

THE INFLUENCE OF BODY IMAGE  
PERCEPTION ON WEIGHT MANAGEMENT  
PRACTICES, PHYSICAL ACTIVITY LEVELS  
AND FOOD CHOICE BEHAVIORS AMONG  
THAI ADOLESCENTS

By

PITIPA CHONGWATPOL

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Oklahoma State University  
Stillwater, Oklahoma  
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Dissertation Approved:

Dr. Gail E. Gates

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Dissertation Adviser  
Dr. Nancy Betts

---

Dr. Barbara J. Stoecker

---

Dr. Glade L. Topham

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Name: PITIPA CHONGWATPOL

Date of Degree: JULY, 2015

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Abstract: Body dissatisfaction has not been directly observed in Thai adolescents and little information about weight management practices among Thais is available. This research included 2,082 male and female adolescent participants and measured 2 aspects of body dissatisfaction: adiposity (for males and females) and muscularity (for males) dissatisfaction. Four manuscripts were prepared from the data obtained. First, adiposity dissatisfaction, physical activity, food choices, and weight management practices of males and females who attended single- and mixed gender schools were compared. The second study categorized both male and female participants into 3 groups by adiposity dissatisfaction (no dissatisfaction, wanted thinner or bigger figures), and compared physical activity, food choices, and weight management practices. The third manuscript classified male participants into 3 groups by their muscularity dissatisfaction (no dissatisfaction, wanted to increase or decrease muscularity) and compared physical activity, food choices, and weight management practices. Lastly, predictors of body dissatisfaction and number of weight management practices were evaluated. Over 80% of the participants reported dissatisfaction with their current body. Females and males had similar levels of body dissatisfaction, but a majority of females wanted to be thinner, while males wanted to be either smaller or bigger. Gender and school environment impacted food choices, physical activity, and number of weight management practices used. Even though some male participants did not report muscularity dissatisfaction, most tried to change their weight, body fat, and muscle. The participants who wanted to increase muscularity also tried to lose body weight and fat. Overall, food choices and physical activity of the participants with body dissatisfaction did not differ from the participants who did not report body dissatisfaction, but different weight management practices were used to reach their desired bodies. The most frequently reported weight management practices were exercise and increased fruit and vegetable consumption. Few participants reported engaging in unhealthy weight management practices. Among Thai adolescents, risk factors of body dissatisfaction were gender, fathers' education, household income, BMI, and comments from primary caregivers. Use of more weight management practices was predicted by body dissatisfaction, gender, mothers' education, BMI, food choices, physical activity and sociocultural factors.

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## CHAPTER I

### INTRODUCTION

In the past, women in East Asian societies such as China, Korea, and Thailand were not focused on body dissatisfaction, overweight concerns, and eating disorders problems (1). This might have been due to the nature of the agricultural countries, which were labor-intensive societies. Additionally, East Asian countries were more associated with poverty, poor health, malnutrition, and thinness (2) until recent years when Westernization started to become part of the societies.

In Western countries, media are consistently representing underweight women as an ideal female figure as well as promoting interest in weight loss and slimming techniques (3). These create a pressure on women to be thin. The internet and mass media have spread Western preference for underweight figures worldwide (3).

A large body of evidence has shown that body dissatisfaction is common among females all over the world (4). Asian countries reported higher body dissatisfaction than

Western countries (1, 5). While girls want to lose weight and want to be skinnier, boys also have body image dissatisfaction because they want to be bigger and more muscular. Sociocultural factors such as male models, cultural norms, peer teasing, mass media, and aspects of gender role also influence pressure on males to be muscular (6-9). However, body image dissatisfaction has not been directly observed in Thai adolescents. Also, a study on body image dissatisfaction focusing on muscularity on boys in Asian countries is lacking.

### **Objectives**

1. To assess current body image perception of Thai adolescents aged between 16 and 18 years old.
2. To document weight management practices used by Thai adolescents in the past 12 months.
3. To identify food choice behaviors and physical activity levels of Thai adolescents in the past 7 days.
4. To assess the role of sociocultural factors on body image perception of Thai adolescents.
5. To compare influences of single-gender to mixed-gender schools on body image perception, weight management practices, food choice behaviors and physical activity levels.
6. To compare weight management practices, food choice behaviors and physical activity levels of adolescents with different levels of body dissatisfaction.

## **Significance of the Study**

The literature has revealed few, if any, studies that have assessed weight management practices among Thais. Physical activity and dietary patterns of Thais have been determined in the National survey, which included a broad range of participants (age >15 years) (10, 11). Additionally, the Global Physical Activity Questionnaire (GPAQ) (12) was used to determine physical activity levels in the National survey, which might not be a suitable tool to assess physical activity in adolescents, because there are other assessment tools that can better capture adolescents' physical activity such as The Physical Activity Questionnaire for Adolescents (PAQ-A) (13).

Body image dissatisfaction has not been directly observed in Thai adolescents. However, body misconception (overestimation of weight) has been observed among adult Thai females (5). This can lead to unhealthy weight loss and/or muscle building practices. Unhealthy weight management practices are associated with an increased risk of developing eating disorders (14, 15) as well as gaining weight (16). Body misconception, either under- or overestimation of weight, can be a barrier to healthy weight loss and/or muscle building practices.

The results from this study can be used as fundamental information to develop programs that promote healthy eating, physical activity, and healthy weight loss. Additionally, this study will help identify the factors associated with body image dissatisfaction among Thai students and help seek baseline perspectives in order to develop prevention or treatment programs among Thai students.



## CHAPTER II

### LITERATURE REVIEW

#### **Dietary Patterns**

Over the past three decades, Thailand has undergone a rapid change from an agricultural to an industrial society (17), which has caused Thai people to have more urbanized and Westernized lifestyles. Urbanization and Westernization have several impacts on people's lifestyles in the Asia-Pacific region. For example, physical activity has declined and sugar and fat consumption have increased (18, 19). Thais used to do labor-intensive physical activity because of the nature of their agrarian lifestyle, but lifestyles have changed to be more sedentary since the transition from an agricultural to an industrial society (17). These changes have been linked to the prevalence of obesity in Thailand, which has drastically increased over the past 20 years, from 11.7% in 1991 to 34.6% in 2009 among Thai adults (20, 21).

Traditionally, Thai cuisine consisted of rice (cereal), fish, legumes, herbs, vegetables, and fruits, and stewing, grilling, and baking were the common procedures for preparing meals (17). Presently, economic growth has influenced people’s dietary patterns by increasing consumption of processed/ prepared/ ready-to-eat food that requires less time and skill to prepare. This has increased fat and sugar consumption as well as decreased fruit and vegetable consumption (17). As shown in Table 1.1, the consumption of fat has tripled since 1960 to 2009, which aligns with the increase in obesity. Additionally, Thais consumed fewer fruits and vegetables in the past 5 years: the number of Thai adults who consumed enough fruits and vegetables each day decreased by 4.7% from 2004 to 2009. In 2009, only 20% of adult males and 24% of females met the recommendations for fruit and vegetable consumption, which is considered very low. Korea and Japan have experienced similar situations where the consumption of animal products has drastically increased, while grain consumption has decreased (22).

**Table 2. 1** Trends in macronutrient intakes as percentage of total energy intake in Thailand

	Year					
	1960	1975	1986	1995	2003	2009
<b>Protein (%)</b>	10.8	11.5	11.5	13.2	13.9	15.7
<b>Fat (%)</b>	8.9	13.1	21.8	22.2	23.9	28.7
<b>Carbohydrate (%)</b>	78.9	71	66.7	64.3	62.1	55.6

Data are from National Nutrition Surveys (1960, 1975, 1986, 1995, and 2003) (10, 11, 23-25), and The Fourth National Health Examination Survey (2009) (21)

## **Physical Activity**

Physical activity of university students during their leisure time in Thailand is very low compared to 23 other countries. In 2001, only 21% of male and 2% of female university students met the recommendation of physical activity (>6 times in the past 2 weeks) (26). Interestingly, less than 20% of Thai university students were aware that physical activity was associated with the prevention of heart disease (26). This has raised a concern that a large group of the highly educated population lacks basic health information. The Thai National Health Examination Survey reported 77.5% of Thais aged 15 years and above had enough physical activity in 2004 by having moderate-physical activity for at least 30 minutes per day, and this increased to 81.5% in 2009 (21, 27). These reports determined physical activity using the GPAQ version 2, which includes activity at work, travel to and from places, and recreational activity. The intensity, performance time, and frequency of each activity are also included in the questionnaire (12). Activity at work accounted for more than 60% of Thai adults' physical activity. The definition of physical activity in the questionnaire and also the sampling distribution might overestimate the results, because Thailand has a huge disparity in activity levels among the overall population. Thailand consists of segments of society from an extremely urbanized to a vigorously labor-intensive agrarian society. This report contrasts with Kosulwat's statement that "...indicates social changes of the Thai population...A shift in the physical activity pattern from labour-intensive to more sedentary" (17).

