

THE RELATIONSHIP BETWEEN THE LEVEL OF PHYSICAL ACTIVITY AND BODY
SATISFACTION IN COLLEGIATE FEMALES

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HYEON JUNG KIM

DR. LAWRENCE JUDGE - ADVISOR

BALL STATE UNIVERSITY

MUNCIE, INDIANA

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INTRODUCTION

Women are concerned with their physical appearance. Physical appearance can affect the level of confidence and self-esteem. Daubenmier (2005) found that physical appearance could enhance body awareness and responsiveness. Women make an effort, both physically and psychologically, to influence their appearance by spending time and money. For these reasons, appearance management is recognized as an important factor to women (Lee, 2007). Pipher (1994) indicated that beauty is important for women to have success in society. Due to societal focus on an ideal body image, defined as a thin body shape, college age women focus a lot of attention on their appearance and body shape. (Grabe, Ward, & Hyde, 2008). The media often misrepresents body image (Jung, 2009). The media has delivered an ideal form of appearance (ie. thin) as a positive characteristic. Women internalize the ideal form portrayed by the media as the accepted beauty standard and negatively recognize their body shape or image if they don't conform to the norms created by the media (Park & Sung, 2001; Harrison & Cantor, 1997). Also, on college campuses physical attractiveness is evaluated as the beauty standard (Pipher, 1994). Although young women may be of lower or normal weight, they sometimes see themselves as overweight or obese and have an incorrect self-perception of their body weight (Chang & Christakis, 2003). These conditions cause women to try to lose weight in a variety ways including dieting programs and cosmetic surgeries (Jung, 2009; Kim, 2005). Additionally, female college students are under more pressure than males to lose weight, which can lead to stress, depression and eating disorders such as bulimia and anorexia (Garner & Garfinkel, 1980; Lee, 2009).

With these negative points of view, female college students feel that their appearance is a criterion to evaluate their worth in society. By accepting the idealized social criterion, the

students have negative appreciation of their appearance and body image. During the college years, it is important for women to change negative self-views of their own body image.

According to Biddle (1996) and Glenister (1996), exercise and sport activity are good ways to help change emotions from negative to positive. Through physical activity, individuals could reduce negative psychological factors such as anxiety and depression (Paluska, & Schwenk, 2000), and improve confidence, achievement, and self-esteem (Jackson, Sullivan, & Rostker, 1988).

According to Kim (2006), women tend to participate in sports to control their body shape instead of for a healthy life. In other words, they participate in sports or exercise due to body image satisfaction or dissatisfaction. Although they engage in exercise and physical activity for body image satisfaction, these women establish a better self-concept, feel more achievement, have enhanced confidence, and have a better understanding of socialization processes (Lee, 2004). There are many studies that identify relationships between body image, body satisfaction, and the psychological factors that relate body satisfaction to the frequency of participation in sports or physical activity.

REVEIW OF LITERATURE

Obesity

The prevalence of overweight and obese individuals has been continuously increasing over recent decades around the world (Abelson & Kennedy, 2004; Haslam & James, 2005).

According to World Health Organization (WHO), “overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.” Body Mass Index, or BMI, is one of the best and easiest assessment tools to evaluate if a person is in a healthy weight range. BMI is a score that is calculated by using a person’s weight and height. A BMI score under 18.5 is considered to be underweight, a score between 18.5 and 24.9 is considered to be normal or

healthy, a score between 25.0 and 29.9 is considered to be overweight, and a score over 30.0 is considered to be obese (WHO, 2013). Hausenblas and Fallon (2006) found that BMI was a strong predictor of body satisfaction. They found that those who had a higher BMI were not as satisfied with their bodies as those with a lower BMI. BMI can be used similarly to evaluate the relationship between body composition and overall body satisfaction.

Obesity is recognized as an epidemic and is a risk factor for Type 2 diabetes, cardiovascular disease, certain cancers and premature death (Caterson et al., 2004; Haslam & James, 2005). Although obese individuals recognize these risk factors, they tend to be inactive and lead a sedentary lifestyle (Petersen, Schnohr, & Sorensen, 2004). Davys, Hodges, and Gillham (2006) also stated that obese and overweight adults were inactive and did not meet CDC/ACSM national exercise recommendations in moderate-intensity activity. The causes of obesity are environmental and predisposed genetic factors. Environmental factors such as cars, appliances, cheap prepared meals, and energy-dense food attribute to obesity (Finkelstein, Ruhm, & Kosa, 2005; Jeffrey & Utter, 2003). In 2004, 32.2% of the U.S. adults were obese (McGee, 2005), and by in 2009-2010, 35.7% of the U.S. adults were obese (Ogden, Carroll, Kit, & Flegal, 2012). In Korea, from 1998 to 2010, the prevalence of obesity has continuously increased and was recorded as 30.8% among adults (Min, 2011). According to OECD (2012), the prevalence of the obesity differs in Korea and the U.S., respectively 4% and 30%, but both countries showed an increasing obese population. Among college age individuals aged from 18 to 29 years, the prevalence of obesity was rapidly increased (10.6% to 17.8%) between 1991 and 1997 (Mokdad et al., 1999). According to Mokdad et al. (2003), obese individuals in college aged were continuously increased to 14% to 21 % by 2001.

Body Image and the Media

Body image is defined as “an internal representation of a person’s outer appearance” (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Modern society often defines social and cultural values through media. Women tend to compare their body image with idealized figures such as actresses, models, and singers while also perceiving the idealized standard body image as presented in television, movies, and magazines (Crago & Shisslak, 2003; Kang, 2006). Media has created a thin-ideal and the fixation on this thin-ideal can cause bulimic and anorexic attitudes and unhealthy behaviors in women (Grabe et al., 2008). Kim and Kim (2003) noted that female college students were negatively thought their body size and dissatisfied with their body shape in specific areas such as hips, thighs, and abdominal. These dissatisfactions led to eating disorders including bulimic and anorexic attitudes.

Recently, in Korea, there is a trend to achieve an ideal body shape or line. This trend has caused young women to focus on having a thin body. The media excessively emphasizes beauty in women as a thin body line (Kang, 2006). Hong & Lee (2005) found that women indicated to increase negative mood and body dissatisfaction when they exposed to Thinness Promoting Messages (TPM) advertisement among 20s women. According to Oh (2004), there is more focus on weight among Korean women than all the thirteen Asian countries and the criteria for beauty has shifted to Western standards which focuses on being thin. In the U.S., the current ideal body image for females is defined as thin and well-toned with large breasts. Ward (2003) stated that women were more sexually objectified than men through visual mass media. Other researchers reported that physical appearance was more associated with women than men in social and economic experiences, such as dating (Davis, 1990) and marriage satisfaction (Margolin & White, 1987). Less attractive or overweight women showed lower educational and economic

success and experienced more discrimination in the workplace than attractive women. With these experiences, most women relate their body image and weight with their appearance (Daubenmier, 2005). Previous studies report that body image is related to psychological risk factors such as low self-esteem, eating disorders, and depression (Delene & Brogowicz, 1990; Kim, Lim, & Kwak, 2008; Rierdan & Koff., 1997; Verplanken & Velsvik., 2008).

Lennon, Rudd, Sloan, and Kim (1999) found that high self-esteem is related to positive body image among Korean, Singaporean, African American, and Caucasian women. Eating disorders are the most problematic issue related to body image among college students (Delene & Brogowicz, 1990). Jung & Lee (2006) stated that Korean women are more negatively impacted by their body image than women in the U.S. based on the BMI. Hong (2006) stated that body image was more impacted by media than by BMI among Korean females. Individuals' body image was subjective, and females compared their body image with the ideal body image through media. Although only 3.3% of subjects were obese, most of the subjects had skewed body image. Females who had a lower BMI focused more attention on their appearances than others. Comparatively, women in their twenties showed lower body satisfaction than women in their thirties.

