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**Abstract**

Previous research has shown that college females are dissatisfied with their bodies, as well as not meeting dietary or physical activity recommendations set by the USDA. This research examines the relationships between body image, diet quality, and physical activity behaviors of undergraduate female students at the University of Wisconsin-Stout. A 49-item online questionnaire was completed by 231 students. Data was analyzed in SPSS Version 21. Both Spearman and Pearson correlations were utilized. The results indicated that participants were not meeting the recommendations set by the USDA for diet or physical activity. Overall, participants had a slightly positive body image. No significant relationship was found between body image and diet quality. Physical activity behaviors were positively correlated with the Body Areas Satisfaction Scale, Overweight Preoccupation, and Appearance Orientation areas of body image and negatively correlated with Self-Classified Weight. Several positive weak correlations were found to be significant between diet quality and physical activity, with the strongest correlation, $r_s(217) = .329, p < 0.001$, between fruit consumption and flexibility. Colleges and universities are urged to take action to better educate students on programs available and the benefits of a healthy diet and physical activity.
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Chapter I: Introduction

In today’s society, there is an unrealistic standard that women should be tall and thin as depicted by models featured on television, in the movies, or in magazines. But in fact, women come in all shapes and sizes, and achieving the “ideal” body type is unlikely for most. Unfortunately, the media plays a huge role on how women view body shape and size. A study conducted in Pakistan at seven different universities found that students who had more exposure to media influences were more dissatisfied with body image (Khan, Khalid, Khan, & Jabeen, 2011). Because there is such an unrealistic standard to live up to, many women feel dissatisfied with their bodies and have a negative body image. Negative perceptions of body image can lead to women having poor self-esteem, eating disorders, or excessive exercise routines (National Eating Disorders Association, 2013). College aged women tend to have all of the risk factors for eating disorders and many have negative body images indicated by inability to accurately assess their body mass index (BMI). Suliga, Wronka, & Pawlinka-Charma (2012) found that out of 1,129 females, 26 students assessed their BMI as too low, 697 accurately assessed, and 202 believed their BMI was higher than actual.

This negative perception of body image has led to college females’ preoccupation with losing weight. In a study done with over 4,500 college students, almost half (46%) stated they were currently trying to lose weight (Galuska, Fulton, Wechsler, Kann, & Collins, 2000). Based on the self-reported height and weight measurements, only 35% of the students were considered overweight according to body mass index (BMI). Students who were trying to lose weight engaged in more vigorous physical activity and were consuming lower-fat foods compared to those not trying to lose weight (Galuska et al., 2000).
Dieting is a very popular behavior among college females. One study looked at the dieting practices of 185 normal, overweight, and obese college females (Malinauskas, Raedeke, Aeby, Smith, & Dallas, 2006). Women, aged 18-24, underwent height, weight, waist and hip circumference, and skinfold measurements to assess body composition. A survey was given to the participants which collected data on dieting practices as well as physical activity behaviors. The results indicated that 83% of the students used dieting for weight loss purposes. The women also believed current weight status would be 2-6% greater if dieting practices were discontinued (Malinauskas et al., 2006). Eighty percent of the participants reported using physical activity as a weight loss strategy; however, only 19% of the women were engaged in intense enough physical activity to promote weight loss (Malinauskas et al., 2006).

A negative body image can affect one’s diet quality and nutrition. Some individuals may try to become more satisfied with appearance by eating healthier foods or engaging in more physical activity throughout the day. Others may engage in unhealthy behaviors such as skipping meals, using meal replacements, or consciously eating less than the amount required for satiety. College females who have a negative body image are more likely to follow diets and skip meals more frequently than those who have a positive body image (Suliga et al., 2012).

Statement of the Problem

The “ideal” body image in society is unrealistic, yet many females are constantly trying to achieve the ideal. Females tend to believe their own bodies are larger because of the high standard set by society, thus creating negative self-images. Negative body images can often relate to other areas of health, specifically diet and physical activity. It is important to understand how all three areas of health (body image, diet quality, and physical activity) relate to
each other in order to provide the best programs and opportunities for college females to live healthy lifestyles.

Purpose of the Study

College females are at high risk for exhibiting negative body images as well as improper diet and physical activity behaviors. Because diet, exercise, and self-perception greatly impact the overall health of an individual, the purpose of this study was to identify the relationship between female college students’ perceived body image, the quality of overall diet, and physical activity behaviors. More specifically this study addresses the following research questions:

1. What is the relationship between body image and diet quality?
2. What is the relationship between body image and physical activity behaviors?
3. What is the relationship between diet quality and physical activity behaviors?

Assumptions of the Study

This study assumed that all of the participants completed the questionnaire accurately and as honestly as possible. It was also assumed that the participants in the study were a general representation of all of the female undergraduate students attending the University of Wisconsin-Stout.

Definition of Terms

For clarity in this study, the following terms were defined:

*Body image*. How an individual perceives their physical appearance.

*Body mass index (BMI)*. A weight to height ratio used to categorize individuals into specific weight classifications (World Health Organization, 2013).
**Dietary guidelines.** Specific recommendations set by the United States Department of Agriculture (USDA) for each food group regarding how many servings to consume every day (USDA, 2013).

**Diet quality.** How close an individual is to meeting the recommendations set by the USDA for each food group category.

**Physical activity.** An activity in which an individual sweats or breathes hard for the benefit of their health.

**Limitations of the Study**

One limitation of the study was that a convenience sample from one university was utilized. The sample may not represent all female undergraduate students across the country. Another limitation to the study was that participants self-reported all data. Participants may not have answered all questions honestly or accurately.

**Methodology**

After receiving approval from the University of Wisconsin-Stout Institutional Review Board, an e-mail invitation was sent to 1,000 female undergraduate students who were asked to complete the 49-item survey. A reminder e-mail was sent out five days after the initial e-mail to recruit more responses. A total of 231 students completed the survey. Statistical analysis was done using Statistical Program for Social Sciences (SPSS), Version 21. Frequency data, including means and standard deviations were determined. Both Spearman and Pearson correlations were also calculated.
Chapter II: Literature Review

Body image plays an important role in a woman’s diet quality and physical activity behaviors. The purpose of this study was to determine the relationship between body image, diet quality, and physical activity behaviors among college females. This chapter will discuss society’s version of the perfect body, positive and negative body images, eating disorders, diet quality, and physical activity. The theory selected to do this investigation was the Self-Discrepancy Theory, which is also described in this chapter.

Body Image

Body image is a perceived idea of one’s own physical appearance based on their own self-observations and the reactions of others (Merriam-Webster, 2013). Evaluative body image refers to appraisals and emotions associated with one’s appearance, including body satisfaction and self-discrepancies (Carraca et al., 2011).

The ideal female body in the United States has changed over the years. In the 1920’s the average BMI of Miss America was 22 kg/m², today it is around 16.9 kg/m² (Martin, 2010). Also, today the average Miss America winner is 5’7” and weighs approximately 121 pounds; however, the average female is 5’4” and weighs 165 pounds (Martin, 2010). Considering female role models in the media who are taller and thinner than most average women, it is not difficult to see why many women feel the need to lose weight. Studies have found that constant exposure to thin-promoting television is related to higher body dissatisfaction (Heinberg & Thompson, 1995; Cattarin, Thompson, Thomas, & Willimas, 2000).

Owen and Spencer (2013) conducted a study to determine how women perceived their bodies after viewing thin models compared to healthy-weight models. A total of 44 females viewed images of thin models followed by healthy-weight models two weeks later. The
participants’ body image, depression, happiness, and anxiety were measured at baseline as well as after each viewing. The results indicated women believed the ideal body to be significantly heavier after viewing pictures of healthy-weight models compared to thin models (Owen & Spencer, 2013).

Young females are very conscious about body image and weight, and appearance is extremely important. These beliefs are influenced by celebrities, wanting to be thin to gain attention from males, approval from friends, as well as seeking self-confidence. Anxiety about appearance has been shown to increase among college-aged females (Malinauskas et al., 2006).

Cefai and Camilleri (2011) studied weight satisfaction of 340 female and 154 male students from the University of Malta. The students were asked to complete a questionnaire regarding several different health and wellness behaviors. About two-thirds (64%) of the students believed they were about the right weight, 22% believed they were overweight, 3% thought of themselves as obese, and 11% felt they were underweight (Cefai & Camilleri, 2011).

A 2010 Gallup poll found that the average woman weighs 19 pounds over their ideal body weight and 65% of American women weigh more than their ideal body weight (Mendes, 2010). The poll also reported that 45% of women believed they were very or somewhat overweight, 50% believed they were about right, and 4% believed they were very or somewhat underweight. Of American women, 61% reported wanting to lose weight, and of those women 32% stated seriously trying to lose weight to improve body image (Mendes, 2010).

A study was done by Mwaba and Roman (2009) to determine the body image satisfaction of female South African students. The study took place at a university in the Western Cape province of South Africa and included 150 female students who were currently enrolled in an introductory psychology class. The Body Shape Questionnaire was used to determine body
satisfaction and perception of body size. Overall, the study found that the majority of the students were satisfied with their bodies; however, 56% were concerned about becoming fat and 52% reported they needed to start exercising or go on a diet (Mwaba & Roman, 2009).

Body satisfaction of females was more recently studied by Goswami, Sachdeva, and Sachdeva (2012). Ninety-six newly matriculated Asian female students underwent several anthropometric measurements, including height, weight, hip, and waist circumference measurements to assess body composition. Personal interviews were conducted with each participant to determine individual body satisfaction (Goswami et al., 2012). Body dissatisfaction was found in 13.54% of the participants and a body satisfaction rating of excellent was found among 32.29% of the participants. A lower BMI (<18.5 kg/m²) was significantly correlated to higher body satisfaction whereas a higher BMI (≥23 kg/m²) was significantly correlated with greater body dissatisfaction (Goswami et al., 2012).