## **Body Image Perceptions among Females**

Prevalence of body image dissatisfaction has increased among Asian countries, and a major influencer of body image perception among Asian people is from Western cultures. A study conducted among 400 Thai adolescents aged between 16-19 years in Bangkok, showed that mass media such as magazines, TV programs, and movies are the top influence on body image perceptions among Thai adolescents, which is similar to Western countries (28). Interestingly, mass media from Western countries that is available in Thailand such as translated magazines (*Elle*, *Cleo*, *Cosmopolitan*, *Seventeen*, and *Marie Claire*) and TV programs (*America's Next Top Model*) are getting a great deal of attention from Thai adolescents (28). A similar observation was found in an exploratory study by Sharps et al. (3) that Western cultures have invaded Thai's body image preference. Thai female participants indicated a desire to have a super skinny body and many of them also stated that they want to look like U.S. singers and actresses. These can partly explain why Westernization impacts body dissatisfaction of people in non-Western cultures.

A large body of evidence has shown that body dissatisfaction, which appears to occur in early childhood, is common among females all over the world (4). Body dissatisfaction is associated with many negative factors such as decreased self-esteem, reduced social effectiveness, and eating disorders (1). The figure rating scale (FRS) (29) is a popular tool that is used to estimate body dissatisfaction by asking participants to choose a figure that they think represents their body and choose another figure that represents their ideal body shape. If the figures do not match, this represents body

dissatisfaction. Participants in Asian countries reported higher body dissatisfaction than Western countries (1, 5). In addition to preference for a thin body, participants also commonly held an incorrect perception of their bodies.

Normal-weight Asian participants thought they were overweight more often than normal-weight participants in Western and Mediterranean regions (5). The studies by Wardle et al (5) and Pon et al (30) asked about the body weight perception. Wardle et al (5) observed that 31% of Thai male and 55% of female university students perceived themselves as overweight, even though most of their BMIs fell in the normal category. Similarly, Pon et al (30) found that 38% of Malaysian adolescents aged between 13-15 years old had incorrect perceptions of their current body shape, and 50% of normal weight participants considered themselves overweight. Among Hong Kong adults, 71.2% of underweight participants did not desire a bigger body, and 75.5% of those in the normal weight group wanted a slimmer body (31).

### **Body Image Perceptions among Males**

Most research on body image dissatisfaction has focused on females; however research has clearly shown that males are also dissatisfied with their bodies (32-34). . While being overweight is associated with body image dissatisfaction among women, such a relationship has not been observed among overweight men (35). Concerns in males are different from females. Males want to increase their size, specifically muscularity, whereas females want to lose weight and want skinnier bodies (32-34). The body image concerns among men relate to two factors: (1) increased muscularity and (2) reduced body fat. Additionally, weight regulation in men appears to be either to lose or

gain weight, which reflect the desire to increase muscle mass or reduce body fat (36). Additionally, body image dissatisfaction in males has been shown to develop as early as preadolescence (37, 38). A trend of increasing body dissatisfaction as males increase in age was also observed by Folk et al. (39). The researchers found that the number of boys in grade six who were dissatisfied with their current weight was greater than grade three (39).

Schur and colleagues observed that among 6<sup>th</sup> grade participants in the San Francisco Bay Area suburban community, 48.3% of boys wanted to lose weight and 37.9% wanted to gain weight (40). Similarly, Furnham and Calnan observed that 21.5% of male participants aged between 16 and 18 years wanted to lose weight and 36.3% wanted to gain weight (41). A muscular male body ideal occurs at 6 to 7 years of age. The preference increases with age and reaches a peak at early adolescence (32). Similar results were observed by Parkinson et al. (42) in a large group of participants. Grade 7 and 8 boys preferred a leaner body and boys in grade 4 and 5 preferred a larger body compared to their perceived current body shape (42). These observations showed that boys not only become more aware of their bodies but also desire for the sociocultural ideal for males that is muscular and toned (42). Consistent observations were found among adult men when the body dissatisfaction was separated into wanting to lose and gain weight. Interestingly, adult men across cultural groups in the west have a similar goal of increasing their muscle. Adult male participants from France, Austria, and America preferred an average of 28 lbs. more muscle than their current body figure (43).

McCabe and Ricciardelli (44) mentioned an interesting point that the low level of body dissatisfaction observed among boys might possibly be because the average level of dissatisfaction was calculated based on which boys preferred either a smaller or bigger body, whereas most girls were more likely to prefer a smaller figure. McCabe and Ricciardelli suggested that among male participants, respondents who want smaller or bigger bodies should be evaluated differently (44). Additionally, the definitions that were used in the study are also important. For example, when a participant responds that he does not want to lose weight, he might mean he wants to become leaner by losing body fat but increasing muscle. However, the research about body dissatisfaction among male is limited, especially in Asian countries.

### **Factors Associated with Body Dissatisfaction**

Researchers suggest that there are multiple factors associated with the development of body dissatisfaction. The factors include physical characteristics (i.e. larger body size), cultural/ethnic beauty norms, social environments (i.e. peer and parental environments), and psychological factors (i.e. low self-esteem, depression, and belief about the importance of thinness) (45, 46). Figure 1.1 demonstrates possible important factors that influence body image dissatisfaction.

Peers and parents are contributing factors to body dissatisfaction. Peer pressure is a strong contributing factor to body dissatisfaction. Being surrounded by peers who value slimness, possess dieting behaviors, discuss appearance, and tease about weight and shape is associated with increasing body dissatisfaction (47-49). Peer pressure differs by gender; girls reported higher perceived feedback from both male and female best friends

on their body image than boys (50). A study on Australian adolescents observed that more participants in mixed gender schools reported dissatisfaction with their appearance than participants in single gender schools, but the differences did not reach statistically significant levels (51). Girls also believed that being thin would increase their ability to be liked by their peers (52).

It is not only peers that impact body dissatisfaction; parents are an important factor that drives body image dissatisfaction as well. Parents are influential models and sources of information for their children. A study found that among participants aged 8-13 years, parents are the main source of dieting information. Body dissatisfaction among girls was correlated with their perception of their mother's body dissatisfaction, but this was not observed in boys (53). Parents also can influence children's beliefs about weight, shape and eating behaviors through verbal comments such as which food is allowed and not allowed, which food is good for them and which food is bad for them (53).

Weight and shape teasing is not only correlated with increased body dissatisfaction, but is also associated with low self-esteem and depression (54). Low self-esteem and depression strongly correlate with the development of body dissatisfaction (55). However, McCabe and Ricciardelli observed that adolescent boys had higher self-esteem than adolescent girls (50).

Exposure to media can create idealized media figures. Media images are potential contributors to developing body dissatisfaction in females (56) and also males (57). Additionally, individuals who have low self-esteem and are depressed are more likely to engage in body comparison with idealized media figures (56). Conversely, body



comparison contributes to low self-esteem and depressive mood as well (58), making these factors reciprocal.

### **Weight Loss Behaviors**

In a previous study among American college students, exercise and increased fruit and vegetable consumption were the most frequent dieting behaviors used by the participants (59). Unhealthy weight loss practices that have been observed in Western societies include skipping meals, fasting, inducing vomiting, and taking pills (i.e. diuretics, laxatives, diet pills, and appetite suppressants) (59); similar unhealthy weight-loss practices such as using medications, smoking, and inducing vomiting were also observed among Korean participants (60). Interestingly, a study among college students in Spain observed that the eating habits, including fruit and vegetable consumption, were similar between wanting-to-lose-weight and not-wanting-to-lose-weight groups, and 92.1% of females in the wanting-to-lose-weight group had a normal BMI (61).

