), not eating for 24 hours ( $r = .161$ ,  $p = .000$ ), taking diet pills to keep from gaining weight ( $r = .131$ ,  $p = .000$ ), and using laxatives or vomiting to lose weight ( $r = .097$ ,  $p = .000$ ).

**Hypothesis 5:** *There will be a relationship between adolescents' reports of exercise behaviors and their reports of weight control behaviors. The fifth hypothesis was supported.*

Adolescents' self-reports of exercise (a continuous variable of the number of days each participant exercised from 0 days to 7 days).

Table 3

*Correlations of body image, exercise, and sports participation with regard to weight control behaviors (N= 13, 791)*

Source	Exercise to Lose weight	Eating less Food/calories	Fasting for 24 hours	Using diet Pills	Vomiting/Using laxatives
Body Image	.269* n=13,705	.365* n= 13,683	.161* n= 13,339	.131* n= 13,687	.097* n= 13,650
Exercise	.181* n= 13,315	.000 n= 13, 297	-.034* n= 13, 317	-.010 n= 13, 327	-.010 n= 13,294
Sports Participation	.077* n= 13,269	-.058* n= 13,252	-.059* n= 13,272	-.016 n= 13, 283	-.009 n= 13,254

\* p<.001= significance. “Exercise to lose weight”, “Eating less food/calories”, and “Fasting for 24 hours” are all related to body image, exercise, and sports participation.

Two significant correlations were found including weight control behaviors of exercising to lose weight ( $r = .181, p = .000$ ) and fasting for 24 hours ( $r = -.034, p = .000$ ). That is, as weekly exercising behaviors increased the use of exercise to lose weight also increased in frequency. In addition, fasting for 24 hours decreased in frequency as exercise behaviors increased in frequency.

**Hypothesis 6:** *There will be a relationship between adolescents' sports participation and their reports of weight control behaviors.*

The sixth hypothesis was supported. Adolescents' self-report of sports participation (how many sports teams did each student participate in) was significantly correlated with the following weight control behaviors: exercising to lose weight ( $r = .077, p = .000$ ), eating less food ( $r = -.058, p = .000$ ), and fasting for 24 hours ( $r = -.059, p = .000$ ). As participant reports of sports participation went up, they also reported a higher frequency of exercising to lose weight and a decrease in frequency of weight control behaviors of eating less food and fasting for 24 hours.

## CHAPTER 5

### Discussion

In order to examine the use of weight control behaviors of adolescents, this study explored relations between adolescent weight control behaviors and certain demographic variables (age, gender, and race) and other influences such as exercise variables, sports participation variables, and body image variables among adolescents. Focusing on adolescents in this study was important because of the many weight control behaviors, eating disorders, body image issues they have during this period of development (Youth Risk Behaviors Survey, CDC, 2005).

The current literature suggests that sports participation (Salbach, Klinkowski, Pfeiffer, Lehmkuhl, & Korte, 2007; Rome et al., 2004; and Reinking & Alexander, 2005), body image issues (De Bruin, Oudejans, & Bakker, 2007; Crissey & Honea, 2006; Hausenblas & Downs, 2001; Ricciardelli & McCabe, 2001), and the amount of exercise per week (Jensen & Steele, 2009; Grave, Calugi, & Marchesini, 2008; De Bruin, Woertman, Bakker, & Oudejans, 2009) have been related to the frequency of weight control behaviors (e.g., vomiting, using laxatives; fasting for 24 hours) used by adolescents. Also, differences in weight control behaviors of adolescents based on gender, age, and ethnicity have been found (Goni & Rodriguez, 2007; Moya, Fleitich-Bilyk, & Goodman, 2006). The findings of this research provide some evidence to support these earlier findings.

#### *Gender and Weight Control Behaviors*

Scholars previously found that there is a difference between male and female adolescents engaging in weight control behaviors. Females have been found to engage in these behaviors more frequently than males (McCabe & Ricciardelli, 2006). The findings of this study support this earlier research of gender differences. Females reported using all five weight control behaviors identified in this study more frequently than males. Females scored higher than males on eating less food/calories, fasting for a 24 hour period, using diet pills or laxatives, and vomiting to lose weight. This may be due to the fact that females try to lose the weight in a quicker manner rather than exercising and may be reinforced by their peers.

#### *Age and Weight Control Behaviors*

Goni and Rodriguez (2007) previously found that older adolescents (ages 15 to 18) are more prone to developing disordered eating behaviors or weight control behaviors than younger adolescents (ages 12 to 14). Older adolescents in this study were found to have higher frequencies of weight control behaviors than younger adolescents. The 15 year old and 17 year old adolescents (males and females) reported the highest frequencies of weight control behaviors from the older adolescent age groups. The next highest frequency of weight control behaviors came from 16 year olds.