Body image of Hispanic college females was evaluated by the Multidimensional Body-Self Relations Questionnaire (MBSRQ) in a study done by Smith and Davenport (2012). The details of the MBSRQ will be discussed in the subsequent section. One hundred females participated in the study and self-reported both height and weight measurements, as well as their ideal measurements. Participants’ mean actual weights were between 86-250 pounds while their ideal weights fell between 100-180 pounds. The study used the full, 10-subscale version of the MBSRQ and found that mean scores on each of the subscales ranged from 3.03 on the Overweight Preoccupation subscale to 3.91 on the Appearance Orientation subscale. Overall, these participants had a body image that was trending in the positive direction (Smith & Davenport, 2012).
Body Image Assessment

There are several different ways to assess how an individual perceives their own body image. One well known method is the MBSRQ (Cash, 2000). This questionnaire is only used for individuals over the age of 15 years. Two different versions of the MBSRQ exist, a full version and a shortened version. The full version of the questionnaire consists of sixty-nine questions and is divided into ten subscales, whereas the shortened version consists of thirty-four questions and five subscales (Cash, 2000). The five subscales used in the short version are: Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, and Self-Classified Weight (Cash, 2000).

The Appearance Evaluation subscale looks to measure how individuals feel about body attractiveness (Cash, 2000). The subscale determines how satisfied or dissatisfied individuals are with their looks. Higher scores on this scale are associated with being satisfied whereas lower scores mean unhappiness with physical appearance. Appearance Orientation looks at how much time an individual puts into appearance. Individuals who score high on this subscale tend to pay a great deal of attention to looks and have extensive grooming routines. If an individual scores low on this subscale, looks are not as important and not as much time is spent grooming. The Body Areas Satisfaction Scale examines appearance satisfaction of different areas of the body. An overall high score on this scale means the individual is content with the shape and size of their body whereas a lower score means the individual is unhappy with several areas of the body. Overweight Preoccupation determines how anxious a person is about becoming fat, weight vigilance, diet, and eating restraint. Self-Classified Weight describes how an individual perceives their weight as well as how individuals believe others perceive it (Cash, 2000).
Body image scales are also used to assess body image. Thompson and Gray (1995) developed a nine-figure scale ranging from severely underweight to severely overweight men or women. Individuals are instructed to select the figure believed to best fit personal body shape (Cafri & Thompson, 2004). It has been found that when figure rating scales are used, women choose a smaller figure for ideal body shape than current body shape. Women also report that and ideal body weight lower than current body weight and believe they would be more attractive if ideal body weight was attained (Cafri & Thompson, 2004). These discrepancies may indicate that women are overall dissatisfied with their bodies (Malinauska et al., 2006).

**Self-Discrepancy Theory**

The Self-Discrepancy Theory helps explain how people view themselves (Higgins, 1987). There is one’s “actual self” which can be defined as the type of person the individual believes he or she truly is. The “ideal self” can be defined as the person an individual wants to be or the better version of their actual self. Discrepancies occur when an individual’s actual self is different from ideal self. The Self-Discrepancy Theory predicts that people who do not believe they are their ideal self are likely to feel shame or embarrassment. Discrepancies are also associated with low self-esteem (Higgins, 1987).

When discussing body image, the Self-Discrepancy Theory is often used. Women tend to have large discrepancies among what is believed to be the “ideal” body image and their current body image. Because women see thin models in magazines or on television, comparisons tend to be made to the media. A study by Abbott et al. (2000) compared body image and eating habits of young adults with cystic fibrosis to healthy peers. The results of the study showed that healthy women believed their body shape was less than actual but also desired to be even slimmer. The women with cystic fibrosis believed their body shape was less than actual as well.
but were content with personal body size. The healthy females actually desired to be at an underweight BMI. Overall, the study showed that healthy women were very dissatisfied with body image, with a discrepancy in BMI of 5 kg/m², where the mean actual BMI was 23.24 kg/m² and the mean ideal BMI was 18.24 kg/m² (Abbott et al., 2000).

**Diet Quality**

Nutrition is a key element to a person’s overall health. A healthy diet can help reduce the risk for type 2 diabetes, heart disease, high blood pressure, and various types of cancers (Centers for Disease Control and Prevention, 2013). The USDA has established Dietary Guidelines for Americans which emphasize three specific behaviors. These behaviors are: balancing calorie consumption with physical activity to manage weight; consuming more fruits, vegetables, whole grains, fat-free or low-fat dairy products, and seafood; and consuming less sodium, saturated fat, trans fat, cholesterol, added sugars, and refined grains. The Choose My Plate recommends that women aged 19-30 should consume two fruits, 2.5 cups of vegetables, six ounces of grains, with at least three ounces of whole grains, 5.5 ounces of protein foods, three cups of dairy, and no more than six teaspoons of oils per day (USDA, 2013). It is also estimated that females aged 19-30 years old need 2000-2400 calories per day based on their physical activity level and are allotted 260-362 empty calories (USDA, 2013).

A pilot study was done at the University of Kentucky to examine the nutritional patterns of female college students (Whitlock, Cowherd, Esslinger, & Nixon, 2013). Sixteen students aged 18-30 participated in the two-month long study. Participants were asked to complete a 12-question food intake questionnaire and a three-day food record. Nutritional consultations were then done with each of the participants and information about portion sizes was provided. A weekly blog was also created which contained health and wellness tips. After two months,
participants were asked to complete another three-day food record as well as a 10-question survey. The results showed there was an increase in healthy food consumption and a decrease in fat consumption at the end of the two-month study. The study concluded that portion size tools as well as the nutritional consultation were beneficial to these students (Whitlock et al., 2013).

The Interactive Healthy Eating Index (IHEI) was used to assess the diet quality of college students in a study done by Hiza and Gerrior (2002). One hundred college students (70 females and 30 males) who were enrolled in an introductory nutrition class took part in the study. All of the students completed the IHEI and a one-day food record. The results showed that as a whole, regardless of gender, the minimum recommendation for grains was being met by these students (Hiza & Gerrior, 2002). Female students consumed significantly less than the recommended number of servings of fruits, vegetables, milk, and meat. The authors did mention underreporting may have been a limitation (Hiza & Gerrior, 2002).

Cefai and Camilleri (2011) did a study to determine the dietary habits of university students in Malta. The participants included 494 undergraduate students (340 females and 154 males) at the University of Malta. The overwhelming majority of the students (95.3%) were 25 years of age or younger. Participants were asked to complete a questionnaire regarding several wellness topics, including dietary behaviors. The main dietary habits Cefai and Camilleri (2011) examined included: breakfast consumption, fruit and vegetable consumption, and type of food and drinks consumed on campus. The results showed that 69.6% of the students were consuming between 0-2 fruits and vegetables per day. Females averaged 2.14 servings which was significantly higher than the male students’ average of 1.72. With regards to breakfast consumption, 43.9% of the students stated they consumed breakfast daily, with the percentage for females being higher than males, but the difference was not significant. Water was the
preferred drink of 84% of the participants. Sandwiches were the most consumed unhealthy snack food on campus, with 66.8% reporting consumption (Cafai & Camilleri, 2011).

In a study done by Butler, Black, Blue, and Gretebeck (2004) diet behaviors were assessed in female college freshmen. A five-month study with 82 participants was conducted. Each participant was required to complete a pre- and post-test as well as have anthropometric measurements taken at the beginning and end of the study. The tests included questions about the consumption of each of the main food groups as well as total calories consumed. For each of the categories: total calories, vegetables, fruits, bread, milk, meat, and fats, the mean intake decreased during the five-month period. All of the macronutrients also decreased. The percentage of calories from fat increased as well as the percentage of alcohol consumed. Alcoholic beverage consumption increased from 0.04 to 0.16 drinks per day (Butler et al., 2004). The results showed that these women were deficient in their daily intake of vegetables, fruits, bread, and meats; however, adequate amounts of milk were consumed (Butler et al., 2004).

A convenience sample of 736 students (47.9% women) from the University of Kansas was used to assess overweight, obesity, diet, and physical activity of college students (Huang et al., 2003). Participants self-reported height and weight and also completed shortened versions of the Berkeley fruit, vegetable, and fiber screener, as well as the Youth Risk Behavior Survey. The mean BMI for males was 23.5 kg/m² and 22.1 kg/m² for females. Of the participants, 21.6% were overweight, and 4.9% were obese based on BMI calculations. As far as diet, students reported consuming on average 4.2 fruits and vegetables per day and 18.0 grams of fiber. Women consumed significantly less fiber than men. The average number of days engaged in aerobic activity was 2.8. Males reported higher amounts of exercise than females; however, the difference was not significant (Huang et al., 2003).
**Eating Disorders**

Eating disorders are very common amongst college females. Approximately 95% of all people with eating disorders are between the ages of 12 and 25.8 (National Eating Disorders Association, 2013). Eighty-six percent of people with eating disorders reported the onset was before age 20, and 43% reported an onset between the ages of 16 and 20.6. In addition, 25% of college-aged females reported bingeing and purging as a weight loss method. In a study of 185 college females it was found that 58% felt pressure to be a certain weight, and 83% reported dieting to try to lose weight (National Eating Disorders Association, 2013). There are several risk factors for developing eating disorders; one of those is being female (Mayo Clinic, 2013). Teens and young adults, in their early 20’s, are also at a higher risk for developing eating disorders. People who have just experienced a major life transition, such as attending college or going through a relationship break-up, are also at a higher risk. Family history and having an emotional disorder also put an individual at an increased risk (Mayo Clinic, 2013).