Body Image Satisfaction

The body image satisfaction indicated that the ideal body shape is different based on cultural and ethnic differences. Women, especially, are more concerned about this issue than men (Allaz, Bernstein, Rouget, Archinard, & Morabia, 1998). Schwartz & Brownell (2004) reported that obese and overweight women showed a higher score in body dissatisfaction tests than those with normal body weights. According to Lee (2009), female college students indicated a higher rate of dissatisfaction than male college students. Female students were

expected to have a thin body type more so than male students because a thin body type has become a beauty standard. Additionally, Lee (2009) found that weight loss in female students was often triggered by environmental effects. Lee and Han (2008) focused on female college students' recognition of their physical body image and satisfaction. They found that female students were not satisfied with their practical body size. They had an idealized body size; taller in height and less body weight. According to Nam and Lee (2001), although Korean female students were thinner than American female students, Korean female students perceived themselves as overweight and were dissatisfied with their body image.

According to Hall (1995), the desire for thinness has increased in Asian and Asian American women. This condition is also related to Western culture. Mukai (1998) stated that Western culture has impacted Japanese women more than other parts of Asia. Fashion magazines in Korea publish many articles on how to get a thin body and approximately 30 percent of models are white on television commercials. Another study found that females have self- and body- dissatisfaction related to their BMI. Japanese women have higher body dissatisfaction despite having a lower BMI where 60% of females studied perceived the need to be thinner. Chinese females indicated low BMI and low body- and self-dissatisfaction. African-American females showed the highest BMI, but they were the most satisfied with their bodies (Yates & Aruguete, 2004).

Depending on ethnic or racial backgrounds, women have different dissatisfactions with the body (Cargo & Shisslak, 2003). The body dissatisfaction study has become increasingly important in identifying the four factors of attitudinal body image: 1) global subjective dissatisfaction; referring to an overall satisfaction or dissatisfaction with one's appearance, 2) affective distress regarding appearance; referring to one's emotions about one's appearance,

including anxiety and discomfort, 3) cognitive aspects of body image; referring to investment in one's appearance, erroneous thoughts or beliefs about one's body, and body image schemas, and 4) behavioral avoidance reflective of dissatisfaction with appearance; referring to avoidance of situations or objects because of their elicitation of body image concerns (Thompson & Berg, 2002). Interestingly, Chang and Christakis (2003) and Wharton, Adams, and Hampl (2008) showed the differences in recognition of body status and satisfaction between men and women. Wharton et al. (2008) found that more women desired to lose or maintain weight compared to men, even though men were more overweight or obese. Chang and Christakis (2003) stated that women and men inversely misjudged their own weight status. Women of normal weight perceived that they were overweight while men that were actually over weight perceived that they were the correct weight or underweight. These results illustrate that women are under more pressure to be thin from Western cultural ideals and popular media (Chang & Christakis, 2003).

In a Korean study, Lee (2011) studied middle aged women in regards to body satisfaction with the BMI index. Underweight, overweight, and obese individuals were not satisfied with their body image, but normal weight individuals were neither satisfied nor satisfied. The underweight and overweight groups expressed dissatisfaction with their body image concerning abdominal obesity. On the other hand, normal weight group concerned their body line. This study only showed the satisfaction of body image and the research did not mention physical activity levels related to body satisfaction. Depending on the BMI range, female college students indicated different body image satisfaction. Females with a low BMI were more satisfied with their body image than females with a high BMI (Lim, 2010).

Self-Perception of Weight

Chang and Christakis (2003) reported that self-perception of weight appropriateness varies between public health and normative cultural standards. Many overweight men and women have an acceptable self-perception of weight and believe that their weight status is not hazardous to their health, which may explain why many overweight people are not attempting weight-loss. Individuals who do not perceive themselves as overweight have the perception that their weight is not problematic to their health. They have fewer perceived benefits from engaging in regular physical activity and healthy eating. This group does not feel the necessity to control body weight.

Wardle, Haase, and Steptoe (2006) indicated that English students tended to overestimate their heights and to underestimate their weights. Although the students were overweight or obese, their BMI was underestimated. Women perceived themselves as overweight more so than men and they had more desire to lose weight. About 45% of women perceived themselves as overweight in most of the participating countries including North-Western Europe, the U.S., the former socialist states of Central and Eastern Europe, Mediterranean countries, countries of the Pacific-Asian rim, and South American countries. This could be indicative of common cultural pressures regarding weight concerns among women. Women showed more motivation to control their weight than men. Results also indicated that women, who had a low BMI, were more concerned about losing weight while women with a high BMI did not try to lose weight.

Regional differences relating to self-perception of weight indicate that Mediterranean women felt consistently less overweight but Asian women felt more overweight compared to the average. Japanese women had the highest perception of being overweight in relation to their actual weight whether or not they were overweight, whereas Mediterranean women showed the

lowest level (Wardle et al., 2006). The Mediterranean culture also has a more relaxed relationship with eating and weight (Beer-Borst et al., 2000). All women classified their weight as overweight if they were not in the bottom half of the distribution. Mediterranean women tried less to lose weight, while Asian women tried more to lose weight. The lower BMI cutoff for overweight in Asian populations might temper this effect but the trend towards the increased misperception of being overweight emphasizes the need to examine what is a ‘normal’ weight to this sociocultural environment.

De Araujo and De Araujo (2003) explained that women desire to decrease their body weight more than men and feel dissatisfaction with their current weight. The authors relate the dissatisfaction of body weight to esthetic reasons. Rubinstein and Caballero (2000) stated that the BMI of beauty pageant winners in the United States has decreased year by year. This study did not relate the frequency of physical activity and the satisfaction with body weight or self-perception of the height/weight relation. However, the authors assumed the relation was due to the difficulty of contestants to expose themselves. Many studies relate recognition of body image and body satisfaction but there are few studies that associate body satisfaction and the level of physical activity, while also considering cross cultural variance.

Based on the trend called “Mom-zzang”, (Korean) women are too concerned about their body weight and have obsessions about obesity and food (Ha, Yoon, & Kim, 2011). Lee (2004) studied the appearance management behaviors in university men. Interestingly, many male students perceived their body weight to be heavier than their actual body weight. Lee (2009) explored body image recognition, weight control consciousness, and the dietary behavior of university students. In the results of the self-perception of weight, 24.6% of female and 75.4% of male students answered that they were thin, 55.1% of female and 44.9% of male students thought

that they had a normal body type, and 54.8% of female and 45.2% of male students thought they had a plump which was the actual criteria from the study.

Compared to the difference in ethnicity, fewer African and Mexican Americans selected their weight status in a higher weight-perception category as compared to Caucasian Americans. Some groups preferred to have a large body size because their culture perceives that higher weights indicate being in good health (Kumankyka, 1998).

Behavioral Factors (Exercise)

Naturally, whenever there are weight and body satisfaction concerns with an individual, physical activity is a topic that needs to be addressed. Unfortunately, only half of Americans aged 12- 21 engages in regular vigorous physical activity, and one fourth of this population does not participate in any physical activity at all (Kirkcaldy, Shepard, & Sifen, 2002). This situation is particularly disturbing given research that has shown that frequent participation in physical activity is associated with increased physical, psychological and social well being (Biddle, & Wang, 2003). Haskell et al (2007) stated that physical activity contributes health benefits and improves the quality of life as related to physical activity profiles including type, intensity, and amount. Other researchers mentioned that regular physical activity is inversely related to prevalence of physical and psychological health including cardiovascular disease, thromboembolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety, depression, and stress (DeBate, Gabriel, Zward, Huberty, & Zhang, 2009; Dishman et al., 2004; Kesaniemi, Danforth, Jensen, Kopelman, Lefebvre, & Reeder, 2001; Kilpatrick, Hebert, & Bartholomew, 2005). Kilpatrick et al. (2005) found that extrinsic body-related motivations such as appearance, weight management, and personal strength and endurance are more related to exercise participation than other intrinsic motivation.

Technological enhancements and economic factors such as decreased energy expenditure on activities of daily living and increased sedentary work reduce the chances for a population to be active (Haskell et al., 2007). The Center for Disease Control and Prevention (CDC) recommends 150 minutes of moderate physical activity every week for adults (18 to 64 years). Although many government and health associations recommend participating in physical activity, people do not engage in regular physical activity in America (CDC, 2001; Kruger, Lee, Ainsworth, & Macera, 2008). Additionally, college age students do not meet the amount of physical activity in both Korea and the U.S.