Eating disorders used to be limited to Western societies; however, evidence has shown that the prevalence of eating disorders has been increasing in non-Western societies as well (62, 63). An increase of eating disorders in non-Western countries is believed to be associated with modernization, urbanization, and Westernization (64). Even so, eating disorders are relatively rare among Thai populations (65). This might be due to individuals denying or hiding their illness from others, not because the disorders rarely happen in Thailand.

The Eating Disorder Inventory (EDI) -2 and/or the Eating Attitudes Test (EAT-26) are popular methods that are used for screening individuals who are at risk of developing eating disorders. A study by Jennings et al. (65) observed that Thai women had the highest EAT and EDI scores compared to Caucasian Australian and Asian Australian women, which means that Thais were more susceptible to developing eating disorders than those other two races. In addition, higher BMI was positively correlated with higher EAT and EDI scores only in Thai participants (65). In another study, EDI scores were not statistically different between Korean, Chinese, and American college women (1). These results suggested that the susceptibility to developing disordered eating also differs between the countries that share some similar cultures. Interestingly, a systematic review observed that eating disorders are more prominent in non-Western cultures than Western cultures (66).

There is a connection between healthy weight management and knowledge. Many researchers believe that the correct information about health, nutrition, and weight management should be introduced as early as adolescence (28, 30, 67). A study of Malaysian adolescents observed that overweight subjects had a lower level of weight management knowledge, assessed by using the Weight Management Knowledge Inventory (WMKI), than normal weight subjects (30). In another study, American students had misconceptions about weight management knowledge such as “The best method for weight management is to control energy intake” rather than balancing between energy intake and expenditure and “It is important to limit carbohydrate consumption.” (68). In American adolescents, knowledge was negatively correlated with unhealthy weight loss methods. Non-diet pill users and non-purgers had better weight

management knowledge as well as higher self-esteem (69). However, adolescents tended to not seek information on the proper weight management practices from professionals, as seen in the study by Lee and colleagues (67). Sixty-nine percent of all Korean student participants and more than half of the overweight students were not interested in a school-based weight management program (67). As observed by Haase et al. (26), less than 20% of Thai university students were aware that physical activity is associated with heart disease. This raises a concern that a large group of the high-educated population, such as the university students, lack basic health information.

### **Muscle Building Behaviors**

Body dissatisfaction among males is mostly a desire to gain a more muscular body. Common practices to achieve an ideal muscular body include exercise (working-out and lifting weights) and nutritional strategies (diet and supplements) (70, 71). Lifting weights or resistance exercise is the most effective practice for building muscle (72). However, nutritional strategies have been used along with exercise in order to increase muscle. Nutrition strategies include increased protein intake, ergogenic supplements, creatine supplementation, and taking beta-hydroxymethylbutyric acid (b-HMB) (70).

YRBSS data showed that in U.S. male high school students, trying to lose weight was associated with more vigorous physical activities, exercise, and eating  $\geq 5$  servings of fruits and vegetables per day (73). In a study by Smolak and colleagues (74), middle-schools boys ( $n = 383$ ) from a rural area in Ohio were asked how frequently in the past year they had used five muscle-building techniques (74). The techniques included exercise, weight lifting, eating more, taking vitamins or supplements, and using steroids

or other drugs. Lifting weights and exercise were the most common strategies used by the respondents to increase their muscle. Approximately 25% often or always used exercise and 24% lifted weights. Surprisingly, among the 383 respondents with mean age of 13 years (range from 11-16), 56 boys reported trying steroids or other drugs to build their muscle at least once. Moreover, 16 respondents reported that they often used this muscle building technique. Media, peers, and parents were shown to be independently associated with being involved in these five muscle-building techniques. Results showed that participants who were involved in muscle-building techniques were more likely to be influenced by media, had peers that were interested in muscularity, and had parents who teased/commented on their size (74).

Prevalence of muscle dysmorphia (MD) has been associated with the desire to become more muscular (75). MD, previously called reverse anorexia, shares some similar behavioral and cognitive characteristics with anorexia nervosa including body image disturbance (wanting, in this case, bigger and more muscular figure), excessive exercise, extreme or rigid diet plan, supplement and drug use, and feeling guilty if they are not able to follow an exercise or diet plan.

### **Summary**

Consumption of fruits and vegetables by Thais is low and has declined over time. Data about food choice behaviors of Thais are only available in the National survey. The most current National survey, published in 2009, reported data for all adult participants ( $\geq 15$  years) so recent information on the food choices of adolescents is not available. The most current data on Thais' physical activity levels are also available in the National

Survey. The physical activity levels observed in the previous literature differed from what was reported in the National survey. One reason is that different tools were used to determine physical activity levels. The National survey used GPAQ version 2, which might not be suitable to capture physical activity levels in adolescents.

A large body of literature reported many males and females may be dissatisfied with their current body; however, the level of body dissatisfaction might differ across cultures. Previous research observed higher levels of body dissatisfaction and eating disorders in non-Western cultures than Western cultures. One study observed that Thai adult women were more susceptible to disordered eating than Caucasian Australian and Asian Australian women. However, the information about body dissatisfaction in Asian countries is lacking, especially for adolescents and males. Body dissatisfaction, which may occur as early as preadolescence, may lead to the use of weight management behaviors. Unhealthy weight management practices can lead to the development of eating disorders. Weight management behaviors have not been observed in Thailand.

A growing body of evidence shows that sociocultural factors, including parents, peers, and media, are important predictors of body dissatisfaction. The school environment, i.e. single or mixed gender schools, may also impact levels of body dissatisfaction. However, there is no available research on the influence of sociocultural factors on body dissatisfaction of Thais, and the studies among Asian participants are limited.

The current study attempted to fill research gaps by using the appropriate tools to gather current information about body dissatisfaction, weight management behaviors,

food choices, physical activity, and the influence of sociocultural factors on body dissatisfaction of Thai adolescents.

## CHAPTER III

### METHODOLOGY

#### **Participants**

The participants included 10<sup>th</sup> -12<sup>th</sup> grade students in Bangkok, Thailand. Thailand is a country located on the center of the Indochina peninsula of South Asia, with an area of approximately 513,000 km<sup>2</sup>. As of July 2014, the population in Thailand was estimated to be approximately 67 million people (76). Thailand consists of 76 provinces, and Bangkok is the capital city of Thailand. Bangkok is the most populous city and has a population of 5,673,560 according to the 2015 census, which accounted for 8.8% of the national population (77).

This study was approved by the Oklahoma State University Institutional Review Board. A questionnaire was distributed to five to eight classes of 10<sup>th</sup> -12<sup>th</sup> grade students from a total of nine schools in the Bangkok Metropolitan Region. The participating schools included single and mixed gender schools.

After getting permission from the school principals, the primary investigator (PI) visited the schools and distributed a questionnaire in classes. The school principals chose the participating classes based on the schedule availability. Written informed consent was waived because the documentation of consent would be the only record linking the subject with the research. However, the parents of the students were informed about this study prior to questionnaire distribution and students were free to reject participation in this study. The questionnaire was distributed in classes and took less than 30 minutes to complete. Once the questionnaire was completed, the students returned the questionnaire to the PI in the same class period. Two thousand, eight hundred thirty-seven questionnaires were returned, but 718 were excluded due to incomplete responses.

### **Measures**

A questionnaire used in this study included questions about demographic information, age, school grade, school program, parental education, household income, height, current and ideal weight, weight perception, body dissatisfaction, food choice behaviors, physical activity, and weight management practices. The questionnaire was translated into Thai by the primary investigator. Five Thai graduate students and 2 Thai assistant professors proofread the translated-version for clarification. Some sentences or wordings on the questionnaire were rephrased to eliminate any confusion that may occur.

Weight perception of the participants was obtained by asking the participants “How do you describe your weight?” The participants reported with the following responses: very underweight, slightly underweight, about the right weight, slightly overweight, or very overweight. The participants’ intentions for their body weight, body



fat, and muscle size were acquired by asking, “Which of the following are you trying to do about your weight/body fat/muscle?” The participants responded with one of the following answers: lose, gain, stay the same, or not trying to do anything.