**Physical Activity**

Physical activity is important to overall health. Three different categories of physical activity exist: aerobic, anaerobic, and flexibility. It is recommended by the USDA that adults aged 18-64 participate in at least 2 hours and 30 minutes of aerobic exercise each week at a moderate intensity or at least 1 hour and 15 minutes at a vigorous intensity. Strength training is recommended at least two times per week (USDA, 2013).

Anaerobic exercise includes weight training, resistance training, or strength training and aerobic is commonly referred to as cardiovascular training. A study was done with female college students which compared two different exercise programs (Ma, 2011). One exercise program included only aerobic exercise and the other exercise program combined aerobic and
strength training exercises. The participants of the study were 64 female college students between the ages of 19 and 21. They were equally and randomly divided into the control group (aerobic exercise only) and the experimental group (aerobic exercise and strength training). Height, weight, waist, and hip measurements were taken before and after the twelve-week study. The results showed that both groups were successful in losing weight; however, there was no significant difference in weight for the control group whereas there was significant reduction in weight for the experimental group. The study yielded the same results in terms of waist and hip ratio. The control group participants’ weight measurements decreased, however not significantly. The experimental group experienced a significant reduction in waist and hip measurements (Ma, 2011).

Buckworth and Nigg (2004) examined the relationship between physical activity, exercise, and sedentary behaviors of college students. The participants included 493 college males and females enrolled in physical activity classes who completed a questionnaire regarding current sedentary behaviors, physical activity, and exercise habits (Buckworth & Nigg, 2004). Men reported spending more time engaged in all three behaviors compared to women. A negative correlation between television watching and exercise and physical activity was found for the women participants. It was also found that younger students were more likely to engage in physical activity behaviors (Buckworth & Nigg, 2004).

Another study looked at changes in physical activity behaviors during the transition into college (Han et al., 2008). Participants included 171 female college freshmen, of which 71 completed the study. The Modifiable Activity Questionnaire of Adolescents was used as the self-assessment of physical activity. The questionnaire asked for physical activity done within the past year. The participants were asked to complete this questionnaire six weeks into their
freshman year of college, and again at the beginning of sophomore year. The results showed that physical activity significantly decreased from high school to college. The average number of days engaged in physical activity per week in high school was 3.34 whereas in college it dropped to 1.14. Many of the participants (82.6%) were meeting the physical activity recommendations while in their senior year of high school; however, only 65.2% of the participants were meeting the recommendation during their first year of college (Han et al., 2008).

Kwan and Faulkner (2011) used focus groups to determine how physical activity was affected when students transition from high school into their first year of college. Eight focus groups were conducted with a total of 45 freshman college students. Demographic information and self-reported physical activity were collected via a questionnaire. The results of the focus groups showed overall that students were unhappy that they were unable to maintain the same level of physical activity that they had in high school. The students stated one reason for this change was more focus on academics upon entering college. Students also reported being interested in a program to help maintain levels of physical activity during the transition (Kwan & Faulkner, 2011).

**Barriers to physical activity.** College students have identified several barriers to not meeting the physical activity standards set by the USDA. One study revealed that lack of time was the main barrier for college students engaging in physical activity; however, other barriers included weather, lack of interest, and desire to participate in other activities (Gomez-Lopez, Gallegos, & Extremera, 2010). Other barriers that have been identified include lack of facilities, knowledge of benefits, and lack of social support from friends and family members (Gomez-Lopez et al., 2010).
During a focus group study, students stated that they had no sense of time management at the beginning of college due to newly found independence (Kwan & Faulkner, 2011). Some students also reported not feeling good enough to compete in sports at the college level, thus explaining the decline in physical activity. Lack of knowledge about intramural sports was another barrier identified, as well as feeling tired after commuting to school (Kwan & Faulkner, 2011).

Conclusion

Body dissatisfaction is a recognized problem for young women, particularly of the college age. Studies have shown that women are dissatisfied with body image and also tend to believe body weights are heavier. College females have been shown to be lacking in consumption of many of the main food group categories, consuming as low as 0-2 fruits and vegetables per day. Physical activity has been shown to decline when females enter college, and students are far from meeting the recommendations for physical activity set by the USDA. The question remains, how do body image, diet quality, and physical activity behaviors of female college students relate to one another. Chapter 3 reports methodology utilized for this research study.
Chapter III: Methodology

The objective of this study was to determine the relationship between body image, diet quality, and physical activity behaviors of college females. The research employed the use of a survey design and a 49-item questionnaire to gather data about body image, diet quality, and physical activity among undergraduate female college students. This chapter will discuss subject selection and description, instrumentation, data collection procedures, data analysis, and limitations.

Subject Selection and Description

A convenience sample was taken from the female undergraduate population on the University of Wisconsin-Stout campus. The survey was sent to 1,000 random female undergraduate students.

Instrumentation

A four-part online survey (Appendix A) was utilized to gather data about body image, diet quality, and physical activity behaviors. The survey consisted of four questions related to physical activity habits, 11 questions related to diet quality as well as the 34-question version of the Multidimensional Body-Self Relations Questionnaire, which was used to assess body image. Demographic information was also gathered at the end of the survey.

An implied consent form was also created which explained the details of the study (Appendix B). Participants were asked to read the consent form before completing the survey. Consent was implied, meaning if the student completed the survey, consent was provided for participation.
**Data Collection Procedures**

After approval from the Institutional Review Board (Appendix C), data was collected in October 2013. A stratified-random sample of 1,000 undergraduate female students at the University of Wisconsin-Stout was obtained via the Planning, Assessment, Research, and Quality (PARQ) office. These students received a survey invitation from the researcher via e-mail and were asked to read the implied consent form and then to click on the link to the survey in Qualtrics. A reminder e-mail was sent five days after the initial e-mail to ensure the highest response rate possible.

The survey was completely anonymous and no personal identifying information was collected. There was minimal risk to the participants, but some of the questions may have made subjects uncomfortable. Participants were given contact information for the UW-Stout Counseling Center as well as the UW-Stout Student Health Center and were advised to contact one of those offices if they wished.

**Data Analysis**

Data was downloaded from Qualtrics into SPSS Version 21 on the researcher’s personal computer. Therefore, only the researcher had access to the data. All data analysis was done in SPSS Version 21. Both Spearman and Pearson correlations were used, as well as frequency statistics, including means and standard deviations, for each question.

**Limitations**

One limitation to the study was that participants were from a convenience sample. Therefore, the data may not be a true representation of all undergraduate college female students. Another limitation was that the participants’ self-reported data and therefore the data may not be completely accurate; participants may have under- or over-reported answers.
Chapter IV: Results

The purpose of this study was to determine if there was a relationship between body image, diet quality, and physical activity behaviors of college females. A 49-item questionnaire was used to gather data. The survey included the 34-question version of the MBSRQ, 11 diet quality related questions, and four questions related to physical activity behaviors.

Sample Demographics

The survey was sent to 1,000 random undergraduate female students, of which 231 completed the study. The mean age of the participants was 22.62 with a standard deviation of 7.05 years. There was a fairly even distribution among academic status, with 65 freshmen, 34 sophomores, 53 juniors, and 74 seniors. An almost even distribution was seen in students who lived on-campus (n = 112) and those who lived off-campus (n = 114). The mean height for the participants was 64.64 inches with a standard deviation of 5.71 inches and the mean weight of the participants was 152.38 pounds with a standard deviation of 35.64 pounds.

Body Image

The MBSRQ section of the survey was divided into five subscales for analysis purposes. These subscales were Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, and Self Classified Weight. Each subscale was made up of specific questions from the MBSRQ and the average score from the sum of those individual questions became the score for each subscale.

Appearance evaluation. The subscale for Appearance Evaluation was made up of seven questions from the MBSRQ, two of which were reverse coded when scored. Table 1 shows the frequencies of responses as well as the mean and standard deviation for each question in the Appearance Evaluation subscale. Less than half of the participants (42.5%) had neutral feelings
about their body being sexually appealing and 30.8% of the participants mostly agreed that they liked their looks the way they are (Table 1). A large number of the participants felt neutral about how most people would view their looks and how they felt about their own looks without their clothes on, with 44.5% and 33.3% respectively. Some 42.7% of the participants mostly agreed that they liked the way their clothes fit, while 30.2% reported mostly disagreeing with disliking their physique. Lastly, 40.5% of the participants reported disagreeing with being physically unattractive. The overall mean for the Appearance Evaluation subscale was 3.22, with a standard deviation of 0.79.