According to the Korean National Health and Nutrition Examination Survey (KNHANES) in 2008, 19.6% of Korean men do vigorous physical activity while 14.5% of Korean women participated in vigorous physical activity. Data trends show that 32.7% of U.S. men and 23.5% of women participate in vigorous physical activity. By comparison Korea has less physical activity than America. Additionally, both countries indicated that men had more physical activity than women.

Physical Activity and Body Image Satisfaction

Many people participate in regular physical exercise to improve body appearance and to reduce or maintain body weight (McDonald & Thompson, 1992). Foster, Wadden, and Vogt (1997) reported that body image was improved with reducing body weight. Ha (2012) focused on middle-aged women in regards to recognition of body image before and after participating in physical activity. The study found that most middle-aged women were dissatisfied with their body image before they engaged in physical activities. After the subjects participated in physical activities with the purpose of modifying their body type, benefits such as losing weight, changing body type, and feeling differences on their appearance also impacted the participants body image.

Kruger et al. (2008) studied body size satisfaction and physical activity levels among men and women. They found that normal-weight individuals had higher satisfaction of body size than overweight or obese individuals. 43.7% of women of a normal weight were very satisfied with their body size compared to 15.3% who were overweight and 6.1% who were obese. Individuals who were satisfied with their body size showed more regular activity as compared to those with insufficient or no activity. Women who were not satisfied with their body size were also found to be insufficiently active more often than regularly active or inactive.

Parsons and Betz (2001) found that the extent of sports participation and physical activity among college women was unrelated to levels of self-objectification and associated with greater body shame. However, another study suggested that increased participation in sports and exercise positively counter act the consequences of self-objectification. Physical activity does not necessarily reduce self-objectification (Smolak, Murnen, & Ruble, 2000). Daubenmier (2005) found that the BMI correlated with body satisfaction, disordered eating attitudes, and body responsiveness across groups. Yoga participants reported significantly greater body awareness, responsiveness, body satisfaction, and less self-objectification than the aerobic and baseline comparison groups. The baseline group showed greater body satisfaction than aerobic groups. The researcher explained that yoga is a mind-body exercise and it may affect participants' physical and psychological factors (Daubenmier, 2005).

Kang (2006) found that women who participated in physical exercise had higher body image satisfaction as related to the factors of health and body types when compared to those who did not engage in physical exercise. Thus, physical exercise had a positive effect on body image among women. This result was similar to Hausenblas and Fallon (2006). They explained that the exercise intervention group had positive impact on the participants' body image as compared to

the non-exercise group. Additionally, Martin Ginis, McEwan, Josse, and Phillips (2012) studied the effect of a weight-loss intervention with overweight and obese women for body image changes. The subjects showed improved appearances and body satisfaction when decreasing their percentage of fat mass and increasing body strength. These changes were related to satisfaction in appearance.

According to Lim (2010), the frequency, period, and time of participation in physical activity relate to body image in female college students. The students positively recognized their body image when they engaged in 30 minutes of physical activity more than three times a week, for six months, respectively. Atlantis, Barnes, and Ball (2007) reported that obese Australian women over twenty did not meet recommendations for the levels of leisure time physical activity (LTPA). The participants showed the lowest level of LTPA compared to acceptable and overweight women. Women indicated that the modest and high levels of excess body weight were related to lack of physical activity. All overweight women who perceived or did not perceive themselves as overweight had lower levels of LTPA compared to acceptable weight women.

Many studies stated that aerobic endurance training (AET) is recommended to treat or prevent overweight and obesity through physical activity (Strasser & Scholbersberger, 2010). Rice, Janssen, Hudson, and Ross (1999) and Sarsan, Ardiç Ö zgen, Topuz, and Sermez (2006) reported that AET is positively related to having greater energy expenditure during the exercise session than resistance training (RT). Hausenblas and Fallon (2006) also showed that an aerobic exercise group and a combined exercise (aerobic and anaerobic) had better body image than an anaerobic group. Although RT had lesser energy expenditure, it is effective in contributing to weight loss in obese individuals. Previous studies showed that RT is associated with reducing fat

mass and increasing lean body mass, but there is a lack of evidence to effect on total body weight (Cauza et al., 2005; Dunstan et al., 2002; Hunter, Bryan, Wetzstein, Zuckerman, & Bamman, 2002; Schmitz, Jensen, Kugler, Jeffery, & Leon, 2003). Vaughan (1991) found that RT prevented the reduction of lean body mass and increased the resting metabolic rate. Additionally, RT is effective in reducing cardiovascular disease (CVD) (Wilson, D'Agostino, Sullivan, Parise, & Kannel, 2002), Type 2 diabetes (Maggio & Pi-Sunyer, 2003), metabolic syndrome (Kahn, Buse, Ferrannini, & Stern, 2005), total cholesterol, and plasma triglyceride (Boardley, Fahlman, Topp, Morgan, & McNevin, 2007).

Caruso and Gill (1992) explored physical self-perceptions with aerobic and weight training, and reported that participating in aerobic and weight training was useful to improve self-perception. Ahmed, Hilton, and Pituch (2002) studied the relations of strength training and body image in college women. The participants were normal weight and overweight. Although this study did not show exact information about their BMI, their weight status was assumed by percentage of body fat. They found that strength training enhanced the students' body image satisfaction. After 12 weeks of the strength training, 51.2% of the subjects improved the perception of their body image. However, 24.3% of the subjects were not satisfied with their body image because they did not see body changes or weight lost.

In a circuit training study, Williams and Cash (2001) found that students who engaged in a circuit weight training program increased their perceived physical appearance and body satisfaction. Koff and Bauman (1997) found that students who participated in step aerobics, weight-training, or running showed enhanced appearance evaluation, fitness evaluation, fitness orientation, and body satisfaction compared to non-exercise group. According to these studies, physical exercise including aerobic and anaerobic exercise positively enhances body image and

satisfaction. There is no evidence, however, to prove a preferred type of exercise based on weight status including under-, normal-, over-weight, and obese. A study done by Davis et al. (2006), explored physical activity compliance with overweight, obese, and normal weight adults. The results reported that obese and overweight subjects engaged in less moderate-vigorous physical activity than normal subjects did. Henry, Anshel, and Michael (2006) explored the effect of aerobic and interval circuit training on fitness and body image among college women. The study reported that the interval circuit training group had higher scores in body image than control groups. Comparing an aerobic exercise group and interval circuit training group, the interval circuit training group indicated more positive effects to improve physical fitness and body image than aerobic training group.

Suminsski, Petosa, Utter, & Zhang (2002) studied differences in physical activity levels among ethnically diverse college students. In a sample of participants, 53% of women college students did not participate in vigorous physical activity during the month preceding the study. In analyzing ethnic and gender-specific rates of physical activity, Asian women had the lowest physical activity level compared to other ethnic group, including African Americans, Caucasians, and Hispanics. This result was attributed to the differences in curriculum of physical education programs; there were not enough opportunities to participate in physical activity among Asian women. BMI was related to current physical activity levels however, the researchers did not have specific explanations for physical activity levels and the BMI. Another study found that African-American females spent more time exercising than Chinese and Japanese females, while White and multiethnic females had higher levels of exercise than Japanese females.

Kruger et al. (2008) found that there was a significant relationship between body size satisfaction and being regularly active in Caucasians, but this relationship was insignificant in

African-Americans, Hispanics, or other race/ethnicities after being stratified by race/ethnicities. Hispanic men and women showed the highest body size satisfaction compared to other racial/ethnic groups. Smith, Thompson, Raczynski, and Hilner (1999) attributed the result to the level of the acculturation. Hispanics experienced variety ethnic cultures than other races which experienced their own ethnic culture. However, Cachelin, Rebeck, Chung, and Pelayo (2002) stated that after controlling differences in age, education, and BMI, most racial/ethnic differences disappeared.

Purpose of the Study

With changing dominant cultural ideals, women want to have slim and fit physiques. There are many studies related to the recognition of body image and satisfaction. However, there is a lack of research associated with body satisfaction and the level of physical activity, specifically the differences between countries. The purpose of this study is to explore the relationships between physical activity level, self-perception of weight and body satisfaction among female college students, and to compare these differences between the U.S. and Korea. Additionally, this study looks to examine the preference in the types of physical activity engaged in depending on weight status.