Body Mass Index (BMI) was calculated from self-reported height and weight including current (from reported current weight) and ideal (from reported ideal weight) BMIs. The cut-offs used in the current study were calculated using an average of the WHO growth reference for each month in the year of age (15, 16, 17, or 18 years) (78). Participants were classified into the following categories using Z score: underweight if  $< -2$  SD; healthy weight if  $\geq -2$  SD but  $\leq +1$  SD; overweight if  $> +1$  SD but  $\leq +2$  SD; or obese if  $> +2$ SD (78).

Body image dissatisfaction was assessed using Stunkard’s figure rating scale (FRS) (79) for thinness dissatisfaction in males and females, and nine contour drawings of male-specific body image by Winitch for muscularity dissatisfaction in males (80). The FRS has been widely used for a self-report measure of body image and has well-known psychometric properties (79). The scale consists of nine male and female figures numbered 1-9, varying in size from very thin to very large, or very muscular. Participants were asked the following questions: 1) which figure looks most like your current body, 2) which figure looks most like your ideal body. The body dissatisfaction was represented by a discrepancy score (current – ideal).

Food choice behaviors were determined with a modified version of Youth Risk Behavior Surveillance (YRBSS) questionnaire (81). The food examples were changed to match the common foods consumed by Thais. Questions about different types of

vegetable consumption were combined into a single question including all types of vegetable consumption. This 9-item questionnaire asked the participants to recall their diet in the past week. The questions assessed how often the participants consumed fruits, vegetables, breakfast, snacks, and main meals, as well as soda and other sweet drinks. All items were scored to represent the frequency of consumption per day. Then the total scores from 9 items were calculated (possible scores ranged from 0-24 points). The higher scores represent healthier food choices whereas lower scores indicate less healthy food choices.

Physical activity level was measured using Physical Activity Questionnaire for Adolescents (PAQ-A)(13). Modifications were made on the activities listed in question one of the PAQ-A to match the activities commonly practiced by Thais. This questionnaire consists of 9 items, each scored on a 5-point scale. Item 9 is not used to calculate the score, but is used to identify participants who had unusual activity in the last 7-day period. Participants were asked to recall their activity during the previous week. The summary physical activity score is an average of 8 items. A score of 1 indicates low physical activity and 5 indicates high physical activity. PAQ-A was designed for students in grades 9-12, with good internal consistency (Cronbach alpha = 0.88) (13).

Weight management practices were assessed using a modified version of National Health and Nutrition Examination Survey (NHANES) (82). This scale asks about weight management practices used by the participants to lose weight/body fat or build/increase muscle. The scale consists of lists of activities/practices and spaces for participants to indicate other activities not listed. Participants were asked to check all activities that were practiced in the past 12 months, used to practice but not in the past 12 months, or never.

The scale also asked about the purpose of the activities practiced (lose weight/body fat or build/increase muscle). This scale was used to determine the frequency of weight management practices used by the participants and has good internal consistency (Cronbach alpha = 0.86).

The influence of sociocultural factors on body image dissatisfaction was determined using a modification of the Sociocultural Influences Questionnaire (83). The feedback from primary caregiver (13 items) and best friends (13 items), and the influence of media (10 items) to lose weight, gain weight, and increase muscle were included. Items are rated on a 5-point Likert scale from “never” to “always”, scoring from 1 to 5. Total scores of each category (primary caregiver, best friends, and media) were calculated. Higher scores indicate higher perceived pressure from those factors. The scales have high levels of internal consistency with adolescent boys and girls in grades 10 to 12, with Cronbach alpha > 0.84 (83).

### **Hypotheses**

1. Body image dissatisfaction will be similar between male and female participants.
2. The level of body image dissatisfaction will be different between single-gender schools and mixed gender schools.
3. Food choice behaviors and physical activity levels will be different between single-gender schools and mixed gender schools.
4. Adolescents with different levels of body image dissatisfaction will report different food choice behaviors and physical activity levels.

5. Participants with different levels of body dissatisfaction will use different weight management practices.
6. Male participants will report different weight management practices than female participants.
7. Sociocultural factors will be related to body image perception of Thai adolescents.
8. Body dissatisfaction will be related to food choice behaviors, physical activity levels, and number of weight management practices used.

### **Statistical Analysis**

Data were analyzed using the SPSS statistical software package version 21.0 (SPSS Inc., Chicago, IL, USA). Chi-square was used to analyze categorical data. Univariate analysis was conducted on dependent variables with genders (male and female) and school types (single or mixed gender) as fixed factors. Levene's test was used to assess equality of variances. If the Levene's test is significant, the variables were analyzed using Kruskal-Wallis test with Games-Howell as a post-hoc test. If the Levene's test was not significant, the variables were then analyzed using one-way ANOVA with Tukey's test as a post-hoc analysis.

Correlations between measured variables were explored. Multiple regression modeling was performed to evaluate the predictive variables of the participant's body dissatisfaction and number of weight management practices used by the participants. The independent variables were all entered into the equation. The predictive variables included age, gender, food choices, physical activity, parental education, household income, and sociocultural factors. Significance was set at  $p < 0.05$ .

## REFERENCES

(For Chapters I – III)

1. Jung J, Forbes GB. Body dissatisfaction and disordered eating among college women in China, South Korea, and the United States: Contrasting predictions from sociocultural and feminist theories. *Psychol Women Q.* 2007;31(4):381-93.
2. Lee S. Fat, fatigue and the feminine: the changing cultural experience of women in Hong Kong. *Cult Med Psychiatry.* 1999;23(1):51-73.
3. Sharps MJ, Price-Sharps JL, Hanson J. Body image preference in the United States and rural Thailand: An exploratory study. *J Psychol.* 2001;135(5):518-26.
4. Adams K, Sargent RG, Thompson SH, Richter D, S C, T R. A study of body weight concerns and weight control practices of 4th and 7th grade adolescents. *Ethn Health.* 2000;5(1):79-94.
5. Wardle J, Haase A, Steptoe A. Body image and weight control in young adults: international comparisons in university students from 22 countries. *Int J Obes (Lond).* 2006;30(4):644-51.

6. Leit RA, Pope HG, Gray JJ. Cultural expectations of muscularity in men: The evolution of Playgirl centerfolds. *Int J Eat Disord.* 2001;29(1):90-3.
7. Smolak L, Stein JA. The relationship of drive for muscularity to sociocultural factors, self-esteem, physical attributes gender role, and social comparison in middle school boys. *Body Image.* 2006;3(2):121-9.
8. Knauss C, Paxton SJ, Alsaker FD. Relationships amongst body dissatisfaction, internalisation of the media body ideal and perceived pressure from media in adolescent girls and boys. *Body Image.* 2007;4(4):353-60.
9. Grogan S, Richards H. *Body Image: Focus Groups with Boys and Men.* *Men Masc.* 2002;4(3):219-32.
10. Ministry of Public Health. *The Fourth National Food and Nutrition Survey in Thailand.* Bangkok: Nutrition Division, Ministry of Public Health, 1995.
11. Ministry of Public Health. *The Fifth National Food and Nutrition Survey in Thailand.* Bangkok: Nutrition Division, Ministry of Public Health, 2003.
12. World Health Organization. *Global Physical Activity Questionnaire* [cited 2015 January]. Available from:  
[http://www.who.int/chp/steps/resources/GPAQ\\_Analysis\\_Guide.pdf](http://www.who.int/chp/steps/resources/GPAQ_Analysis_Guide.pdf).
13. Janz KF, Lutuchy EM, Wenthe P, Levy SM. Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Med Sci Sports Exerc.* 2008;40(4):767-72.
14. White S, Reynolds-Malear JB, Cordero E. Disordered eating and the use of unhealthy weight control methods in college students: 1995, 2002, and 2008. *Eat Disord.* 2011;19(4):323-34.