These findings suggest that during middle adolescence, youth are becoming more concerned with their looks and appearance than the younger adolescents. At this age, adolescents are becoming more interested in relationships and pleasing others. Also, youth are becoming more aware of physical changes, for instance, sexual maturation, emerging skin issues and

increasing weight issues. Adolescents in this age range are self-absorbed and self-conscious. More mature (post-pubertal) adolescents are more likely to want to lose weight, build up their bodies, and think that they are “too fat” (O’Dea & Abraham, 1999). There is likely to be more self-induced vomiting occurring during older adolescence (Thomas, Keel, & Heatherton, 2005).

### *Ethnicity and Weight Control Behaviors*

Franko, Streigel-Moore, Barton, Schumann, Garner, Daniels, Schreiber, and Crawford (2004) stated that there are differences in ethnicities in the concern of food; especially with Black and White adolescent girls. Although they did not find many differences between them, they found one particular difference for each group. On the scale Eating Disorder Inventory, White adolescent girls scored highest on the perfectionism scale and Black adolescent girls scored highest on the body dissatisfaction scale. Consequently, based on these findings, this study tested the hypothesis that there would be a difference in ethnicity (White, Black, and Hispanic) in their engagement of the weight control behaviors. Interestingly, Whites and Hispanics had close mean frequencies with Hispanics being a little higher.

Hispanic adolescents report more weight control behaviors more frequently than Black or White adolescents. Pernik et al. (2006) suggested that White athletes had the highest number of adolescents with eating disorders followed by Hispanic than African American youth. Compared to other ethnicities, Whites usually are the most concerned with their weight and appearance (Pernik et al., 2006).

### *Comparison of Body Image and Weight Control Behaviors*

Previous research has found that during adolescence, body image is of big concern. Most adolescents are self-conscious about their developing bodies and want to attract others by presenting an ideal body type. They are especially interested in developing romantic relationships with others. Sometimes they feel the only way to be attractive is to be “thin” and not “too fat”. Also, many of the body image issues stem from sports participation (Ricciardelli & McCabe, 2001). On the contrary, Hausenblas & Downs (2001) found that adolescent athletes had a more positive image of their body than adolescent non-athletes.

Based on previous research (De Bruin, Oudejans, & Bakker, 2007; Crissey & Honea, 2006), it was hypothesized that there would be a relationship of the adolescents’ self-perceptions of body image and their engagement in weight control behaviors. The findings of this study would seem to support this earlier research with body image having a positive relationship with all the weight control behaviors examined. Because body image is a societal issue among adolescents, the social cognition theory (Thomas, 2005) can help to explain this phenomenon well. Adolescents have this particular image in their minds of what he or she should look like whether it is from media, friends, family, culture, etc. They learn from others that it is better if he or she is thin and in shape. Also, the society is where they learn to pick up on these certain weight control behaviors.

### *Comparison of Exercise and Weight Control Behaviors*

Jensen and Steele (2009) found that adolescent girls who demonstrated body dissatisfaction and weight concerns participated in physical activity. Usually it is girls who exercise to lose weight while boys exercise to keep their bodies fit and in shape. Grave, Calugi,

and Marchesini (2008) found that compulsive exercisers had the highest scores with weight concern compared to non-compulsive exercisers.

In the current study, adolescents who reported engaging in exercise also reported engaging in weight control behaviors of exercising to lose weight and eating less food and fasting. In this study it seems those participants in exercise are selective in their use of certain types of weight control behaviors, especially exercising to lose weight and fasting for 24 hours.

### *Comparison of Sports Participation and Weight Control Behaviors*

Sports participation has been shown to have a relationship with adolescents' and weight control behaviors. Not all sports are "weight-related" sports. However, some sports are weight-related including gymnastics, dance, swimming, and track. Previous research (e.g., De Bruin, Woertman, Bakker, & Oudejans (2009) studied the relationships between sports motivation and body image, dietary behaviors, and self-esteem. They found that the girls who participated in weight-related sports had a higher frequency of dietary behaviors and had a lower self-esteem. Gymnastics and dance are two sports that are very influenced by weight; adolescents especially are influenced in these sports to lose weight if they are not considered the "perfect size." In gymnastics it is said that "to fly higher, be smaller".

In this research it was hypothesized that there would be a relationship between adolescent's reports of sports participation (number of sports participated per year) and self-reports of weight control behaviors. The hypothesis was somewhat supported by sports participation having a positive relationship with the weight control behavior of exercising to lose weight. On the contrary, sports participation had a negative relationship with the other weight control behaviors including less food/calories and fasting for 24 hours. Participants who participate in sports appear to be even more selective in their use of weight control behaviors. Exercising to lose weight seems to be consistent with their participation in sports. For this sample, adolescents seem to be less likely to engage in weight control behaviors when they are actively participating in sports.