Research Questions

The research questions for this study are examining cross cultural differences;

1) Is body image satisfaction related to physical activity level?

- H1: Students who are dissatisfied with their body image will show less participation in physical activity.

- H2: Students who are satisfied with their body image will show a higher rate of participation in physical activity.

- H3 : Compared to the U.S. and Korea, both countries' female students will not show different Results in body image satisfaction related to physical activity level.

2) Is self-perception of body weight related to physical activity level?

- H4: Students who think they are overweight will show less participation in physical activity.

- H5: Students who think they are underweight or normal weight will show a higher rate of participation in physical activity.

- H6 : Compared to the U.S. and Korea, both countries' female students will not show different results in self-perception of body weight related to physical activity level.

3) Will students participate in different types of exercise, such as aerobic exercise or resistance exercise, depending on their weight status?

-H7: Overweight and obese student will participate more in aerobic exercise.

-H8: Normal and underweight students will participate more in anaerobic exercise.

-H9 : Compared to the U.S. and Korea, both countries' female students will not show different results in preference types of exercise with their weight status.

METHOD

Participants

The participants were female college students and were recruited from one university in both South Korea (N=200) and Midwest in the U.S. (N=200). All participants were ranging in ages from 18 to 35.

Procedures

Prior to the data collection, the instruments were approved by the university Institutional Review Board. Data were collected in two languages. An anonymous survey was made available

to female students at the Midwest university on campus for a period of two weeks. A recruitment e-mail was sent out through the university communication center to current female students on two separate occasions, once at the end of the spring semester, and a second at the beginning of the summer term. To ensure anonymity, Survey Monkey, online survey software, was used to collect participant's responses. Participants were first prompted to agree to the consent form, which included information about the main purpose of the study and the individual's rights to participation. Once the participants had given their consent, they were taken to the questionnaire, which took about 15-20 minutes to complete. For the cross-cultural sample, the researcher contacted a faculty member in Yong-In university of South Korea and asked for assistance. When recruiting subjects in Korea, the faculty member emailed an announcement to the students describing the study and soliciting voluntary participation. All of the forms were translated from English to Korean.

Instrumentation

Three different questionnaires were utilized in an attempt to determine the relationship between the level of physical activity and body satisfaction. Participants provided demographic information and completed questionnaires including the Body Dissatisfaction Scale-Eating Disorders Inventory (BDS-EDI), International Physical Activity Questionnaire (IAPQ), and The Objectified Body Consciousness Scale (OBS).

BDS-EDI questionnaires were used for body dissatisfaction information. The questionnaire's validation was examined by Garner, Olmstead, and Polivy (1983). The questionnaire was comprised of eight items; drive for thinness, interoceptive awareness, bulimia, body dissatisfaction, ineffectiveness, maturity fears, perfectionism, and interpersonal distrust. For this study, only body dissatisfaction questionnaires were used. Each of items was rated on a

five-point Likert-type scale ranging from strongly disagree to strongly agree. Garner, et al. (1983) showed reliability that Cronbach's alphas were .90 and .91 when they tested anorexia nervosa (AN) patients and female comparison group (FC), respectively. In the current study, an item analysis of the questionnaire was calculated using the Cronbach coefficient α , and revealed acceptable internal consistency of the American data, $\alpha = .844$ and the Korean data, $\alpha = .866$.

OBC questionnaire was developed by McKinley & Hyde (1996) based on feminist theory. OBC questionnaire formed three eight-item scales; body surveillance, body control, and body shame. For this study, body shame scale was only used. Each of items was rated on a five-point Likert-type scale ranging from strongly disagree to strongly agree. The questionnaire used was internally reliable. McKinley and Hyde (1996) study showed the reliability that the Cronbach's alpha was 0.79, and Lowery et al. (2005) study indicated 0.82 of Cronbach's alpha. In the current study, American data showed that the Cronbach's alpha was 0.83 while Korean data showed Cronbach's alpha of 0.75.

IAPQ long format was used for evaluating physical activity level. The questionnaire consisted of five activity domains; job-related physical activity, transportation physical activity, house work, house maintenance, and caring for family, recreation, sport, and leisure-time physical activity, and time spent sitting.

Data analysis

Using SPSS 20.0 program, descriptive statistics, correlation analysis, and multiple regression analysis were conducted for the overall variables. Three multiple regression analyses were conducted to examine the extent to which the independent variables (Body dissatisfaction and body shame) had statistically significant impact on the dependent variables (frequency of exercise, spending time in exercise, and BMI). To minimize type I error when running more than

one multiple regressions, a conservative alpha level was selected. Cross tabulation analysis was conducted to determine whether BMI levels differ in terms of individual's preference of exercise types. To check data normality, as suggested by Hair, Black, Babin, & Anderson (2010), both Skewness and Kurtosis values were assessed.

RESULTS

Descriptive Statistics

All participants were classified into four levels based on their BMI. Among the American female students, descriptive statistics indicated that 13% were obesity, 25% were overweight, 57.8% were normal weight, and 4.2% were underweight. Based on the Korean female students' data, 2.5% were overweight, 80.3% were normal weight, and 17.2% were underweight. Compared to American female students, Korean female students self-reported more in the normal BMI while no participant declared as obese. This result showed that Korean female students' body size was overall smaller than American female students.

Body dissatisfaction (Table 1) and body shame's (Table 2) mean score were analyzed for both Korean and American data. Compared to American female college students, Korean female college students showed higher mean scores in both body dissatisfaction and body shame. The overall results indicated that Korean female college students were more dissatisfied with their body image than American female college students.

When comparing body dissatisfaction variables, both countries' students indicated the lowest mean in ButtocksLarge ("I think by buttocks are too large."). In contrast, the highest mean was found in different factor. American female college students showed the highest mean in Thighsright ("I think that my thighs are just the right size.") while Korean female college students indicated the highest mean in SatisfiedBS (I feel satisfied with the shape of my body.).

Among body shame variables for both countries, the highest mean was found in NWorryEX (“I never worry that something is wrong with me when I am not exercising as much as I should.”). However, the lowest mean was different. NExQestion (“When I’m not exercising enough, I question whether I am a good enough person.”) was the lowest mean in America data, and BadNLookG (“I feel like I must be a bad person when I don’t look as good as I could.”) was the lowest mean in Korea data.

Physical activity level including frequency and spending time of physical activity was not related to body dissatisfaction and body shame in both countries. However, between Korea and America female students showed different level of physical activity (Table 3). American female students had more time to participate in recreational physical activity including vigorous, moderate, and low level than Korean students. Korean students had more sitting time on weekend compared to American students. However, during weekday, American students had more sitting time than Korean students.

Correlation Analysis

Body dissatisfaction and body shame variables were evaluated with factor correlation in both countries. Among the American data, the highest factor correlation was found between *StomachBig* and *StomachRight* ($r = 0.639$) while the lowest factor correlation was found between *LikeButtocks* and *HipsBig* ($r = 0.093$). Among Korean data, the highest factor correlation was found between *StomachBig* and *StomachRight* ($r = 0.655$) while the lowest correlation was found between *StomachRight* and *HipsBig* ($r = .083$).

Additionally, statistically significant factor correlations were found between independent factors and body Shame. Refer to Table 6 (America) and 7 (Korea) for the overall values.

Among the American data, the highest factor correlation was found between *NExQuestion* and

AshamedNSize ($r = 0.567$) while the lowest correlation was found between *Ashamed NB* and *NWorryEx* ($r = 0.213$). Among the Korean data, the highest factor correlation was found between *Ashamed NB* and *BadNLookG* ($r = 0.655$) while the lowest correlation was found between *AshamW* and *NExQuestion* ($r = -.012$).

Multiple Regression Analysis

The overall results indicated that body dissatisfaction and body shame level did not have statistically significant impact on both frequency and amount of time spent on physical activities. In contrast, BMI was significantly related to body dissatisfaction but not body shame level among the participants for both countries. When comparing the female college student from the two countries, there was no significant cross-cultural difference. Refer to Table 8 for both countries.