15. Grigg M, Bowman J, Redman S. Disordered eating and unhealthy weight reduction practices among adolescent females. *Prev Med.* 1996;25(6):748-56.
16. Neumark-Sztainer D, Wall M, Story M, Standish AR. Dieting and unhealthy weight control behaviors during adolescence: associations with 10-year changes in body mass index. *J Adolesc Health.* 2012;50(1):80-6.
17. Kosulwat V. The nutrition and health transition in Thailand. *Public Health Nutr.* 2002;5(1a):183-9.
18. Powles J. Changing lifestyles and health. *Asia Pacific J Clin Nutr.* 1992;1(2):113-26.
19. Vorster HH, Bourne LT, Venter CS, Oosthuizen W. Contribution of nutrition to the health transition in developing countries: a framework for research and intervention. *Nutr Rev.* 1999;57(11):341-9.
20. Chuprapawan C. Report of The First National Health Examination Survey in Thailand. Bangkok: Ministry of Public Health, 1992.
21. Akeplakorn V, Porapaktham Y, Taneepanichsakul S, Pakcharoen H, Satiennoppakao V, Thaikla K. Report of the Fourth National Health Examination Survey in Thailand. Nonthaburi: Ministry of Public Health, 2010.
22. Kim S, Moon S, Popkin BM. The nutrition transition in South Korea. *Am J Clin Nutr.* 2000;71(1):44-53.
23. Ministry of Public Health. The First National Food and Nutrition Survey in Thailand. Bangkok: Nutrition Division, Ministry of Public Health, 1960.
24. Ministry of Public Health. The Second National Food and Nutrition Survey in Thailand. Bangkok: Nutrition Division, Ministry of Public Health, 1975.

25. Ministry of Public Health. The Third National Food and Nutrition Survey in Thailand. Bangkok: Nutrition Division, Ministry of Public Health, 1986.
26. Haase A, Steptoe A, Sallis JF, Wardle J. Leisure-time physical activity in university students from 23 countries: associations with health beliefs, risk awareness, and national economic development. *Prev Med.* 2004;39(1):182-90.
27. Porapakkam Y, Boonyarattapan P. Report of The Third National Health Examination Survey in Thailand. Bangkok: Ministry of Public Health, 2006.
28. Thianthai C. Influential sources affecting Bangkok adolescent body image perceptions. *Int J Adolesc Med Health.* 2006;18(4):633-42.
29. Swami V, Salem N, Furnham A, Tovée MJ. Initial examination of the validity and reliability of the female photographic figure rating scale for body image assessment. *Pers Individ Dif.* 2008;44(8):1752-61.
30. Pon LW, Kandiah M, Mohd Nasir M. Body image perception, dietary practices and physical activity of overweight and normal weight Malaysian female adolescents. *Malays J Nutr.* 2004;10(2):131-47.
31. Cheung YTD, Lee AM, Ho SY, Li ETS, Lam TH, Fan SYS, et al. Who wants a slimmer body? The relationship between body weight status, education level and body shape dissatisfaction among young adults in Hong Kong. *BMC Public Health.* 2011;11(1):835.
32. Ricciardelli LA, McCabe MP. Self-esteem and negative affect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscles among adolescent boys and girls. *Sex Roles.* 2001;44(3-4):189-207.



33. Ricciardelli LA, McCabe MP. A biopsychosocial model of disordered eating and the pursuit of muscularity in adolescent boys. *Psychol Bull.* 2004;130(2):179-205.
34. Cafri G, Thompson JK, Ricciardelli L, McCabe M, Smolak L, Yesalis C. Pursuit of the muscular ideal: physical and psychological consequences and putative risk factors. *Clin Psychol Rev.* 2005;25(2):215-39.
35. Tiggemann M. Gender differences in the interrelationships between weight dissatisfaction, restraint, and self-esteem. *Sex Roles.* 1994;30(5-6):319-30.
36. Hildebrandt T, Langenbacher J, Schlundt DG. Muscularity concerns among men: development of attitudinal and perceptual measures. *Body Image.* 2004;1(2):169-81.
37. Sands R, Tricker J, Sherman C, Armatas C, Maschette W. Disordered eating patterns, body image, self-esteem, and physical activity in preadolescent school children. *Int J Eat Disord.* 1997;21(2):159-66.
38. Vander Wal JS, Thelen MH. Eating and body image concerns among obese and average-weight children. *Addict Behav.* 2000;25(5):775-8.
39. Folk L, Pedersen J, Cullari S. Body satisfaction and self-concept of third-and sixth-grade students. *Percept Mot Skills.* 1993;76(2):547-53.
40. Schur EA, Sanders M, Steiner H. Body dissatisfaction and dieting in young children. *Int J Eat Disord.* 2000;27(1):74-82.
41. Furnham A, Calnan A. Eating disturbance, self esteem, reasons for exercising and body weight dissatisfaction in adolescent males. *Eur Eat Disord Rev.* 1998;6(1):58-72.
42. Parkinson K, Tovee M, Cohen - Tové E. Body shape perceptions of preadolescent and young adolescent children. *Eur Eat Disord Rev.* 1998;6(2):126-35.

43. Pope HG, Gruber AJ, Mangweth B, Bureau B, Jouvent R, Hudson JI. Body image perception among men in three countries. *Am J Psychiatry*. 2000;157(8):1297-301.
44. McCabe MP, Ricciardelli LA. Body image dissatisfaction among males across the lifespan: A review of past literature. *J Psychosom Res*. 2004;56(6):675-85.
45. Paxton SJ, Eisenberg ME, Neumark-Sztainer D. Prospective predictors of body dissatisfaction in adolescent girls and boys: a five-year longitudinal study. *Dev Psychol*. 2006;42(5):888-99.
46. Paxton SJ, Norris M, Wertheim EH, Durkin SJ, Anderson J. Body dissatisfaction, dating, and importance of thinness to attractiveness in adolescent girls. *Sex Roles*. 2005;53(9-10):663-75.
47. Nichter M. *Fat talk: What girls and their parents say about dieting*: Harvard University Press; 2009.
48. Presnell K, Bearman SK, Stice E. Risk factors for body dissatisfaction in adolescent boys and girls: A prospective study. *Int J Eat Disord*. 2004;36(4):389-401.
49. Ferguson C, Muñoz M, Garza A, Galindo M. Concurrent and prospective analyses of peer, television and social media influences on body dissatisfaction, eating disorder symptoms and life satisfaction in adolescent girls. *J Youth Adolesc*. 2014;43(1):1-14.
50. McCabe M, Ricciardelli L. Parent, peer and media influences on body image and strategies to both increase and decrease body size among adolescent boys and girls. *Adolescence*. 2001;36(142):225-40.

51. Delfabbro PH, Winefield AH, Anderson S, Hammarström A, Winefield H. Body image and psychological well-being in adolescents: The relationship between gender and school type. *J Genet Psychol.* 2011;172(1):67-83.
52. Oliver KK, Thelen MH. Children's perceptions of peer influence on eating concerns. *Behav Ther.* 1997;27(1):25-39.
53. Lowes J, Tiggemann M. Body dissatisfaction, dieting awareness and the impact of parental influence in young children. *Br J Health Psychol.* 2003;8(2):135-47.
54. Eisenberg ME, Neumark-Sztainer D, Story M. Associations of weight-based teasing and emotional well-being among adolescents. *Arch Pediatr Adolesc Med.* 2003;157(8):733-8.
55. van den Berg P, Thompson JK, Obremski-Brandon K, Coovert M. The tripartite influence model of body image and eating disturbance: A covariance structure modeling investigation testing the mediational role of appearance comparison. *J Psychosom Res.* 2002;53(5):1007-20.
56. van den Berg P, Paxton SJ, Keery H, Wall M, Guo J, Neumark-Sztainer D. Body dissatisfaction and body comparison with media images in males and females. *Body Image.* 2007;4(3):257-68.
57. Leit RA, Gray JJ, Pope HG. The media's representation of the ideal male body: A cause for muscle dysmorphia? *Int J Eat Disord.* 2002;31(3):334-8.
58. Durkin SJ, Paxton SJ. Predictors of vulnerability to reduced body image satisfaction and psychological wellbeing in response to exposure to idealized female media images in adolescent girls. *J Psychosom Res.* 2002;53(5):995-1005.