Table 1

*Frequencies of Responses to Appearance Evaluation Subscale Questions*

<table>
<thead>
<tr>
<th>Question</th>
<th>Definitely Disagree</th>
<th>Mostly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Mostly Agree</th>
<th>Definitely Agree</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>My body is sexually appealing.</td>
<td>14 (6.2)</td>
<td>35 (15.5)</td>
<td>96 (42.5)</td>
<td>67 (29.6)</td>
<td>14 (6.2)</td>
<td>3.14 ± 0.965</td>
</tr>
<tr>
<td>I like my looks just the way they are.</td>
<td>16 (7.0)</td>
<td>56 (24.7)</td>
<td>63 (27.8)</td>
<td>70 (30.8)</td>
<td>22 (9.7)</td>
<td>3.11 ± 1.103</td>
</tr>
<tr>
<td>People consider me good-looking.</td>
<td>4 (1.8)</td>
<td>24 (10.6)</td>
<td>101 (44.5)</td>
<td>83 (36.6)</td>
<td>15 (6.6)</td>
<td>3.36 ± 0.826</td>
</tr>
<tr>
<td>I like the way I look without my clothes.</td>
<td>38 (16.9)</td>
<td>54 (24.0)</td>
<td>75 (33.3)</td>
<td>49 (21.8)</td>
<td>9 (4.0)</td>
<td>2.72 ± 1.105</td>
</tr>
<tr>
<td>I like the way my clothes fit me.</td>
<td>9 (4.0)</td>
<td>39 (17.2)</td>
<td>67 (29.5)</td>
<td>97 (42.7)</td>
<td>15 (6.6)</td>
<td>3.31 ± 0.965</td>
</tr>
<tr>
<td><em>I dislike my physique.</em></td>
<td>28 (12.6)</td>
<td>67 (30.2)</td>
<td>68 (30.6)</td>
<td>47 (21.2)</td>
<td>12 (5.4)</td>
<td>2.77 ± 1.088</td>
</tr>
<tr>
<td><em>I am physically unattractive.</em></td>
<td>44 (19.4)</td>
<td>92 (40.5)</td>
<td>61 (26.9)</td>
<td>24 (10.6)</td>
<td>6 (2.6)</td>
<td>2.37 ± 0.997</td>
</tr>
</tbody>
</table>

* reverse coded items for scoring purposes, columns = n followed by percentage in parenthesis

**Appearance orientation.** The Appearance Orientation subscale was comprised of 12 questions, four of which were reverse coded for scoring purposes. Table 2 presents the
frequencies of the responses for all 12 of the questions related to Appearance Orientation. Almost half of the participants (49.6%) reported agreeing that they notice their looks before going out in public and just over half (51.6%) reported they buy clothes that will look good on them (Table 2). Just under 35% of the participants were neutral about checking themselves in the mirror; however 28.5% of the participants reported spending a lot of time to get ready before going out. Almost 40% had no opinion about the importance of always looking good. As far as use of grooming products, 35.5% of the participants reported using few grooming products and 30.8% were neutral about feeling self-conscious if grooming was not right. Some 34.4% of the participants reported not wearing whatever was handy, and 31.4% did not state an opinion about caring of what others thought of their appearance. Almost 33% of the participants were neutral about their hair grooming routine. Just under half of the participants (47.6%) reported disagreeing with never thinking about appearance. Some 36.6% of the participants were neutral or were trying (34.8%) to always improve physical appearance. The average score for this subscale was 3.21 with a standard deviation of 0.55.
Table 2

**Frequencies of Responses to Appearance Orientation Subscale Questions**

<table>
<thead>
<tr>
<th>Question</th>
<th>Definitely Disagree</th>
<th>Mostly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Mostly Agree</th>
<th>Definitely Agree</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before going out, I notice how I look.</td>
<td>0 (0)</td>
<td>14 (6.1)</td>
<td>26 (11.4)</td>
<td>113 (49.6)</td>
<td>75 (32.9)</td>
<td>4.09 ± 0.827</td>
</tr>
<tr>
<td>I am careful to buy clothes to me look my best.</td>
<td>0 (0)</td>
<td>6 (2.7)</td>
<td>31 (13.8)</td>
<td>116 (51.6)</td>
<td>72 (32.0)</td>
<td>4.13 ± 0.742</td>
</tr>
<tr>
<td>I check my appearance in a mirror whenever I can.</td>
<td>8 (3.6)</td>
<td>57 (25.3)</td>
<td>77 (34.2)</td>
<td>58 (25.8)</td>
<td>25 (11.1)</td>
<td>3.16 ± 1.038</td>
</tr>
<tr>
<td>Before going out, I usually spend a lot of time getting ready.</td>
<td>17 (7.5)</td>
<td>63 (27.6)</td>
<td>63 (27.6)</td>
<td>65 (28.5)</td>
<td>20 (8.8)</td>
<td>3.04 ± 1.102</td>
</tr>
<tr>
<td>It is important that I always look good.</td>
<td>7 (3.1)</td>
<td>53 (23.5)</td>
<td>90 (39.8)</td>
<td>62 (27.4)</td>
<td>14 (6.2)</td>
<td>3.10 ± 0.935</td>
</tr>
<tr>
<td>*I use few grooming products.</td>
<td>21 (9.2)</td>
<td>47 (20.6)</td>
<td>52 (22.8)</td>
<td>81 (35.5)</td>
<td>27 (11.8)</td>
<td>3.20 ± 1.170</td>
</tr>
<tr>
<td>I am self-conscious if my grooming isn’t right.</td>
<td>12 (5.3)</td>
<td>65 (28.6)</td>
<td>70 (30.8)</td>
<td>67 (29.5)</td>
<td>13 (5.7)</td>
<td>3.02 ± 1.013</td>
</tr>
<tr>
<td>*I wear what is handy without caring how it looks.</td>
<td>31 (13.7)</td>
<td>78 (34.4)</td>
<td>67 (29.5)</td>
<td>46 (20.3)</td>
<td>5 (2.2)</td>
<td>2.63 ± 1.024</td>
</tr>
<tr>
<td>*I don’t care what people think about my appearance.</td>
<td>33 (14.8)</td>
<td>64 (28.7)</td>
<td>70 (31.4)</td>
<td>52 (23.3)</td>
<td>4 (1.8)</td>
<td>2.69 ± 1.044</td>
</tr>
<tr>
<td>I take special care with my hair grooming</td>
<td>12 (5.3)</td>
<td>47 (20.9)</td>
<td>73 (32.4)</td>
<td>71 (31.6)</td>
<td>22 (9.8)</td>
<td>3.20 ± 1.047</td>
</tr>
<tr>
<td>*I never think about my appearance.</td>
<td>81 (36.0)</td>
<td>107 (47.6)</td>
<td>29 (12.9)</td>
<td>6 (2.7)</td>
<td>2 (0.9)</td>
<td>1.85 ± 0.810</td>
</tr>
<tr>
<td>I am always trying to improve my physical appearance.</td>
<td>8 (3.5)</td>
<td>28 (12.3)</td>
<td>83 (36.6)</td>
<td>79 (34.8)</td>
<td>29 (12.8)</td>
<td>3.41 ± 0.980</td>
</tr>
</tbody>
</table>

* reverse coded for scoring purposes, columns = n followed by percentage in parenthesis
**Body areas satisfaction scale.** A series of nine questions made up the Body Areas Satisfaction scale, which determined how satisfied one was with their overall body appearance. The frequency responses for these nine questions can be seen in Table 3. Over half of the participants reported being mostly satisfied with their face and hair, 52.4% and 52.9%, respectively and just under 32% were mostly satisfied with their lower torso (buttocks and legs) (Table 3). Slightly over 40% of the participants were mostly dissatisfied with their mid torso (waist and stomach), and slightly over 40% were mostly satisfied with their upper torso (chest and arms). Just over a third of the participants were neither satisfied nor dissatisfied with their muscle tone. As far as weight and height, 28.9% of the participants were mostly dissatisfied with their weight, but 42.8% were mostly satisfied with their height. Overall 46% of the participants were mostly satisfied with their overall appearance. The mean for this subscale was 3.27 with a standard deviation of 0.68.
Table 3

*Frequencies of Responses to Body Areas Satisfaction Scale Subscale Questions*

<table>
<thead>
<tr>
<th>Question</th>
<th>Very Dissatisfied</th>
<th>Mostly Dissatisfied</th>
<th>Neither Satisfied Nor Dissatisfied</th>
<th>Mostly Satisfied</th>
<th>Very Satisfied</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face (facial features, complexion)</td>
<td>8 (3.5)</td>
<td>21 (9.3)</td>
<td>54 (23.8)</td>
<td>119 (52.4)</td>
<td>25 (11.0)</td>
<td>3.58 ± 0.929</td>
</tr>
<tr>
<td>Hair (color, thickness, texture)</td>
<td>2 (0.9)</td>
<td>10 (4.5)</td>
<td>37 (16.6)</td>
<td>118 (52.9)</td>
<td>56 (25.1)</td>
<td>3.97 ± 0.824</td>
</tr>
<tr>
<td>Lower torso (buttocks, hips, thighs, legs)</td>
<td>27 (12.0)</td>
<td>64 (28.4)</td>
<td>46 (20.4)</td>
<td>71 (31.6)</td>
<td>17 (7.6)</td>
<td>2.94 ± 1.177</td>
</tr>
<tr>
<td>Mid torso (waist, stomach)</td>
<td>37 (16.6)</td>
<td>90 (40.4)</td>
<td>39 (17.5)</td>
<td>48 (21.5)</td>
<td>9 (4.0)</td>
<td>2.56 ± 1.121</td>
</tr>
<tr>
<td>Upper torso (chest or breasts, shoulders, arms)</td>
<td>11 (4.9)</td>
<td>49 (21.7)</td>
<td>53 (23.5)</td>
<td>91 (40.3)</td>
<td>22 (9.7)</td>
<td>3.28 ± 1.062</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>16 (7.1)</td>
<td>60 (26.5)</td>
<td>80 (35.4)</td>
<td>57 (25.2)</td>
<td>13 (5.8)</td>
<td>2.96 ± 1.017</td>
</tr>
<tr>
<td>Weight</td>
<td>34 (15.1)</td>
<td>65 (28.9)</td>
<td>64 (28.4)</td>
<td>46 (20.4)</td>
<td>16 (7.1)</td>
<td>2.76 ± 1.153</td>
</tr>
<tr>
<td>Height</td>
<td>7 (3.2)</td>
<td>12 (5.4)</td>
<td>56 (25.2)</td>
<td>95 (42.8)</td>
<td>52 (23.4)</td>
<td>3.78 ± 0.971</td>
</tr>
<tr>
<td>Overall appearance</td>
<td>6 (2.7)</td>
<td>27 (12.1)</td>
<td>71 (31.7)</td>
<td>103 (46.0)</td>
<td>17 (7.6)</td>
<td>3.44 ± 0.896</td>
</tr>
</tbody>
</table>

Columns = n followed by percentage in parenthesis
**Overweight preoccupation.** The subscale for Overweight Preoccupation consisted of four questions. The frequencies for the three ranked questions are seen in Table 4. The mean score for this subscale was 2.72 with a standard deviation of 0.84. Just over a third of the participants reported constantly worrying about becoming fat (Table 4). Almost 30% of the participants agreed they were very conscious about small changes in weight, yet 31.3% disagreed with being on a weight-loss diet.