Chi Square Analysis

Most of the Korean female college students preferred to participate in aerobic exercise (69.2%) or combined exercise including aerobic and resistance (25.3%). Pearson chi-square analyzing P value was .471. Exercise preference was not associated with BMI. Additionally, most of the American female students preferred to participate in aerobic exercise (48.4%) or combined exercise including aerobic and resistance (50%). Pearson chi-square analyzing P value was .271. Exercise preference was not associated with BMI.

DISCUSSION

The main purpose of the study was to examine the relationship between physical activity level and self-perception of body status and body satisfaction among female college students in the US and Korea. Additionally, this study looked to explore the preference in the types of physical activity depending on weight status.

In this study, there were no significant differences between the level of physical activity and body image satisfaction and between the level of physical activity and self-perception of body status in each of countries (the results were not supported hypotheses 1, 2, 4, and 5). De Araujo and De Araujo (2003) showed the same result with this study. The results indicated that no relationships exist between the frequency of physical activity and body status, and between the frequency of physical activity the level of satisfaction with weight. De Araujo and De Araujo (2003) explained that although most people believe that an active lifestyle and regular exercise are good ways to maintain health and body weight, individuals did not exercise regularly. In contrast, previous studies reported that physical activity level was related to body image satisfaction and body status. Kruger et al. (2008) mentioned that individuals who had regular physical activity were more satisfied with their body size than inactive individuals. Ha (2012) found that participation in physical activity levels were a means to improve body image satisfaction among middle-aged women. Kang (2006) and Hausenblas and Fallon (2006) also found that physical exercise was useful to enhance body image satisfaction. Compared to this study, previous studies' samples consisted of adults (aged over 18 years) or middle-aged women. Due to this fact, this study's findings did not match the results of previous studies and physical activity was tested as an intervention by providing exercise programs.

When comparing the two countries' body satisfaction levels, Korean students were more dissatisfied with their bodies than American students. Wardle et al (2006) reported that Asian female students were more concerned about their weight status than American and UK female students and Oh (2004) found that Korean women had a higher concern regarding their body weight than other Asian countries. These results could be explained by an effect of sociocultural environment. Hall (1995) also noted that Asian and Asian American women feel more pressure to have thin body shapes. Korea is more influenced by media messaging, especially through television, about being thin because mostly thin actresses appear in television shows.

This study found that there were no relationships between physical activity level and body satisfaction. However, differences were noted between Korea and American female students' physical activity levels (the results were not supported hypotheses 3 and 5). American female students spent more time engaging in recreational physical activity (vigorous, moderate, and/or low level) than Korean students. This finding is similar to the results of the Korean national Health and Nutrition Examination Survey (KNHANES, 2008). This result is related to environmental effects such as weather conditions, transportation, campus safety, and recreation facilities (Keating, Jianmin, Piñero, & Bridges, 2005; Kim, 2012). Compared to one university in midwest U.S., the university in South Korea did not have variety resources such as fitness programs, intramural sports, sport clubs, instructional recreation, and sizeable gyms. Suminsskin et al. (2002) noted that the difference in physical education programs was related to different physical activity levels among ethnic groups.

This study did not find any relationships between preference of exercise type and students' weight status (BMI) (the results were not supported hypotheses 7, 8, and 9). Previous studies reported that aerobic exercise and resistance exercise were positively affected to

increased body image satisfaction (Ahmed et al., 2002; Caruso & Gill, 1992; Hausenblas & Fallon, 2006; Koff & Bauman, 1997; Williams & Cash, 2001). However, none of the previous studies found relationships between preferences of exercise types and BMI. It is assumed that based on individuals' characteristics, their preference in the types of physical activity might be different.

In summary, although female college students' physical activity levels were not related to body satisfaction, there were cultural differences between Korea and America. The findings raise concerns about cultural differences, overweight and obesity recognition, and environmental factors impacting physical activity engagement. In addition, the relationship between physical activity participation and body image satisfaction could also be related to psychological issues such as eating disorders, depression, and self-esteem. In future studies, these factors need to include a focus on investigating the results within the college aged population more closely.

Limitations

As with all research, certain limitations were found within the current study. First, the participant pool was a small sample, limited to one Midwestern university in the US and one university in Korea. While the current research found some similarities to past research, the low sample size decreases generalizability of the findings. These factors may have contributed to the relatively limited significant findings throughout this research. Additionally, survey instruments may not have allowed a complete view of participants' perceptions regarding strength training. Limitations of the current research have been noted and should be taken into consideration when applying the findings.

In conjunction with the limitations mentioned above, it is suggested that prospective researchers utilize a larger sample that is more representative of the entire United States

population and the entire population of Korea. Additionally, if deciding on a qualitative study, in person interviews would be helpful as it would allow the researcher to gain more information by following up on responses that were insightful.

Conclusion

Overall, body satisfaction seems to be a prevalent issue among female college students in both the United States and South Korea. Parents, school administrators, counselors, and other people who work closely with adolescents should realize that teaching healthy eating habits and placing an emphasis on healthy amounts of exercise can help curb the discrepancies between perceived body image and ideal body image, which will, in turn, lead to greater body satisfaction following high school during college. The teaching of these habits can also reduce their BMI, which is also likely to lead to greater body satisfaction. This will especially help college aged females increase their body satisfaction since exercise was a main predictor for female body satisfaction in that more physical activity led to higher body satisfaction and low amounts of physical activity led to lower body satisfaction. To increase the likelihood of females participating in physical activity, more programs that are exclusive to women should be made available. Such programs exist for adult females, but there are none catered specifically to the college age group.

As discussed previously in this manuscript, the media and popular culture are also very important influences on adolescent body satisfaction. The aforementioned emphasis on healthy eating habits and healthy amounts of physical activity will help increase body satisfaction among females in the US and Korea, but also create a cultural shift. If adolescents and college students in the United States and South Korea continue to be bombarded with advertisements, television, and movies that depict unhealthy and, for most people, unobtainable body images, it will be

difficult to make significant increases in body satisfaction and help improve nutritional and physical activity decisions. It will take a combination of all of these factors to improve the current issues with body satisfaction among American and Korean collegiate females.

REFERENCES

- Ahmed, C., Hilton, W., & Pituch, K. (2002). Relations of strength training to body image among a sample of female university students. *The Journal of Strength & Conditioning Research, 16*(4), 645-648.
- Abelson, P., & Kennedy, D. (2004). The obesity epidemic. *Science (New York, NY), 304*(5676), 1413.
- Allaz, A., Bernstein, M., Rouget, P., Archinard, M., & Morabia, A. (1998). Body weight preoccupation in middle-age and ageing women: A general population survey. *International Journal of Eating Disorders, 23*(3), 287-294.
- Atlantis, E., Barnes, E. H., & Ball, K. (2007). Weight status and perception barriers to healthy physical activity and diet behavior. *International journal of obesity, 32*(2), 343-352.
- Beer-Borst, S., Hercberg, S., Morabia, A., Bernstein, M. S., Galan, P., Galasso, R., Northridge, M. E. (2000). Dietary patterns in six European populations: results from EURALIM, a collaborative European data harmonization and information campaign. *European journal of clinical nutrition, 54*(3), 253-262.
- Boardley, D., Fahlman, M., Topp, R., Morgan, A. L., & McNevin, N. (2007). The impact of exercise training on blood lipids in older adults. *The American journal of geriatric cardiology, 16*(1), 30-35.
- Biddle, S. (1995). Exercise and psychosocial health. *Research Quarterly for Exercise & Sport, 66*(4), 292-297.
- Biddle, S. J. H., & Wang, C. K. (2003). Motivation and self-perception profiles and links with physical activity in adolescent girls. *Journal of Adolescence, 26*(6), 687-701.

Cachelin, F. M., Rebeck, R. M., Chung, G. H., & Pelayo, E. (2002). Does ethnicity influence body-size preference? A comparison of body image and body size. *Obesity Research, 10*(3), 158-166.

Crago, M., & Shisslak, C. M. (2003). Ethnic differences in dieting, binge eating, and purging behaviors among American females: A review. *Eating disorders, 11*(4), 289-304.