59. Lee S-K, Keenan DP, Ryu HK. Identification of weight-control behaviors practiced by diverse groups of college students. *Nutr Res Pract.* 2007;1(3):218-23.
60. Kim O, Kim K. Body mass index, body shape satisfaction, and weight control behaviors among Korean girls. *Psychol Rep.* 2005;96(3):676-80.
61. Navia B, Ortega RM, Requejo AM, Mena MC, Perea JM, López-Sobaler AM. Influence of the desire to lose weight on food habits, and knowledge of the characteristics of a balanced diet, in a group of Madrid university students. *Eur J Clin Nutr.* 2003;57:S90-S3.
62. Lee S, Ng KL, Kwok K, Fung C. The changing profile of eating disorders at a tertiary psychiatric clinic in Hong Kong (1987–2007). *Int J Eat Disord.* 2010;43(4):307-14.
63. Jackson T, Chen H. Sociocultural experiences of bulimic and non-bulimic adolescents in a school-based Chinese sample. *J Abnorm Child Psychol.* 2010;38(1):69-76.
64. Nasser M. Eating disorders across cultures. *Psychiatry.* 2009;8(9):347-50.
65. Jennings PS, Forbes D, McDermott B, Hulse G, Juniper S. Eating disorder attitudes and psychopathology in Caucasian Australian, Asian Australian and Thai university students. *Aust N Z J Psychiatry.* 2006;40(2):143-.
66. Podar I, Allik J. A cross cultural comparison of the eating disorder inventory. *Int J Eat Disord.* 2009;42(4):346-55.
67. Lee G, Ha Y, Vann JJ, Choi E. Weight perception and dieting behavior among Korean adolescents. *J Sch Nurs.* 2009;25(6):427-35.

68. Davy SR, Benes BA, Driskell JA. Sex differences in dieting trends, eating habits, and nutrition beliefs of a group of midwestern college students. *J Am Diet Assoc.* 2006;106(10):1673-7.
69. Thombs DL, Mahoney CA, McLaughlin ML. Expectancies, self-esteem, knowledge, and adolescent weight reduction behavior. *J Nutr Educ.* 1998;30(2):107-13.
70. Tarnopolsky MA. Building muscle: nutrition to maximize bulk and strength adaptations to resistance exercise training. *Eur J Sport Sci.* 2008;8(2):67-76.
71. Murray SB, Rieger E, Hildebrandt T, Karlov L, Russell J, Boon E, et al. A comparison of eating, exercise, shape, and weight related symptomatology in males with muscle dysmorphia and anorexia nervosa. *Body Image.* 2012;9(2):193-200.
72. Tarnopolsky MA, Parise G, Yardley NJ, Ballantyne CS, Olatunji S, Phillips SM. Creatine-dextrose and protein-dextrose induce similar strength gains during training. *Med Sci Sports Exerc.* 2001;33(12):2044-52.
73. Lowry R, Galuska DA, Fulton JE, Wechsler H, Kann L. Weight management goals and practices among U.S. high school students: associations with physical activity, diet, and smoking. *J Adolesc Health.* 2002;31(2):133-44.
74. Smolak L, Murnen SK, Thompson JK. Sociocultural influences and muscle building in adolescent boys. *Psychol Men Masculin.* 2005;6(4):227-39.
75. Pope HG, Katz DL, Hudson JI. Anorexia nervosa and “reverse anorexia” among 108 male bodybuilders. *Compr Psychiatry.* 1993;34(6):406-9.
76. Central Intelligence Agency. Thailand 2015 [cited 2015 June 05]. Available from: <https://http://www.cia.gov/library/publications/the-world-factbook/geos/th.html>.

77. Royal Thai Government Gazette. Thailand population report by city, year 2014 2014 [cited 2015 June 5]. Available from:  
<http://www.ratchakitcha.soc.go.th/DATA/PDF/2557/E/041/18.PDF>.
78. Onis Md, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. Development of a WHO growth reference for school-aged children and adolescents. Bull World Health Org. 2007;85:660-7.
79. Stunkard AJ, Sorensen T, Schulsinger F. Use of the Danish Adoption Register for the study of obesity and thinness. Res Publ Assoc Res Nerv Ment Dis. 1983;60:115-20.
80. Lynch SM, Zellner DA. Figure preferences in two generations of men: The use of figure drawings illustrating differences in muscle mass. Sex Roles. 1999;40(9-10):833-43.
81. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance Survey 2013 [updated September 24, 2013; cited 2014 December 9]. Available from:  
[http://www.cdc.gov/healthyyouth/yrbs/questionnaire\\_rationale.htm](http://www.cdc.gov/healthyyouth/yrbs/questionnaire_rationale.htm).
82. Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey 2013 [updated February 3, 2014; cited 2014 December 9]. Available from: [http://www.cdc.gov/nchs/nhanes/nhanes\\_questionnaires.htm](http://www.cdc.gov/nchs/nhanes/nhanes_questionnaires.htm).
83. McCabe MP, Ricciardelli LA. The structure of the perceived sociocultural influences on body image and body change questionnaire. Int J Behav Med. 2001;8(1):19-41.

## CHAPTER V

### GENDER DIFFERENCES IN BODY IMAGE PERCEPTION, WEIGHT MANAGEMENT PRACTICES, AND FOOD CHOICES OF HIGH SCHOOL STUDENTS IN THE BANGKOK METROPOLITAN REGION

The following manuscript has been submitted for publication in *Public Health Nutrition*.

#### **Abstract**

**Objective:** The purpose of this study was to assess body image perceptions and weight management practices by gender and type of school among Thai adolescents.

**Design:** A questionnaire was used to obtain height, weight, body image perception using Stunkard's figure rating scale (FRS), food choices, physical activity, and weight management practices.

**Setting:** Nine single and mixed gender schools located in Bangkok Metropolitan Region, Thailand.

**Subjects:** 2,082 10<sup>th</sup> -12<sup>th</sup> students, ages 15-18 years.

**Results:** Only 18.1% of females and 20.6% of males did not indicate body dissatisfaction. More than 66% of females selected a thinner ideal figure than their current figure, while 15.9% wanted a bigger figure. Among males, 44.3% wanted a thinner figure, but 35.1% wanted a bigger figure. However, univariate analysis observed school type but not gender differences in the degree of body image dissatisfaction; students in single gender schools had more body dissatisfaction. Females reported using more weight management practices but less physical activity than males, while males reported healthier food choices. Participants in single gender schools had healthier food choices compared to mixed gender schools.

**Conclusion:** Females and males had similar levels of body dissatisfaction but a majority of females wanted to be thinner, while males wanted to be either smaller or bigger. These results support the contention that it may not be appropriate to calculate an average dissatisfaction score from FRS for males because they report a preference for both smaller and bigger figures; therefore, the average dissatisfaction score will result in underreporting of body dissatisfaction.

## **Introduction**

A large body of evidence has shown that body dissatisfaction is common among females all over the world<sup>(1-3)</sup>. Asian countries reported higher body dissatisfaction than Western countries<sup>(3,4)</sup>. The figure rating scale (FRS)<sup>(5)</sup> is a popular tool that is used to



estimate body dissatisfaction by asking participants to choose a figure that they think represents their body and choose another figure that represents their ideal body shape. If the figures do not match, this represents body dissatisfaction. Body dissatisfaction is associated with many negative factors such as decreased self-esteem, reduced social effectiveness, and eating disorders <sup>(4)</sup>.

Most research on body image dissatisfaction has focused on females; however research has clearly shown that males are also dissatisfied with their bodies <sup>(6-8)</sup>. Concerns in males are different from females. Many males want to increase their size, specifically muscularity, whereas females want to lose weight and want skinnier bodies <sup>(6-8)</sup>. Previous research observed significantly higher levels of body dissatisfaction in females than in males <sup>(9-11)</sup>. McCabe and Ricciardelli <sup>(12)</sup> mentioned an interesting point that the low level of body dissatisfaction observed among boys, might possibly be because boys preferred either a smaller body (observed by a positive FRS score) or a bigger body (observed by a negative FRS score), which makes the average scores close to zero. Whereas most girls are more likely to prefer a smaller figure, which creates positive average scores. McCabe and Ricciardelli <sup>(12)</sup> suggested that among male participants, respondents who want smaller or bigger bodies should be evaluated differently.