Table 4

*Frequencies of Responses to Ranked Questions on Overweight Preoccupation Subscale*

<table>
<thead>
<tr>
<th>Question</th>
<th>Definitely Disagree</th>
<th>Mostly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Mostly Agree</th>
<th>Definitely Agree</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I constantly worry about being or becoming fat.</td>
<td>10 (4.4)</td>
<td>31 (13.8)</td>
<td>47 (20.9)</td>
<td>76 (33.8)</td>
<td>61 (27.1)</td>
<td>3.65 ± 1.148</td>
</tr>
<tr>
<td>I am conscious of small changes in weight.</td>
<td>25 (11.1)</td>
<td>48 (21.2)</td>
<td>48 (21.2)</td>
<td>67 (29.6)</td>
<td>38 (16.8)</td>
<td>3.20 ± 1.261</td>
</tr>
<tr>
<td>I am on a weight-loss diet.</td>
<td>81 (35.7)</td>
<td>71 (31.3)</td>
<td>40 (17.6)</td>
<td>23 (10.1)</td>
<td>12 (5.3)</td>
<td>2.18 ± 1.178</td>
</tr>
</tbody>
</table>

Columns = n followed by percentage in parenthesis

The last question in the Overweight Preoccupation Subscale asked about crash dieting. Almost half (48.7%) of the participants reported having never trying to lose weight by going on a crash diet. Only 1.3% used a crash diet for weight loss very often.

**Self-classified weight.** This subscale was made up of two questions which assessed how an individual would describe their current weight status. Table 5 shows the frequencies of responses to questions in this subscale. Just about half of the participants (47.8%) believed they were normal weight. The majority of the participants (59.6%) believed most people would view them as normal weight.
Table 5

Frequencies of Responses to Self-Classified Weight Subscale Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Very underweight</th>
<th>Somewhat underweight</th>
<th>Normal Weight</th>
<th>Somewhat overweight</th>
<th>Very overweight</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think I am:</td>
<td>0 (0)</td>
<td>9 (3.9)</td>
<td>109 (47.8)</td>
<td>93 (40.8)</td>
<td>17 (7.5)</td>
<td>3.52 ± 0.693</td>
</tr>
<tr>
<td>Looking at me, most people would think I am:</td>
<td>0 (0)</td>
<td>28 (12.3)</td>
<td>136 (59.6)</td>
<td>55 (24.1)</td>
<td>9 (3.9)</td>
<td>3.20 ± 0.696</td>
</tr>
</tbody>
</table>

Columns = n followed by percentage in parenthesis

Diet Quality

Diet quality was assessed via 11 items on the questionnaire. Frequencies for each question were run in SPSS Version 21. The frequencies and percentages of responses for all the diet quality questions are found in Appendix D.

The majority of the participants consumed three meals per day (n = 130). Seventy-two percent (n = 167) of the participants consumed between one and two snacks per day. The mean fruit consumption was 2.45 with a standard deviation of 0.89. As far as vegetable consumption, the mean was 2.50 with a standard deviation of 0.98. The mean number of times starchy foods were consumed per day was 3.14 with a standard deviation of 0.91. The mean whole grain consumption reported was 1.96 times per day with a standard deviation of 0.62.

Protein consumption was divided into two categories, lean meat and red meat. The mean number of times lean meat was consumed per day was 2.30 with a standard deviation of 0.80 and the mean number of times red meat was consumed on a typical day was 1.84 with a standard deviation of 0.69.
Dairy was consumed on average 2.82 times per day with a standard deviation of 1.10. The average number of times sweets were consumed in a typical day was 2.48 times per day with a standard deviation of 1.25. The mean number of glasses of water consumed on a typical day was 5.29 with a standard deviation of 2.67.

**Physical Activity**

Physical activity behaviors of the participants were determined by four items on the questionnaire. Frequencies, percentages, means, and standard deviations were run in SPSS Version 21. The results for frequencies and percentages to each of questions can be found in Appendix E.

The mean number of days participants engaged in physical activity was 3.81 with a standard deviation of 1.84 days. The mean number of minutes was 3.00 (meaning between 16-30 minutes) with a standard deviation of 1.47.

Physical activity was broken down into three different types: cardiovascular, strength training, and flexibility. The mean number of days participants spent engaged in cardiovascular activity was 3.19, with a standard deviation of 1.86. Participants averaged 2.02 days of strength training per week, with a standard deviation of 1.00. Flexibility training was done by the participants an average of 2.76 days with a standard deviation of 1.78.

Intensity of physical activity was defined as light, moderate, or vigorous. The average intensity of physical activity was 1.74, with a standard deviation of 0.60.

**Body Image and Diet Quality**

To determine if there was a relationship between body image and diet quality, a Spearman correlation was conducted for each of the five body image subscales and for each of the 11 diet quality questions. No significant correlations were found between number of meals
consumed per day and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales. There were no significant correlations between number of snacks consumed per day and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales. No significant correlations were found between number of servings of whole fruit and Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales. A significant correlation, $r_s(219) = .147, p = 0.028$, was found between number of servings of vegetables consumed and the Overweight Preoccupation body image subscale. No significant correlations were found between servings of vegetables consumed and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, or Self-Classified Weight subscales.

As far as the grain category, no significant correlations were found between starchy food consumption and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales. There were also no significant correlations found between whole grain consumption and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales.

Meat consumption was divided into two categories, lean meat and red meat. No significant correlations were found between number of times per day participants consumed lean meat and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales. Red meat consumption did not yield any significant correlations between the Appearance Evaluation,
Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales.

The dairy category also showed no significant correlations between number of times participants consumed dairy products on a typical day and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales. The number of times consuming sweets per day did not have any significant correlations with the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales.

The last diet quality variable was water consumption. There were no significant correlations between number of glasses of water consumed and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation, or Self-Classified Weight body image subscales.

**Body Image and Physical Activity**

Both Spearman and Pearson correlations were used to determine if a relationship between body image and physical activity existed. Spearman correlations were used when looking at the number of minutes per day as well as the intensity of the physical activity. Pearson correlations were used when analyzing number of days per week, as well as the number of days per week of each type of physical activity.

Regarding number of days engaged in physical activity, a weak positive correlation $r(203) = .180$, $p = 0.01$, was found between days of physical activity and the Body Areas Satisfaction Scale. A weak negative correlation, $r(226) = -.193$, $p = 0.003$, was found between number of days and the Self-Classified Weight body image subscale. No significant correlations
were found between number of days of physical activity and the Appearance Evaluation, Appearance Orientation, or Overweight Preoccupation body image subscales.

A weak positive correlation, $r_s(203) = .199$, $p = 0.004$, was found between the number of minutes engaged in physical activity per day and the Body Areas Satisfaction Scale. Another significant correlation, $r_s(226) = -.196$, $p = 0.003$, was found between number of minutes spent doing physical activity per day and the Self-Classified Weight body image subscale. There were no significant correlations found between minutes of physical activity and the Appearance Evaluation, Appearance Orientation, or Overweight Preoccupation body image subscales.

As far as type of physical activity, there was a significant positive correlation, $r(219) = .207$, $p = 0.002$, found between cardiovascular activity and the Overweight Preoccupation subscale. There was also a significant correlation, $r(224) = -.165$, $p = 0.013$, between cardiovascular activity and the Self-Classified Weight body image subscale. No significant correlations were found between cardiovascular activity and the Appearance Evaluation, Appearance Orientation, or Body Areas Satisfaction Scale body image subscales. A significant positive correlation, $r(199) = .145$, $p = 0.041$, was found between strength training and the Appearance Orientation body image subscale. No significant correlations were found between strength training and the Appearance Evaluation, Appearance Orientation, Body Areas Satisfaction Scale, or Self-Classified Weight body image subscales. There was a significant correlation, $r(202) = .138$, $p = 0.049$, found between flexibility exercise and the Appearance Orientation body image subscale. Another significant correlation, $r(195) = .167$, $p = 0.019$, was found between flexibility and the Body Areas Satisfaction Scale. Between flexibility and the Self-Classified Weight body image subscale, a weak significant negative correlation, $r(217) = -.189$, $p = 0.005$, was found.
Two significant results were found between intensity of physical activity and body image. A weak positive correlation, \( r_s(199) = .149, p = 0.035 \), was found between intensity and the Body Areas Satisfaction Scale and a weak positive correlation, \( r_s(217) = .138, p = 0.041 \), was found between intensity and the Overweight Preoccupation body image subscale. No significant correlations were found between intensity of physical activity and the Appearance Evaluation, Appearance Orientation, or Self-Classified Weight body image subscales.