Caterson, I., Hubbard, V., Bray, G., Grunstein, R., Hansen, B., Hong, Y., ... Smith, S. Prevention conference VII (2004). Obesity, a worldwide epidemic related to heart disease and stroke group III: worldwide comorbidities of obesity. *Circulation. 110*: 476–483.

Cauza, E., Hanusch-Enserer, U., Strasser, B., Ludvik, B., Metz-Schimmerl, S., Pacini, G., & Haber, P. (2005). The relative benefits of endurance and strength training on the metabolic factors and muscle function of people with type 2 diabetes mellitus. *Archives of physical medicine and rehabilitation, 86*(8), 1527-1533.

Caruso, C. M., & Gill, D. L. (1992). Strengthening physical self-perceptions through exercise. *The Journal of sports medicine and physical fitness, 32*:416–427.

CDC. (2001). Physical activity trends: United States, 1990–1998. *Morbidity Mortality Weekly Report, 50*, 166 –169.

Chang, V. W., & Christakis, N. A. (2003). Self-perception of weight appropriateness in the United States. *American Journal of Preventive Medicine, 24*(4), 332-339.

Daubenmier, J. J. (2005). The relationship of yoga, body awareness, and body awareness, and body responsiveness to self-objectification and disordered eating. *Psychology of Women Quarterly, 29*(2), 207-219.

Davis, S. (1990). Men as success objects and women as sex objects: A study of personal advertisements. *Sex Roles, 23*, 43–50.

Davis, J. N., Hodges, V. A., & Gillham, M. B. (2006). Physical activity compliance: differences between overweight/obese and normal-weight adults. *Obesity, 14*(12), 2259-2265.

De Araujo, D. S., & De Araujo, C. G. (2003). Self-perception and dissatisfaction with weight does not depend on the frequency of physical activity. *Arquivos brasileiros de cardiologia, 80*(3), 235.

Debate, R. D., Gabriel, K.P., Zward, M., Huberty, J., & Zhang, Y. (2009). Changes in psychosocial factors and physical activity frequency among third- to eighth-grade girls who participated in a developmentally focused youth sport program: A preliminary study. *The Journal of School Health, 79*(10), 474 – 484.

Delene, L. M., & Brogowicz, A. A. (1990). Student healthcare needs, attitudes, and behavior: Marketing implications for college health centers. *Journal of American College Health, 38*(4), 157-164.

Dishman, R. K., Motl, R. W., Saunder, R., Felton, G., Ward, D. S., Dowda, M., & Pate, R. R. (2004). Self-efficacy partially mediates the effect of a school-based physical-activity intervention among adolescent girls. *Preventive Medicine, 38*, 628-636.

Dunstan, D. W., Daly, R. M., Owen, N., Jolley, D., De Courten, M., Shaw, J., & Zimmet, P. (2002). High-intensity resistance training improves glycemic control in older patients with type 2 diabetes. *Diabetes care, 25*(10), 1729-1736.

Garner, D. M., & Garfinkel, P. E. (1980). Socio-cultural factors in the development of anorexia nervosa. *Psychological Medicine, 10*, 647–656.

Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a

multidimensional eating disorder inventory for anorexia nervosa and bulimia.

International journal of eating disorders, 2(2), 15-34.

Glenister, D. (1996). Exercise and mental health: a review. *The Journal of the Royal Society for the Promotion of Health*, 116(1), 7-13.

Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological bulletin*, 134(3), 460-476.

Finkelstein, E. A., Ruhm, C. J., & Kosa, K. M. (2005). Economic causes and consequences of obesity. *Annual Review of Public Health*, 26, 239-257.

Foster, G. D., Wadden, T. A., & Vogt, R. A. (1997). Body image in obese women before, during, and after weight loss treatment. *Health Psychology*, 16(3), 226-229.

Ha, M. H. (2012). The relationship between exercise participation and body image perception among middle-aged women. (Unpublished Doctoral's thesis). Inha University, Incheon, Korea.

Ha, M. H., Yoon, H. S., & Kim, B. J. (2011). The relationship between exercise participation and body image perception. *Journal of Sport Science*, 23, 89-102.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.

Hall, C. C. I. (1995). Asian eyes: Body image and eating disorders of Asian and Asian American women. *Eating Disorders*, 3, 8-19.

Harrison, K., & Cantor, J. (1997). The relationship between media consumption and eating disorders. *Journal of Communication*, 47(1), 40-67.

Haskell, W. L., Lee, I., Pate, R. R., Powell, K. E., Blair, S. N., Franklin, B. A., ... Bauman, A.

- (2007). Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Medicine and science in sports and exercise*, 39(8), 1423-1434.
- Haslam, D., & James, P. (2005). Obesity. *Lancet*, 366, 1197–1209.
- Hausenblas, H. A., & Fallon, E. A. (2006). Exercise and body image: A meta-analysis. *Psychology & Health*, 21(1), 33-47.
- Hawkins, N., Richards, P. S., Granley, H., & Stein, D. M. (2004). The impact of exposure to the thin-ideal media images on women. *Eating Disorders: The Journal of Treatment & Prevention*, 12, 35–50.
- Henry, R. N., Anshel, M. H., & Michael, T. (2006). Effects of aerobic and circuit training on fitness and body image among women. *Journal of Sport Behavior*, 29(4), 281-303.
- Hong, J. P., & Lee, S. Y. (2005). The effects of exposure to thinness promoting advertising message on young female's mood and body dissatisfaction. *Korean Women's Communication Association*, 4, 72-118.
- Hong, K. H. (2006). The influence of the sociocultural attitudes toward appearance and BMI on body image and body satisfaction. *Journal of the Korean Society of Clothing and Textiles*, 8(1), 48-54.
- Hunter, G. R., Bryan, D. R., Wetzstein, C. J., Zuckerman, P. A., & Bamman, M. M. (2002). Resistance training and intra-abdominal adipose tissue in older men and women. *Medicine and science in sports and exercise*, 34(6), 1023-1028.
- Jeffrey, R.W., & Utter, J. (2003). The changing environment and population obesity in the United States. *Obesity Research*, 11(S10), 12S–22S.
- Jackson, L., Sullivan, L., & Rostker, R. (1988). Gender, gender role, and body image. *Sex Roles*,

19, 429-443.

- Jung, J., & Lee, S. H. (2006). Cross-cultural comparisons of appearance self-schema, body image, self-esteem, and dieting behavior between Korean and U.S. women. *Family and Consumer Sciences Research Journal*, 34, 350-365.
- Jung, Y. J. (2009). *A study of weight control, dietary habits and nutrition education with different body image in female college students*. (Unpublished Master's thesis). Dongguk University, Seoul, Korea.
- Kahn, R., Buse, J., Ferrannini, E., & Stern, M. (2005). The metabolic syndrome: time for a critical appraisal Joint statement from the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes care*, 28(9), 2289-2304.
- Kang, E. B. (2006). A study on body image of women who participate in physical exercise. *Journal of contents*, 4(2),145-148.
- Keating, X., Jianmin, G., Piñero, J., & Bridges, D. (2005). A Meta-Analysis of College Students' Physical Activity Behaviors. *Journal of American College Health*, 54(2), 116-125.
- Kesaniemi, Y., Danforth, E., Jensen, M., Kopelman, P., Lefebvre, P. & Reeder, B. (2001). Dose-response issues concerning physical activity and health: an evidence-based symposium. *Medicine and Science in Sports and Exercise*, 33, S351-S358.
- Kilpatrick, M., Hebert, E., & Bartholomew, J. (2005). College students' motivation for physical activity: differentiating men's and women's motives for sport participation and exercise. *Journal of American college health*, 54(2), 87-94.
- Kim, H. Y., & Kim, S. Y. (2003). A Study on the weight control and eating disorder characteristics of women undergraduate of dance major. *Journal of sport and leisure studies*, 20(1), 1091-1103.