### *Implications*

One implication for this research would be to help make sports better and coaching better. It would be good for coaches to learn that weight control is not the most important aspect of the sport. A more important goal would be to make sure the athlete is healthy and having fun participating in the sport. Also, if a coach suspects an athlete is engaging in weight control behaviors or has an eating disorder then the coach can talk to and counsel the athlete. Another implication of this research would be for counselors in the schools to help the student realize that appearance is not everything in the world. This would help the counselors in learning how to help adolescents and teach them how to cope since this is such a transitioning period in life. Also, would give parents insight in how to detect whether their child might be engaging in these sorts of weight control behaviors and get the adolescents professional help.

### *Limitations*

Although using the Youth Risk Behavior Survey as secondary data had some advantages was convenient, low cost, a nationally represented sample, and was effective there are still limitations to this study. The method of collecting data was a drawback. Using a self-report



survey can be good, but it also means that the adolescents filling out the survey could have not been completely truthful about the answers which might have skewed the results. Using the method of observation would have helped to make the results stronger. Another limitation would be that; even though, the sample size is extremely large, the sample only consists of certain adolescents back in 2005. It would be interesting to see if the results would change now 5 years later. Correlations in this study may be spurious because of the large sample size.

### *Future Research*

The findings from this survey research continue to show that eating disorders and weight control behaviors keep becoming more prevalent among adolescents. Scholars should continue to examine this topic and keep emphasizing how important the period of adolescence is. Future researchers may want to explore eating disorders or weight control behaviors in adulthood. Researchers should examine older adults to see if body image, weight concerns, and other variables change throughout the life-span.

Future researchers might measure the kinds of foods an adolescent eats and weight control behaviors. Also, the relationship between adolescents who engage in substance abuse and weight control behaviors would be another contribution to the literature.

### *Conclusions*

Note that weight control behaviors have been occurring for a long time, but are just now being examined more fully. As stated in previous research, this study has shown that there are differences in age, gender, and race when engaging in weight control behaviors. Females are usually more likely to participate in these behaviors, but now male adolescents are also becoming a little more involved in weight control behaviors. Also, age and race make a difference. It is now becoming more important to talk to children at an early age about these behaviors and eating disorders since they are occurring earlier and earlier. Sports participation, exercise, and body image have relationships with weight control behaviors. Importantly, adults should make sure that these behaviors are not occurring with the children they have in their lives.

## APPENDIX A

Office of the Vice President For Research  
Human Subjects Committee  
Tallahassee, Florida 32306-2742  
(850) 644-8673 · FAX (850) 644-4392

### APPROVAL MEMORANDUM

Date: 2/23/2010

To: Jessica Urena

Dept.: FAMILY & CHILD SCIENCE

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research  
The Effects of Demographics on Eating Behaviors in Adolescents

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 02/10/2010. Your project was approved by the Committee.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 2/9/2011 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Ronald Mullis, Advisor  
HSC No. 2010.3917

## **APPENDIX B**

Body Image: How do you describe your weight? 1. Very underweight, 2. Slightly underweight, 3. About the right weight, 4. Slightly overweight, 5. Very overweight

Exercise behaviors: How many of the past 7 days did you exercise or do physical activity? 1. 0 days, 2. 1 day, 3. 2 days, 4. 3 days, 5. 4 days, 6. 5 days, 7. 6 days, 8. 7 days

Sports participation: How many sports teams do you play on? 1. 0 teams, 2. 1 team, 3. 2 teams, 4. 3 or more teams

Weight Control Behaviors:

QN66: Did you exercise to lose weight? 1. Yes, 2. No.

QN67: Did you eat less food or fewer calories to keep from gaining weight? 1. Yes, 2. No

QN68: Did you go without eating (fasting) for 24 hours? 1. Yes, 2. No

QN69: Did you take any diet pills, powders, or liquids to lose weight? 1. Yes, 2. No

QN 70: Did you take laxatives or vomit to lose weight? 1. Yes, 2. No

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## **BIOGRAPHICAL SKETCH**

I was born in Dayton, Ohio on May 30, 1986. I attended Northwest Florida State College from 2004 to 2005 and then I attended the Florida State University from 2005 to 2008 and received my Bachelor of Science in Psychology. In the Fall of 2008, I began my graduate studies at the Florida State University in the Department of Family and Child Sciences, and received the Master of Science in December 2010. Currently, I am working at Discovery Learning Academy as an Infant teacher. Previously, I was employed by Florida State University as a Teaching Assistant, by Trousdell Gymnastics Center as a gymnastics coach, and by Northwest Florida State College as a summer camp instructor teaching dance classes. I was a member of Psi Chi (psychology honors society) and a member of Alpha Phi Omega (a co-ed community service fraternity).