**Diet Quality and Physical Activity**

Spearman correlations were computed to determine if there was a relationship between diet quality and physical activity behaviors of the participants. Table 6 shows the correlations between number of meals and number of snacks consumed per day and each of the physical activity behaviors. A significant weak correlation, \( r_s(227) = .197, p = 0.004 \), was found between number of meals consumed per day and strength training (Table 6). Another significant correlation, \( r_s(227) = 0.135, p = 0.046 \), between number of meals and flexibility was found. No significant correlations were found between number of meals per day and number of days or minutes spent engaged in physical activity, cardiovascular activity, or intensity of activity. Positive correlations were found between all of the physical activity behaviors and number of snacks consumed per day. The strongest correlation, \( r_s(227) = .295, p < 0.001 \), was found between number of snacks consumed per day and number of days engaged in physical activity.
Table 6

*Correlations Between Number of Meals and Number of Snacks Consumed Per Day and Physical Activity Behaviors*

<table>
<thead>
<tr>
<th>Physical Activity Behavior</th>
<th>Number of Meals</th>
<th>Number of Snacks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Correlation</td>
<td>p-value</td>
</tr>
<tr>
<td>Number of Days</td>
<td>0.111</td>
<td>0.094</td>
</tr>
<tr>
<td>Number of Minutes</td>
<td>0.088</td>
<td>0.186</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>0.040</td>
<td>0.552</td>
</tr>
<tr>
<td>Strength Training</td>
<td>0.197</td>
<td>0.004</td>
</tr>
<tr>
<td>Flexibility</td>
<td>0.135</td>
<td>0.046</td>
</tr>
<tr>
<td>Intensity</td>
<td>0.062</td>
<td>0.354</td>
</tr>
</tbody>
</table>

Significant weak correlations were found between all of the physical activity behaviors and both fruits and vegetables. The strongest correlation was between fruit consumption and flexibility, $r_s(217) = .329$, $p < 0.001$ (Table 7). The weakest correlation was between number of minutes engaged in physical activity per day and vegetable consumption, $r_s(227) = .136$, $p = 0.040$. No significant correlations were found between starchy food consumption and number of days or minutes engaged in physical activity, cardiovascular activity, strength training, flexibility, or intensity of activity. Weak positive correlations were found between whole grain consumption and number of days engaged in physical activity, number of minutes engaged in physical activity per day, strength training, and flexibility exercises. Table 7 shows the correlations between fruit, vegetable, and whole grain consumption and all of the physical activity behaviors.
Table 7

*Correlations Between Fruit, Vegetable, and Whole Grain Consumption and Physical Activity Behaviors*

<table>
<thead>
<tr>
<th>Physical Activity Behavior</th>
<th>Fruit Correlation</th>
<th>Fruit p-value</th>
<th>Vegetables Correlation</th>
<th>Vegetables p-value</th>
<th>Whole Grains Correlation</th>
<th>Whole Grains p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Days</td>
<td>0.297</td>
<td>&lt;0.001</td>
<td>0.234</td>
<td>&lt;0.001</td>
<td>0.154</td>
<td>0.020</td>
</tr>
<tr>
<td>Number of Minutes</td>
<td>0.223</td>
<td>0.001</td>
<td>0.136</td>
<td>0.040</td>
<td>0.151</td>
<td>0.023</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>0.233</td>
<td>&lt;0.001</td>
<td>0.216</td>
<td>0.001</td>
<td>0.105</td>
<td>0.113</td>
</tr>
<tr>
<td>Strength Training</td>
<td>0.254</td>
<td>&lt;0.001</td>
<td>0.226</td>
<td>0.001</td>
<td>0.156</td>
<td>0.022</td>
</tr>
<tr>
<td>Flexibility</td>
<td>0.329</td>
<td>&lt;0.001</td>
<td>0.228</td>
<td>0.001</td>
<td>0.210</td>
<td>0.002</td>
</tr>
<tr>
<td>Intensity</td>
<td>0.167</td>
<td>0.012</td>
<td>0.157</td>
<td>0.019</td>
<td>0.042</td>
<td>0.527</td>
</tr>
</tbody>
</table>

For meat consumption, a weak positive correlation, \( r_s(213) = .158, p = 0.020 \), was found between lean meat consumption and strength training. Lean meat was not significantly correlated with number of days or minutes engaged in physical activity, cardiovascular activity, flexibility, or intensity of activity. No significant correlations were found between red meat consumption and number of days or minutes engaged in physical activity, cardiovascular activity, strength training, flexibility, or intensity of physical activity. There were also no significant correlations between dairy product consumption and number or days or minutes engaged in physical activity, cardiovascular activity, strength training, flexibility, or intensity of physical activity.

A weak negative correlation, \( r_s(221) = -.177, p = 0.008 \), was found between sweet consumption and intensity of exercise. Sweet consumption was not significantly correlated to
number of days or minutes engaged in physical activity, cardiovascular activity, strength
training, or flexibility.

Table 8 shows the correlations between water consumption and each of the physical
activity behaviors. Several weak positive correlations were found between water consumption
and physical activity behaviors. The only physical activity behavior to not have a significant
correlation with water consumption was cardiovascular type of activity. The strongest
correlation was found between water and flexibility training with a correlation, $r_s(216) = .257$, $p < 0.001$.

Table 8

<table>
<thead>
<tr>
<th>Physical Activity Behavior</th>
<th>Correlation</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Days</td>
<td>0.245</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Number of Minutes</td>
<td>0.177</td>
<td>0.008</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>0.104</td>
<td>0.118</td>
</tr>
<tr>
<td>Strength Training</td>
<td>0.224</td>
<td>0.001</td>
</tr>
<tr>
<td>Flexibility</td>
<td>0.257</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Intensity</td>
<td>0.152</td>
<td>0.024</td>
</tr>
</tbody>
</table>

This ends Chapter 4. A discussion of these findings, their relevance to research
previously conducted, and recommendations for the further research will be discussed in Chapter 5.
Chapter V: Discussion

The main objective of this study was to determine if a correlation existed between body image, diet quality, and physical activity behaviors of college undergraduate females. A 49-item online survey consisting of four physical activity questions, 11 diet quality questions, and the 34-question version of the MBSRQ was used to gather data about each of the variables. Analyses, including frequencies, percentages, and correlations, were done using SPSS Version 21.

Discussion

Overall, the sample had a slightly positive body image, when the overall means of each of the five body image subscales were examined. The mean for four of the five subscales was slightly above three; therefore the participants were trending towards a more positive overall body image. The highest body image subscale mean was in the Self-Classified Weight Subscale, with a mean of 3.36 and the lowest mean, 2.72, was found in the Overweight Preoccupation Subscale. These values indicate, respectively, that participants believed current weight status was similar to how others perceive their weight and also that many of the participants had a strong worry about becoming overweight.

The diet quality of this sample was fairly low. The majority of the participants were not consuming enough fruit, vegetables, whole grains, dairy or meat. The USDA recommends at least two servings of fruit per day, and 61.5% of the participants (n = 141) in this study were not meeting the recommendations. Over half of the participants (58.1%), were not meeting the recommendation of 2 ½ cups of vegetables per day. At least three cups of dairy is the USDA’s recommendation, but only 24.7% of the participants were meeting this recommendation. As far as whole grain consumption, 83.4% of the participants (n = 191) were not meeting the recommendation of at least three servings of whole grains per day (See Appendix D). These
results are similar to previous studies that have found college females eating below the recommended number of servings of several different food groups (Butler et al., 2004; Huang et al., 2003).

The physical activity behaviors of this sample of college female students were also relatively poor. It is recommended by the USDA that adults engage in 2 ½ hours of physical activity at the moderate intensity level or 1 hour and 15 minutes at the vigorous intensity level per week. Based on the results from the number of days engaged in physical activity and the number of minutes per day, many of the students in this study were not meeting those recommendations. The USDA encourages adults to engage in cardiovascular activity at least three days per week. Many of the participants in this study (n = 132) were not meeting the recommendation. Also, over half of the participants (54.1%) were not engaging in any type of strength training throughout the week; however, the USDA recommendation is at least two days per week. The recommendation for intensity varies based on number of minutes engaged in physical activity, but should be at least moderate. Just short of 35% of the participants in this study were only exercising at a light intensity (See Appendix E).

The first question this study aimed to answer was if there was a relationship between body image and diet quality. Overall, the results showed there was no relationship between body image and diet quality. Out of all of the correlations, only one was significant, which was between Overweight Preoccupation and servings of vegetables consumed on a typical day. This result could have been out of chance, considering the low correlation coefficient and that no other results related to diet quality appeared to be significant.

The second question looked at determining if a relationship existed between body image and physical activity behaviors. The Appearance Orientation subscale was significantly
positively correlated to strength training and flexibility indicating participants were more likely to engaged in those behaviors if they placed more value on appearance. Significant positive correlations were found between the Body Areas Satisfaction Scale and number of days and number of minutes spent engaged in physical activity, flexibility, and intensity of activity. Therefore, the participants were overall more satisfied with body features if they were engaging in more physical activity, especially flexibility training. Also the more intense the activity participated in, the more satisfied participants were with body features. Cardiovascular activity and intensity were significantly positively correlated to the Overweight Preoccupation subscale, meaning those who participated in more cardiovascular activity and higher intensity physical activity were more worried about becoming overweight. Significant negative correlations were seen between number of days and number of minutes engaged in physical activity as well as flexibility and the Self-Classified Weight subscale. These results indicate that participants who engaged in more physical activity had more negative perceptions about weight. One explanation of this result is that participants who were more physically active were doing so in order to improve weight perception.