- Kim, M. J., Lim, Y. R., & Kwak, H. K. (2008). Dietary behaviors and body image recognition of college students according to the self-rated health condition. *Nutrition research and practice*, 2(2), 107-113.
- Kim, S. M. (2005). *The study of body image and appearance-management behaviors according to trial or not and weight control methods of college women*. (Unpublished Master's thesis). Dong-Duck Womans University, Seoul, Korea.
- Kim, W. K. (2012). Relationship among individual, social, environmental factor and leisure time physical activity of undergraduates. *The Korean Journal of Sports Science*, 21(2), 1189-1198.
- Kim, Y. J. (2006). The influence of body image on the participation of physical training among women. *The Korea Journal of Sports Science*, 15(1), 269-277.
- Kirkcaldy, B. D., Shephard, R. J., & Siefen, R. G. (2002). The relationship between physical activity and self image and problem behavior among adolescents. *Social Psychiatry & Psychiatric Epidemiology*, 37(11), 544-550.
- Koff, E., & Bauman, C. L. (1997). Effects of wellness, fitness, and sport skills programs on body image and lifestyle behaviors. *Perceptual and Motor Skills*, 84, 555-562.
- Kruger, J., Lee, C. D., Ainsworth, B. E., & Macera, C. A. (2008). Body size satisfaction and physical activity levels among men and women. *Obesity*, 16(8), 1976-1979.
- Kumanyika, S. K. (1998). Obesity in African Americans: Biobehavioral consequences of culture. *Ethnicity & Disease*, 8(1), 93-96.
- Lee, E. K. (2009). *A study on body image recognition and weight control consciousness and dietary behavior of university student* (Unpublished Master's thesis). Ul-San University, Ulsan, Korea.

- Lee, J. H. (2004). *A study on the appearance management behaviors in university man : As related to sex role identity* (Unpublished Master's thesis). Ehwa Womans University, Seoul, Korea.
- Lee, J. S., & Han, G. H. (2008). The effects of university woman students' socio-cultural attitudes to appearance on their body image and satisfaction of their physical bodies. *Journal of Fashion Business*, 12(2), 153~164.
- Lee, K. S. (2007) *A research of desire self-image and appearance - management behavior in women according to degree of Appearance Concern*. (Unpublished Master's thesis). Seo Kyeong University, Seoul, Korea.
- Lee, S. H. & Nam, Y. (1999). A cross-cultural comparison of body image and clothing selection behavior among Korean and American Women. *Journal of International textile & Apparel Association Prodeedings*, p. 75, Monument, CO:ITAA.
- Lee, Y. A. (2011). A study on the actual image and the ideal image of Seoul women in their middle-ages comparision by each category of BMI. *Korean society of basic design and art*, 12(4), 251-261.
- Lennon, S. J., Rudd, N. A., Sloan, B., & Kim, J. S. (1999). Attitudes toward gender roles, self-esteem, and body image: Application of a model. *Clothing and Textiles Research Journal*, 17(4), 191-202.
- Lim, S. H. (2010). *The effects of physical images of female college students towards the participation motives of sports*. (Unpublished Master's thesis). Kyung Hee University, Yong-In, Korea.
- Lowery, S. E., Kurpius, S. E. R., Befort, C., Blanks, E. H., Sollenberger, S., Nicpon, M. F., &

- Huser, L. (2005). Body image, self-esteem, and health-related behaviors among male and female first year college students. *Journal of College Student Development, 46*(6), 612-623.
- Macera, C. A., Ham, S. A., Yore, M. M., Jones, D. A., Kimsey, C. D., Kohl III, H. W., & Ainsworth III, B. E. (2005). PEER REVIEWED: Prevalence of Physical Activity in the United States: Behavioral Risk Factor Surveillance System, 2001. *Preventing chronic disease [electronic resource], 2*(2).
- Maggio, C. A., & Pi-Sunyer, F. X. (2003). Obesity and type 2 diabetes. *Endocrinology and metabolism clinics of North America, 32*(4), 805.
- Margolin, L., & White, L. (1987). The continuing role of physical attractiveness in marriage. *Journal of Marriage and the Family, 49*, 21-27.
- Martin Ginis, K. A., McEwan, D., Josse, A. R., & Phillips, S. M. (2012). Body image change in obese and overweight women enrolled in a weight-loss intervention: The importance of perceived versus actual physical changes. *Body Image, 9*(3), 311-317.
- McDonald, K., & Thompson, J. K. (1992). Eating disturbance, body image dissatisfaction, and reasons for exercising: Gender differences and correlational findings. *International Journal of Eating Disorders, 11*(3), 289-292
- McGee, D. L. (2005). Body mass index and mortality: a meta-analysis based on person-level data from twenty-six observational studies. *Annals of epidemiology, 15*(2), 87-97.
- McKinley, N. M., & Hyde, J. S. (1996). The objectified body consciousness scale development and validation. *Psychology of Women Quarterly, 20*(2), 181-215.
- Min, K. R. (2011, Nov 14). *30% of adult is obesity: Male adult obesity reached the highest*

- record level*. Yonhap news. Retrieved from <http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=103&oid=001&aid=0005370754>
- Mokdad, A. H., Ford, E. S., Bowman, B. A., Dietz, W. H., Vinicor, F., Bales, V. S., & Marks, J. S. (2003). Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. *JAMA: the journal of the American Medical Association*, 289(1), 76-79.
- Mokdad, A. H., Serdula, M. K., Dietz, W. H., Bowman, B. A., Marks, J. S., & Koplan, J. P. (1999). The spread of the obesity epidemic in the United States, 1991-1998. *JAMA: the journal of the American Medical Association*, 282(16), 1519-1522.
- Mukai, T., Kambara, A., & Sasaki, Y. (1998). Body dissatisfaction, need for social approval, and eating disturbances among Japanese and American college women. *Sex Roles*, 39(9-10), 751-763.
- OECD (2012). Obesity update 2012. Retrieved from <http://www.oecd.org/health/49716427.pdf>
- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). *Prevalence of obesity in the United States, 2009-2010*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics
- Oh, Y. H. (2004, July 29). Korean women live to be thin and slim. *The Korea Herald*, pp. A11.
- Paluska, S. A., & Schwenk, T. L. (2000). Physical activity and mental health: current concepts. *Sports Medicine*, 29(3), 167-180.
- Park, E. A., & Sung, Y. S. (2001). The relationship between Media image - body Image discrepancy and advertising effectiveness. *Journal of Korean Psychology*, 2(1), 87-115.
- Parsons, E. M., & Betz, N. E. (2001). The relationship of participation in sports and physical

- activity to body objectification, instrumentality, and locus of control among young women. *Psychology of Women Quarterly*, 25(3), 209-222.
- Petersen, L., Schnohr, P., & Sorensen, T. I. (2004). Longitudinal study of the longterm relation between physical activity and obesity in adults. *International Journal Obesity Related Metabolic Disorders*, 28, 105–112.
- Pipher, M. (1994). *Reviving Ophelia: Saving the selves of adolescent girls*. New York: Grosset/Putnam Books.
- Prevalence and trends data (2007). Behavioral risk factor surveillance system. Retrieved from <http://apps.nccd.cdc.gov/brfss/sex.asp?cat=PA&yr=2007&qkey=4418&state=US>
- Rice, B., Janssen, I., Hudson, R., & Ross, R. (1999). Effects of aerobic or resistance exercise and/or diet on glucose tolerance and plasma insulin levels in obese men. *Diabetes Care*, 22(5), 684-691.
- Rierdan, J., & Koff, E. (1997). Weight, weight-rated aspects of body image, and depression in early adolescent girls. *Adolescence*, 32(127), 615–624.
- Rubinstein, S., & Caballero, B. (2000). Is Miss America an undernourished role model?. *JAMA: the journal of the American Medical Association*, 283(12), 1569-1569.
- Sarsan, A., Ardiç, F., Özgen, M., Topuz, O., & Sermez, Y. (2006). The effects of aerobic and resistance exercises in obese women. *Clinical rehabilitation*, 20(9), 773-782.
- Schmitz, K. H., Jensen, M. D., Kugler, K. C., Jeffery, R. W., & Leon, A. S. (2003). Strength training for obesity prevention in midlife women. *International journal of obesity*, 27(3), 326-333.
- Schwartz, M. B., & Brownell, K. D. (2004). Obesity and body image. *Body image*, 1(1), 43-56.
- Smith, D. E., Thompson, J. K., Raczynski, J. M., & Hilner, J. E. (1999). Body image among men