Peer pressure is a strong contributing factor to body dissatisfaction. Being surrounded by peers who value slimness, practice dieting behaviors, discuss appearance, and tease about weight and shape is associated with increasing body dissatisfaction <sup>(13-15)</sup>. Peer pressure differs by gender; girls reported higher perceived feedback from both male and female best friends on their body image than boys <sup>(16,17)</sup>. A study on Australian adolescents observed that more participants in mixed gender schools reported

dissatisfaction with their appearance than participants in single gender schools, but the differences did not reach statistically significant levels <sup>(1)</sup>. We hypothesized that Thai adolescences in different school environments (single or mixed gender schools) will have different levels of body dissatisfaction. Body image dissatisfaction also has not been directly observed in Thai adolescents or males. However, body misconception (overestimation of weight) has been observed among Thai adult females <sup>(3)</sup>. In addition, the literature has revealed few, if any, studies that have assessed weight management practices among Thais.

Physical activity and dietary patterns of Thais have been determined in the National Health Examination Survey in Thailand <sup>(18, 19)</sup>. However, the National Health Examination Survey in Thailand might not accurately represents physical activity levels of adolescents because it included a broad range of participants (age >15 years), and used the Global Physical Activity Questionnaire (GPAQ) <sup>(20)</sup> to determine physical activity levels. The GPAQ might not be a suitable tool, because other assessment tools can better capture adolescents' physical activity such as The Physical Activity Questionnaire for Adolescents (PAQ-A) <sup>(21)</sup>.

This study took McCabe and Ricciardelli's <sup>(12)</sup> suggestions to observe whether Thai male adolescents have similar levels of body dissatisfaction to female adolescents in single and mixed gender schools. Also, this study observed food choice behaviors, physical activity level using PAQ-A, and weight management practices used by Thai adolescents in single or mixed gender schools.

## Methods

This study was approved by the Oklahoma State University Institutional Review Board. Nine schools in Bangkok Metropolitan Region, Thailand were selected based on a convenience sampling method. All nine schools including single and mixed gender schools agreed to participate in the study. The parents of the 10<sup>th</sup> -12<sup>th</sup> students were informed about this study prior the questionnaire distribution and students were free to reject participation in this study. The informed consent was waived because it would be the only document linking the participant with the study. The questionnaire was distributed in June or July 2014 to five to eight classes of 10<sup>th</sup> -12<sup>th</sup> grade students, ages 15-18 years. The school principals selected the participate classes based on the schedule availability. The PI distributed a questionnaire related to nutrition, physical activity, body dissatisfaction, and weight management practices to 10<sup>th</sup> -12<sup>th</sup> grade students in classes. Two thousand eight hundred and thirty-three questionnaires were returned, but 751 questionnaires were excluded due to incomplete responses.

The questionnaire included demographic information including parental education and household income, height, current and ideal body weight, body dissatisfaction, food choice behaviors, physical activity, and weight management practices.

Body image dissatisfaction was assessed using Stunkard's figure rating scale (FRS)<sup>(22)</sup> in males and females. The FRS has been widely used as a self-reported measure of body image with well-known psychometric properties<sup>(22)</sup>. The scale consists of nine male or female figures numbered 1-9, varying in size from very thin to very large. Participants were asked the following questions: 1) which figure looks most like your

current body, 2) which figure looks most like your ideal body. Body dissatisfaction was measured as a discrepancy score between the current and ideal figures that the participant selected (current – ideal).

Food choice behaviors were determined with a modified version of Youth Risk Behavior Surveillance (YRBSS) questionnaire <sup>(23)</sup>. This 9-item questionnaire asked about the frequency (how many times per day) participants ate or drank during the past 7 days, including how often they ate breakfast, snacks, and main meals during the past 7 days. The score of was code to represent the consumption frequency of each item (time per day). The total scores from the 9 items were calculated (possible scores ranged from 0-24 points). The higher scores represent healthier food choices whereas lower scores indicate less healthy food choices.

Physical activity level was measured using a modified Physical Activity Questionnaire for Adolescents (PAQ-A) <sup>(21)</sup>. The questionnaire was modified only on the list of activities (question 1 of the PAQ-A) to match the common activities practiced by Thais. This questionnaire consists of 9 items, each scored on a 5-point scale. Participants were asked to recall their activity during the previous week, i.e. how often they were active at different times of the day (physical education, lunch, after school, evening, and weekend) in the last 7 days. Item 9 was not used to calculate the score, but was used to identify and exclude participants who had unusual activity in the last 7-day period, which excluded 37 questionnaires from the analysis. A summary physical activity score is an average of 8 items. A score of 1 indicates low physical activity and 5 indicates high physical activity. PAQ-A was designed for students in grades 9-12 and has good internal consistency (Cronbach alpha = 0.88)<sup>(21)</sup>.

Weight management practices were assessed using a modified version of a similar question from the National Health and Nutrition Examination Survey (NHANES) <sup>(24)</sup>. This scale asks about weight management practices used by the participants to lose weight/body fat or build/increase muscle. The scale consists of lists of activities/practices and spaces for participants to indicate other activities not listed. Participants were asked to check all activities that they practiced in the past 12 months or never. The scale also asked about purpose of the activities practiced (lose weight/body fat or build/increase muscle). This scale was used to determine the frequency of weight management practices used by the participants with a reliability coefficient of 0.86.

Body mass index (BMI) was calculated from self-reported height and weight. The BMI classifications were defined based on the WHO growth reference for school-aged children and adolescents <sup>(25)</sup>. The gender specific cut-offs used in the current study were calculated using an average of the WHO growth reference for each month in the year of age (15, 16, 17, or 18 years). The following cut-offs were used in the study:  $< -3$  SD = very underweight,  $-3 \geq$  SD but  $< -2$  SD = underweight,  $\geq -2$  SD but  $\leq +1$  SD = healthy weight,  $> +1$  SD but  $\leq +2$  SD = overweight, and  $> +2$ SD = obese.

Data were analyzed using the SPSS statistical software package version 21.0 (SPSS Inc., Chicago, IL, USA). Chi-square was used to analyze categorical data. Univariate analysis was conducted on dependent variables with genders (male and female) and school types (single or mixed gender) as fixed factors. Significance was set at  $p < 0.05$ .

## Results

Two thousand and eighty two students (1,056 females and 1,026 males) completed the questionnaires. Table 5.1 represents participants' characteristics. Approximately 74% of students had a normal BMI, while only 9.1% were underweight or very underweight. Males were more likely to be overweight than females. A majority of male participants attended single gender schools, while female participants attended either single or mixed gender schools. Over 50% of participants were in math-science programs. The parents of male participants were more likely than females to have a bachelor degree or higher. More female participants came from low-income families (10,000 baht or less), while males came from higher-income families (> 30,000 baht).

Only 18.1% of females and 20.6% of males did not indicate body image dissatisfaction using FRS (Table 5.2). More than 80% of female participants reported wanting a smaller ideal figure than their current figure. In contrast, males reported desiring either a bigger or smaller ideal figure than their current figure (44.3% wanted a thinner figure and 35.1% wanted a bigger figure). A majority of the participants reported one to two degrees of body dissatisfaction (Table 5.2).

In univariate analysis, a similar pattern between current and ideal BMI was observed (Table 5.3). Male students reported significantly higher current and ideal BMI than females. A significant interaction between gender and school types indicated that females in mixed gender schools reported higher current and ideal BMI than females in the single gender schools. In contrast, males in single gender schools reported higher current and ideal BMI than males in mixed gender schools.

Univariate analysis found school type but not gender differences in the degree of body image dissatisfaction; students in single gender schools had more body dissatisfaction. Males reported wanting a significantly bigger figure more than females, while females wanted a thinner figure significantly more than males. Females reported less physical activity than males but used more weight management practices. Types of school also differed in physical activity level. Students in mixed gender schools had significantly higher physical activity levels than single gender schools. However, the significant interaction between gender and school type indicated that females in mixed gender schools had lower physical activity levels than females in single gender schools and these were opposite in males (Table 5.3).

Table 5.4 represents overall and specific food choice behaviors. Males reported healthier overall food choice behaviors compared to female students. A comparison between single and mixed gender schools also showed that the participants in mixed gender schools reported healthier consumption than in the single gender schools in overall food choices behaviors as well as in all food types. There were also gender differences; females reported more frequent consumption of soda and breakfast but less frequent consumption of milk and snacks compared to males (Table 5.4).