Finally, the third question aimed to determine if there was a relationship between diet quality and physical activity behaviors. There were several significant findings between diet quality and physical activity behaviors. Significant correlations were found between fruit, vegetable and whole grain consumption and various physical activity behaviors. All of the correlations were positive, meaning as participants were eating more of these healthy foods, they were also engaging in more physical activity. There was also a significant correlation found between lean meat consumption and strength training. This could be because those who are strength training are most likely trying to build muscle and could believe consuming more
protein will help achieve better results. The negative correlation between sweet consumption and intensity of exercise shows that those who engage in higher intensity physical activity consume fewer sweets. Higher intensity levels of physical activity may indicate the participant puts a high importance on health, and thus may not eat as many sweets as others. Water consumption was shown to be significant with all physical activity behaviors except cardiovascular activity. It is not surprising that those who are more physically active drink more water since sweating occurs during activity, and there is a physiological need to replace fluids. However, it was surprising that the correlation between cardiovascular activity and water consumption was not significant since people tend to sweat the most when engaging in cardiovascular activities.

Conclusions

The fact that this study found college females to have a slightly positive body image contradicts what most previous studies have found. Most studies show that women are generally unhappy with their bodies. However, studies typically focus on weight, and other aspects of body image tend to be left out. Previous studies have also found that college females were not meeting the requirements for many of the food groups just as found in this present study (Butler et al., 2004; Huang et al., 2003). Consumption of fruit and vegetables has also shown to decrease over the course of the school year (Butler et al., 2004). Studies have also found that physical activity behaviors decrease during the transition from high school to college (Han et al., 2008; Kwan & Faulkner, 2011), which may partly explain why the college female population sampled was not meeting physical activity requirements.

The results in this study contradict what has been previously found about body image and diet quality. Usually a negative body image is associated with disordered eating and dieting; however, in this study there was no relationship found between body image and diet quality.
However, another study did find similar results to this current study in that body image was not related to diet quality except for the dairy products category (Kargarnovin, Asadi, Rashidkhani, & Azar, 2013).

There were not many significant correlations found between body image and physical activity behaviors. The only significant correlations were found between the Body Areas Satisfaction Scale. Based on this, it can be said that overall there is not much of a relationship between overall body image and physical activity. This is consistent with a previous study that looked at how lifestyle and physical activity were related to body image (Rote, Swartz, & Klos, 2013). A significant relationship was found between physical activity and body image; higher levels of physical activity were significantly correlated to higher body satisfaction (Kargarnovin et al., 2013).

Most previous studies have focused on the relationship between fruit and vegetable consumption and the relationships to physical activity behaviors, whereas this present study looked at several diet quality variables. Previous studies have found significantly positive correlations between fruit and vegetable consumption and physical activity, meaning people who consume more fruits and vegetables are likely to exercise more (Morin, Turcotte, & Msc, 2013; Woolcott, Dishman, Motl, Matthai, & Nigg, 2013). Therefore, consumption of healthy foods is more likely found in those who are engaging in physical activity on a regular basis.

**Recommendations**

Although the participants in this study were found to have a slightly positive body image, there were several participants who would be considered to have a negative body image. More awareness of college support services needs to be present across college campuses. There is still
a strong need for these services and many students may not know these services are offered to them.

This study did find that college females were far from meeting the dietary or physical activity guidelines recommended by the USDA. College campuses need to encourage healthy eating and physical activity behaviors. More awareness of healthy food items throughout campus dining centers would encourage on-campus students to make healthier choices. Exchanging current vending machines for ones that include healthier options may make it more convenient for students to find and select healthier options.

Also, a reduction in the cost of fitness center usage may encourage more students to join, giving them another place to be active. There could also be a membership for those who would just want to attend group fitness classes. Education about strength training is a must for females; as many females have mistaken ideas about strength training. Over half of the participants in this study did not participate in strength training any days of the week. Lack of education on the value of strength training could be a reason why so many females do not include strength training in workouts.

Continued research needs to be done to determine college students’ barriers to healthy eating as well as why and how food choices are made. Research needs to be conducted in order to determine what barriers to physical activity exist for this population, which could lead to actions to eliminate these barriers.
References


Appendix A: Survey

Body Image, Diet Quality, and Physical Activity

This study was designed to gain information about female college student’s body image, dietary and physical activity habits. By completing the survey, you are agreeing to participation in the project entitled “The Impact of Body Image on Diet Quality and Physical Activity Behaviors of College Females” Thank you for your time and assistance with this project.

“This research has been reviewed by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46.”

1. During a typical week, how many days do you engage in physical activity for the benefit of your health?
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7

2. On an average day, how many minutes do you engage in physical activity for the benefit of your health?
   - 0 minutes
   - 1-15 minutes
   - 16-30 minutes
   - 31-45 minutes
   - 46-60 minutes
   - More than 60 minutes

3. How many days per week do you perform the following types of physical activity?

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular (running, biking, Zumba)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength training (lifting weights)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility exercises (stretching, yoga)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. What intensity do you typically exercise at?
   - Light
   - Moderate
   - Vigorous

5. How many meals do you eat per day? (Excluding snacks)
   - 0
   - 1
   - 2
   - 3
   - More than 3
6. How many snacks do you eat per day?
- 0
- 1-2
- 3-4
- More than 4

7. During a typical day how many 1 cup servings of whole fruit (not including fruit juices) do you consume?
- 0
- 1-1.5
- 2-2.5
- 3-3.5
- 4 or more

8. During a typical day how many 1 cup servings of vegetables do you consume?
- 0
- 1-1.5
- 2-3
- 3.5-4
- More than 4

9. During a typical day how many times do you eat bread, pasta, or other starchy foods including cereal, or potatoes? This also includes chips, crackers, and other salty snacks.
- 0
- 1
- 2-3
- 4-5
- 6-8
- 9-10
- More than 10

10. During a typical day, how many times do you consume products containing whole grains? Examples are brown rice or whole wheat pasta, and whole wheat bread.
- 0
- 1-2
- 3-4
- 5 or more

11. During a typical day, how many times do you eat lean meat (including turkey, chicken, or fish)?
- 0
- 1
- 2
- 3-4
- 5-6
- 7 or more
12. During a typical day, how many times do you eat red meat (including beef, eggs)?
   - 0
   - 1
   - 2
   - 3-4
   - 5-6
   - 7 or more
13. During a typical day how many times do you consume milk or other dairy products (including yogurt or cheese)?
   - 0
   - 1
   - 2
   - 3
   - More than 3
14. During a typical day, how many times do you consume sweets such as cake, pastries, cookies, or ice cream?
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   - More than 10
15. During a typical day, how many 8 ounce glasses of water do you consume?
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   - More than 10

16. Please indicate the extent to which each statement pertains to you personally.

<table>
<thead>
<tr>
<th></th>
<th>Definitely Disagree</th>
<th>Mostly Disagree</th>
<th>Neither Agree Nor Disagree</th>
<th>Mostly Agree</th>
<th>Definitely Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before going out in public, I always notice how I look.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>I am careful to buy clothes that will make me look my best.</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>My body is sexually appealing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>I constantly worry about being or becoming fat.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like my looks just the way they are.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I check my appearance in a mirror whenever I can.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before going out, I usually spend a lot of time getting ready.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am very conscious of even small changes in my weight.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most people would consider me good-looking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is important that I always look good.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use very few grooming products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like the way I look without my clothes on.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am self-conscious if my grooming isn't right.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I usually wear whatever is handy without caring how it looks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like the way my clothes fit me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I don't care what people think</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>about my appearance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>I take special care with my hair grooming.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I dislike my physique.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am physically unattractive.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I never think about my appearance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am always trying to improve my physical appearance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am on a weight-loss diet.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. I have tried to lose weight by fasting or going on crash diets.
   - Never
   - Rarely
   - Sometimes
   - Often
   - Very Often

18. I think I am:
   - Very underweight
   - Somewhat underweight
   - Normal weight
   - Somewhat overweight
   - Very overweight

19. From looking at me, most other people would think I am:
   - Very underweight
   - Somewhat underweight
   - Normal weight
   - Somewhat overweight
   - Very overweight
20. Use this scale to indicate how dissatisfied or satisfied you are with each of the following areas or aspects of your body:

<table>
<thead>
<tr>
<th>Area</th>
<th>Very Dissatisfied</th>
<th>Mostly Dissatisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
<th>Mostly Satisfied</th>
<th>Very Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face (facial features, complexion)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Hair (color, thickness, texture)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lower torso (buttocks, hips, thighs, legs)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Mid torso (waist, stomach)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Upper torso (chest or breasts, shoulders, arms)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Weight</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Height</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Overall appearance</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

21. What is your age?

22. What is your academic status?

- Freshman
- Sophomore
- Junior
- Senior

23. Where do you reside during the school year?

- On campus
- Off campus

24. What is your height, in inches?

25. What is your current weight?
Appendix B: Implied Consent Form

Consent to Participate in UW-Stout Approved Research

Title: “The Impact of Body Image on Diet Quality and Physical Activity Behaviors of College Females”

Description of the Study:
This study is designed to gain information about female college student’s body image, dietary and physical activity habits. The investigator will determine if a relationship exists between all or any of the three categories.

Risks and Benefits:
It is possible that some of the questions in the survey may make you uncomfortable. The survey contains questions about body image, food intake and physical activity habits. If you feel uncomfortable, you can choose not to answer specific questions. You can also choose to stop participating in the survey at any time. If a concern comes up, you may contact the Counseling Center at 715-232-2111 or the Student Health Center at 715-232-2103.

This research study was not designed to benefit you directly; however, you may become more aware of your eating and physical activity habits after completion of the study. This study may help the dietetics profession better understand the relationship between body image, diet quality, and physical activity behaviors. It may also help tailor wellness programs across campus.

Time Commitment:
The survey will take approximately 15 minutes to complete.

Confidentiality:
The survey is strictly anonymous. Any and all of the information collected from your survey will remain confidential. No personal identifiers will be included on the survey; therefore, you cannot be identified from the information given.