- and women in a biracial cohort: the CARDIA Study. *International Journal of Eating Disorders*, 25(1), 71-82.
- Smolak, L., Murnen, S. K., & Ruble, A. E. (2000). Female athletes and eating problems: A meta-analysis. *International Journal of Eating Disorders*, 27, 371–380.
- Strasser, B., & Schobersberger, W. (2010). Evidence for resistance training as a treatment therapy in obesity. *Journal of obesity*, 2011,1-9.
- Suminski, R. R., Petosa, R., Utter, A. C., & Zhang, J. J. (2002). Physical activity among ethnically diverse college students. *Journal of American College Health*, 51(2), 75-80.
- Thompson, J. K., Heinberg, L. J., Altabe, M. N., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance* (pp. 19-47). Washington, DC: American Psychological Association.
- Thompson, J. K., & Van Den Berg, P. (2002). Measuring body image attitudes among adolescents and adults. *Body image: A handbook of theory, research, and clinical practice*, 142-154.
- Vaughan, L., Zurlo, F., & Ravussin, E. (1991). Aging and energy expenditure. *The American journal of clinical nutrition*, 53(4), 821-825.
- Verplanken, B., & Velsvik, R. (2008). Habitual negative body image thinking as psychological risk factor in adolescents. *Body Image*, 5(2), 133-140.
- Ward, L. W. (2003). Understanding the role of entertainment media in the sexual socialization of American youth: A review of empirical research. *Developmental Review*, 23, 347–388.
- Wardle, J., Haase, A. M., & Steptoe, A. (2006). Body image and weight control in young adults: international comparisons in university students from 22 countries. *International Journal of Obesity*, 30(4), 644-651.

- Wharton, C. M., Adams, T., & Hampl, J. S. (2008). Weight loss practices and body weight perceptions among US college students. *Journal of American College Health, 56*(5), 579-584.
- WHO (2013). Obesity and overweight. Retrieved from <http://www.who.int/mediacentre/factsheets/fs311/en/>
- Williams, P. A., & Cash, T. (2001). Effects of a circuit weight training program on the body images of college students. *International Journal of Eating Disorders, 30*, 75–82.
- Wilson, P. W., D'Agostino, R. B., Sullivan, L., Parise, H., & Kannel, W. B. (2002). Overweight and obesity as determinants of cardiovascular risk: the Framingham experience. *Archives of internal medicine, 162*(16), 1867.
- Yates, A., Edman, J., & Aruguete, M. (2004). Ethnic differences in BMI and body/self-dissatisfaction among Whites, Asian subgroups, Pacific Islanders, and African-Americans. *Journal of Adolescent Health, 34*(4), 300-307.

APPENDIX

Table 1
Body dissatisfaction

Variables	Korean (n=198)		American (n=192)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>StomachBig</i>	3.47	1.04	3.41	1.26
<i>ThighsLarge</i>	3.75	1.02	3.47	1.33
<i>Stomachright</i>	3.37	.97	3.54	1.18
<i>SatisfiedBS</i>	3.86	.94	3.09	1.19
<i>LikeButtocks</i>	3.70	1.05	2.80	1.20
<i>HipsBig</i>	3.33	1.03	2.78	1.26
<i>Thighsright</i>	3.60	1.02	3.69	1.11
<i>ButtocksLarge</i>	3.28	1.02	2.23	1.23
<i>HipsRight</i>	3.45	.94	3.17	1.15
Total score	31.86	6.23	28.21	7.34

Table 2
Body Shame

Variables	Korean (n=198)		American (n=192)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>NConWrong</i>	3.39	1.040	2.88	1.29
<i>AshamedNB</i>	3.31	1.03	3.06	1.32
<i>BadNLookG</i>	2.83	1.06	2.50	1.32
<i>AshamW</i>	3.27	1.13	2.75	1.48
<i>NConOK</i>	3.70	.94	2.59	1.18
<i>NWorryEx</i>	3.81	.92	3.10	1.22
<i>NExQuestion</i>	3.01	.95	2.40	1.19
<i>AshamNSize</i>	3.18	1.00	3.09	1.32
Total score	26.54	4.89	22.40	7.08

Table 3
Physical activity level

Variables	Korean (n=198)		American (n=192)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Transportation days</i>	4.56	2.31	4.13	2.68
<i>Transportation time</i>	118.83	93.60	42.28	59.48
<i>Total Recreation MET</i>	996.94	1717.29	1987.07	3162.91
<i>Vig</i>	407.87	969.58	1005.93	1921.94
<i>Mod</i>	272.48	560.39	423.53	1796.76

<i>Walk</i>	316.58	606.80	557.60	1147.81
<i>Sitting time (Weekday)</i>	6.08	3.30	7.26	5.09
<i>Sitting time (Weekend)</i>	12.92	10.99	6.77	3.85

Table 4
Correlations

	Body Dissatisfaction (America)								
	1	2	3	4	5	6	7	8	9
1. StomachBig	1.0								
2.ThighsLarge	.592**	1.0							
3.Stomachright	.639**	.372**	1.0						
4.SatisfiedBS	.587**	.417**	.608**	1.0					
5.LikeButtocks	.276**	.158*	.252**	.440**	1.0				
6.HipsBig	.268**	.423**	.213**	.327**	.093	1.0			
7.Thighsright	.385**	.620**	.424**	.490**	.271**	.457**	1.0		
8.ButtocksLarge	.160*	.276**	.113	.219**	.214**	.482**	.261**	1.0	
9.HipsRight	.410**	.385**	.446**	.532**	.399**	.587**	.587**	.353**	1.0

Table 5
Correlations

	Body Dissatisfaction (Korea)								
	1	2	3	4	5	6	7	8	9
1. StomachBig	1.0								
2.ThighsLarge	.486**	1.0							
3.Stomachright	.655**	.384**	1.0						
4.SatisfiedBS	.423**	.588**	.377**	1.0					
5.LikeButtocks	.241**	.429**	.120	.591**	1.0				
6.HipsBig	.192**	.460**	.083	.315**	.312**	1.0			
7.Thighsright	.325**	.634**	.303**	.524**	.390**	.339**	1.0		
8.ButtocksLarge	.290**	.480**	.161*	.411**	.379**	.644**	.482**	1.0	
9.HipsRight	.267**	.507**	.242**	.488**	.555**	.477**	.572**	.503**	1.0

Table 6
Correlations

	Body Shame (America)							
	1	2	3	4	5	6	7	8
1.NConWrong	1.0							
2.AshamedNB	.441**	1.0						
3.BadNLookG	.430**	.556**	1.0					
4.AshamW	.439**	.330**	.266**	1.0				
5.NConOK	.385**	.329*	.453**	.293**	1.0			
6.NWorryEx	.345**	.213**	.250**	.228**	.427**	1.0		
7.NExQuestion	.376**	.316**	.561**	.437**	.422**	.361**	1.0	
8.AshamNSize	.412**	.466**	.430**	.546**	.374**	.298**	.567**	1.0

Table 7
Correlations

	Body Shame (Korea)							
	1	2	3	4	5	6	7	8
1.NConWrong	1.0							
2.AshamedNB	.508**	1.0						
3.BadNLookG	.373**	.590**	1.0					
4.AshamW	.350**	.427**	.213**	1.0				
5.NConOK	.412**	.367*	.389**	.254**	1.0			
6.NWorryEx	.261**	.229**	.164*	.097	.468**	1.0		
7.NExQuestion	.104	.007	.062	-.012	-.008	.129	1.0	
8.AshamNSize	.340**	.477**	.236**	.417**	.313**	.119	.199**	1.0

Table 8
Multiple Regression Analyses

DV	IV	Korea (n=198)			America (n=198)		
		β	<i>t</i>	<i>p</i>	β	<i>t</i>	<i>p</i>
BMI	<i>Body Dissatisfaction</i>	.456	6.638	.00*	.446	6.086	.00*
	<i>Body Shame</i>	-.041	-.597	.551	.084	1.148	.253

Note. R squares = .243 (toward American) and .196 (toward Korean).