Right to Withdraw:
Participation in this study is completely voluntary. You may choose not to participate or withdraw at any time throughout the survey without any consequences. If you choose to participate, your identity will remain anonymous. You may choose not to answer certain questions if you wish.

IRB Approval:
This study has been reviewed and approved by The University of Wisconsin-Stout’s Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.

Investigator: Allison K. Bohlman
612-817-3720
bohlmana9960@my.uwstout.edu

Research Advisor: Dr. Carol D. Seaborn
715-232-2216
seaborn@uwstout.edu

IRB Administrator
Sue Foxwell, Research Services
152 Vocational Rehabilitation Bldg.
UW-Stout
Menomonie, WI 54751
715-232-2477
foxwells@uwstout.edu

Statement of Consent:
By completing the survey, you are agreeing to participation in the project entitled “The Impact of Body Image on Diet Quality and Physical Activity Behaviors of College Females”
Appendix C: IRB Approval

October 15, 2013

Allison Bohlman
Food and Nutritional Sciences
UW-Stout

RE: The Impact of Body Image on Diet Quality and Physical Activity Behaviors on College Females

Dear Allison,

The IRB has determined your project, "The Impact of Body Image on Diet Quality and Physical Behaviors on College Females," is Exempt from review by the Institutional Review Board for the Protection of Human Subjects. The project is exempt under Category #2 of the Federal Exempt Guidelines and holds for 5 years. Your project is approved from October 15, 2013, through October 14, 2018. Should you need to make modifications to your protocol or informed consent forms that do not fall within the exemption categories, you will need to reapply to the IRB for review of your modified study.

If your project involved administration of a survey, please copy and paste the following message to the top of your survey form before dissemination:

This project has been reviewed by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46

If you are conducting an online survey/interview, please copy and paste the following message to the top of the form:

“This research has been reviewed by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46.”

Informed Consent: All UW-Stout faculty, staff, and students conducting human subjects research under an approved “exempt” category are still ethically bound to follow the basic ethical principles of the Belmont Report: 1) respect for persons; 2) beneficence; and 3) justice. These three principles are best reflected in the practice of obtaining informed consent from participants.

If you have questions, please contact Research Services at 715-232-1126, or foxwells@uwstout.edu, and your question will be directed to the appropriate person. I wish you well in completing your study.

Sincerely,

Susan Foxwell
Research Administrator and Human Protections Administrator,
UW-Stout Institutional Review Board for the Protection of Human Subjects in Research (IRB
Appendix D: Frequency and Percentage Tables for Diet Quality

Table 9

*Frequencies of Number of Servings of Whole Fruit Per Day*

<table>
<thead>
<tr>
<th>Servings</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
<td>8.7</td>
</tr>
<tr>
<td>1-1.5</td>
<td>121</td>
<td>52.8</td>
</tr>
<tr>
<td>2-2.5</td>
<td>57</td>
<td>24.9</td>
</tr>
<tr>
<td>3-3.5</td>
<td>26</td>
<td>11.4</td>
</tr>
<tr>
<td>4 or more</td>
<td>5</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Table 10

*Frequencies of Number of Servings of Vegetables Per Day*

<table>
<thead>
<tr>
<th>Servings</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>28</td>
<td>12.3</td>
</tr>
<tr>
<td>1-1.5</td>
<td>104</td>
<td>45.8</td>
</tr>
<tr>
<td>2-3</td>
<td>55</td>
<td>24.2</td>
</tr>
<tr>
<td>3.5-4</td>
<td>34</td>
<td>15.0</td>
</tr>
<tr>
<td>More than 4</td>
<td>6</td>
<td>2.6</td>
</tr>
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</table>
Table 11

*Frequencies of Times Per Day Consuming Starchy Foods*

<table>
<thead>
<tr>
<th>Times</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>4.4</td>
</tr>
<tr>
<td>1</td>
<td>34</td>
<td>15.0</td>
</tr>
<tr>
<td>2-3</td>
<td>114</td>
<td>50.2</td>
</tr>
<tr>
<td>4-5</td>
<td>54</td>
<td>23.8</td>
</tr>
<tr>
<td>6-8</td>
<td>14</td>
<td>6.2</td>
</tr>
<tr>
<td>9-10</td>
<td>1</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Table 12

*Frequencies of Whole Grain Consumption*

<table>
<thead>
<tr>
<th>Times</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>48</td>
<td>21</td>
</tr>
<tr>
<td>1-2</td>
<td>143</td>
<td>62.4</td>
</tr>
<tr>
<td>3-4</td>
<td>37</td>
<td>16.2</td>
</tr>
<tr>
<td>5 or more</td>
<td>1</td>
<td>0.4</td>
</tr>
</tbody>
</table>
Table 13

*Frequencies of Lean and Red Meat Consumption*

<table>
<thead>
<tr>
<th>Times</th>
<th>Lean Frequency</th>
<th>Lean Percentage</th>
<th>Red Frequency</th>
<th>Red Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>27</td>
<td>11.8</td>
<td>71</td>
<td>31.3</td>
</tr>
<tr>
<td>1</td>
<td>128</td>
<td>55.9</td>
<td>126</td>
<td>55.5</td>
</tr>
<tr>
<td>2</td>
<td>54</td>
<td>23.6</td>
<td>26</td>
<td>11.5</td>
</tr>
<tr>
<td>3-4</td>
<td>19</td>
<td>8.3</td>
<td>4</td>
<td>1.8</td>
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<tr>
<td>5-6</td>
<td>1</td>
<td>0.4</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Table 14

*Frequencies of Milk and Dairy Consumption*

<table>
<thead>
<tr>
<th>Times</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25</td>
<td>11.0</td>
</tr>
<tr>
<td>1</td>
<td>66</td>
<td>29.1</td>
</tr>
<tr>
<td>2</td>
<td>80</td>
<td>35.2</td>
</tr>
<tr>
<td>3</td>
<td>36</td>
<td>15.9</td>
</tr>
<tr>
<td>More than 3</td>
<td>20</td>
<td>8.8</td>
</tr>
</tbody>
</table>
Table 15

Frequencies of Sweets Consumption

<table>
<thead>
<tr>
<th>Times</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>45</td>
<td>19.8</td>
</tr>
<tr>
<td>1</td>
<td>91</td>
<td>40.1</td>
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<td>2</td>
<td>54</td>
<td>23.8</td>
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<tr>
<td>3</td>
<td>23</td>
<td>10.1</td>
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<tr>
<td>4</td>
<td>7</td>
<td>3.1</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>1.8</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>0.4</td>
</tr>
</tbody>
</table>
Table 16

*Frequencies of Daily Water Consumption*

<table>
<thead>
<tr>
<th>Glasses (8 oz)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>7</td>
<td>3.1</td>
</tr>
<tr>
<td>1</td>
<td>17</td>
<td>7.5</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>16.3</td>
</tr>
<tr>
<td>3</td>
<td>47</td>
<td>20.7</td>
</tr>
<tr>
<td>4</td>
<td>35</td>
<td>15.4</td>
</tr>
<tr>
<td>5</td>
<td>21</td>
<td>9.3</td>
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<td>6</td>
<td>21</td>
<td>9.3</td>
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<tr>
<td>7</td>
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<td>9</td>
<td>4</td>
<td>1.8</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>More than 10</td>
<td>11</td>
<td>4.8</td>
</tr>
</tbody>
</table>
### Appendix E: Frequency and Percentage Tables for Physical Activity Behaviors

#### Table 17

*Frequencies of Number of Days Engaged in Physical Activity*

<table>
<thead>
<tr>
<th>Number of Days</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32</td>
<td>14</td>
</tr>
<tr>
<td>1</td>
<td>26</td>
<td>11.4</td>
</tr>
<tr>
<td>2</td>
<td>44</td>
<td>19.2</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
<td>21.8</td>
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<td>4</td>
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<td>11.8</td>
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<tr>
<td>5</td>
<td>34</td>
<td>14.8</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
<td>4.8</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>2.2</td>
</tr>
</tbody>
</table>

#### Table 18

*Frequencies of Minutes Engaged in Physical Activity Per Day*

<table>
<thead>
<tr>
<th>Number of Minutes</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 minutes</td>
<td>26</td>
<td>11.4</td>
</tr>
<tr>
<td>1-15 minutes</td>
<td>34</td>
<td>14.8</td>
</tr>
<tr>
<td>16-30 minutes</td>
<td>59</td>
<td>25.8</td>
</tr>
<tr>
<td>31-45 minutes</td>
<td>49</td>
<td>21.4</td>
</tr>
<tr>
<td>46-60 minutes</td>
<td>38</td>
<td>16.6</td>
</tr>
<tr>
<td>More than 60 minutes</td>
<td>23</td>
<td>10.0</td>
</tr>
</tbody>
</table>
Table 19

*Frequencies for Number of Days Engaged in Each Type of Physical Activity*

<table>
<thead>
<tr>
<th>Number of Days</th>
<th>Type of Physical Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cardiovascular</td>
</tr>
<tr>
<td>0</td>
<td>58</td>
</tr>
<tr>
<td>1</td>
<td>34</td>
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<td>2</td>
<td>40</td>
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<tr>
<td>3</td>
<td>44</td>
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<tr>
<td>4</td>
<td>20</td>
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<tr>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 20

*Frequencies for Intensity of Physical Activity*

<table>
<thead>
<tr>
<th>Intensity</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>77</td>
<td>34.2</td>
</tr>
<tr>
<td>Moderate</td>
<td>129</td>
<td>57.3</td>
</tr>
<tr>
<td>Vigorous</td>
<td>19</td>
<td>8.4</td>
</tr>
</tbody>
</table>