Table 5.5 and figure 5.1 present weight management practices used by the participants and also the purpose of the activities practiced. Females were more likely to decrease their portion size, choose foods with lower calories, and eat less fat and carbohydrates to lose weight but less than 50% of males used these practices (Table 5.1). About half of the males reported increasing their protein intakes to increase muscle, while few females used this practice (Figure 4.1). Females reported exercising to lose

weight/body fat but males exercised to increase their muscle size (Figure 5.1). Both females and males skipped meals to lose weight/ body fat. Few participants used a liquid diet formula, joined a weight loss program, followed a special diet, used prescribed or non-prescribed pills, smoked, took laxatives, or induced vomiting. While females drank a lot of water and increased fruit and vegetable intake to lose weight/body fat, males either used these practices to lose weight or increase muscle size. Eating less sugar/candy/sweets, changing eating habits, and eating less fast food were used to lose weight/ body fat in both females and males (Table 5.5).

### **Discussion**

To the best of our knowledge, the current study is the first to examine body dissatisfaction in Thai males and also to compare single and mixed gender schools. The majority of both male and female Thai students indicated dissatisfaction in their current body shape. Female students reported wanting smaller figures which is similar to an exploratory study by Sharps et al. <sup>(26)</sup> that found Thai female participants desired a super skinny body. In Sharps' study, the average desired body rated on FRS was  $2.92 \pm 0.92$  <sup>(26)</sup>, while the mean desired body shape of female participants in the current study was  $3.14 \pm 0.82$ . Even though Sharps' study had significantly fewer Thai female participants ( $n = 24$ ) and was conducted in a different region of Thailand <sup>(26)</sup> than the current study, these indicate that Thai females prefer skinny figures as observed in 2001.

When the body dissatisfaction determined using FRS was evaluated regardless of whether participants wanted bigger or smaller figures, only the absolute value of the discrepancy score was considered. Females and males had similar levels of body



dissatisfaction. However a majority of females wanted to be thinner, while males wanted to be either smaller or bigger. These results support the contention of McCabe and Ricciardelli <sup>(12)</sup> that the dissatisfaction score from FRS for males should be calculated separately for those who wanted smaller or bigger figures, otherwise the average dissatisfaction score will result in underreporting of body dissatisfaction.

The mean PAQ-A score of all participants in the current study was  $2.21 \pm 0.64$ , which is lower than adolescents in Auckland, New Zealand <sup>(27)</sup>, Iowa, USA <sup>(21)</sup>, and Anand, India <sup>(28)</sup> with mean PAQ-A scores of  $2.80 \pm 0.81$ ,  $2.80 \pm 0.65$ , and  $2.62 \pm 0.72$  respectively. This result coincides with a study that found leisure time physical activity of university students in Thailand was very low compared to students in 23 other countries <sup>(29)</sup>. In 2001, only 21% of male and 2% of female Thai university students met the recommendation for physical activity (>6 times in the past 2 weeks) <sup>(29)</sup>. In contrast, the Thai National Health Examination Survey reported 77.5% of Thais aged 15 and older had enough physical activity in 2004 <sup>(18)</sup> by having moderate-physical activity for at least 30 minutes per day, and this increased to 81.5% in 2009 <sup>(19)</sup>. These reports determined physical activity using GPAQ version 2, which includes activity at work, travel to and from places, and recreational activity. The intensity, performance time, and frequency of each activity were also included in the questionnaire <sup>(20)</sup>. Activity at work accounted for more than 60% of Thai adults' physical activity. The definition of physical activity and also the sampling distribution that included participants from extremely urbanized to vigorously labor-intensive agrarian areas might have overestimated the results in the Thai National Health Examination Survey.

Consistently, previous research observed differences in food choices between males and females in which females tend to make healthier food choices than males<sup>(30-33)</sup>. A study by Wardle and colleagues<sup>(30)</sup> compared food choice behaviors in young adults from 23 countries. They found that women were more likely than men to eat fruits at least once a day<sup>(30)</sup>. In Germany, adolescent girls also reported significantly higher vegetable consumption than adolescent boys<sup>(32)</sup>. In contrast with the available literature, males reported overall healthier food choice behaviors than females in the present study. However, we did not observe differences between genders in consumption of fruits nor vegetables in our samples but there was a difference between single and mixed gender schools. Our findings coincide with the National Health Examination Survey in Thailand<sup>(19)</sup> that reported males and females aged between 15-29 years had similar consumption of fruit and vegetables. In comparison to other Asian countries, Thai high school students had poorer eating habits than Japanese and Korean college students<sup>(2)</sup>. The participants in the current study had less frequent consumption of fruits and vegetables but consumed snacks more often than Japanese and Korean participants. As also observed in the national survey, only 20% of adult males and 24% of females met the recommendations for fruit and vegetable consumption<sup>(19)</sup>. These findings raise a concern at a public level about low fruit and vegetable consumption of the Thai population, which might need attention from the government to raise awareness about this issue.

Similar to a previous study among American college students, exercise and increased fruit and vegetable consumption were the most frequent dieting behaviors used by the participants<sup>(34)</sup>. Unhealthy weight loss practices that have been observed in Western societies include skipping meals, fasting, inducing vomiting, and taking pills

(i.e. diuretics, laxative, diet pills, and appetite suppressants) <sup>(34, 35)</sup>; similar unhealthy weight-loss practices such as using medications, smoking, and inducing vomiting were also observed among Korean participants <sup>(36)</sup>. Similar rates of these unhealthy weight loss practices were used by the Thai high school students who participated in this study.

In the current study, participants in single gender schools reported higher body dissatisfaction than mixed gender schools, which contrasts with the study by Delfabbro et al. <sup>(1)</sup>. However, Delfabbro et al. <sup>(1)</sup> did not use FRS to assess body dissatisfaction, they used a 5- point physical appearance rating scale. Moreover, in the present study school environment (single or mixed gender schools) also affected food choice behaviors, physical activity level, and number of weight management practices used. These suggest that the weight management interventions or approaches should be delivered differently between single and mixed gender schools. In addition, future research can explore what factors influence the differences between high school students in single or mixed gender schools.

There were several limitations in this present study. First, all participants were from the Bangkok Metropolitan Region, so the results might not be applicable to high school students in other regions of Thailand. Second, the participating schools were all convenience samples, which were not nationally represented the Thai adolescents. Finally, this study was cross-sectional using a self-reported questionnaire. The results might be skewed because the responses were solely based on participants' memories and willingness to provide accurate information.

## References

1. Delfabbro PH, Winefield AH, Anderson S et al. (2011) Body image and psychological well-being in adolescents: The relationship between gender and school type. *J Genet Psychol* **172**, 67-83.
2. Sakamaki R, Amamoto R, Mochida Y et al. (2005) A comparative study of food habits and body shape perception of university students in japan and korea. *Nutr J* **4**, 31.
3. Wardle J, Haase A, Steptoe A. (2006) Body image and weight control in young adults: International comparisons in university students from 22 countries. *Int J Obes (Lond)* **30**, 644-51.
4. Jung J, Forbes GB. (2007) Body dissatisfaction and disordered eating among college women in china, south korea, and the united states: Contrasting predictions from sociocultural and feminist theories. *Psychol Women Q* **31**, 381-93.
5. Swami V, Salem N, Furnham A et al. (2008) Initial examination of the validity and reliability of the female photographic figure rating scale for body image assessment. *Pers Individ Dif* **44**, 1752-61.
6. Ricciardelli LA, McCabe MP. (2001) Self-esteem and negative affect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscles among adolescent boys and girls. *Sex Roles* **44**, 189-207.
7. Ricciardelli LA, McCabe MP. (2004) A biopsychosocial model of disordered eating and the pursuit of muscularity in adolescent boys. *Psychol Bull* **130**, 179.

8. Cafri G, Thompson JK, Ricciardelli L et al. (2005) Pursuit of the muscular ideal: Physical and psychological consequences and putative risk factors. *Clin Psychol Rev* **25**, 215-39.
9. Lawler M, Nixon E. (2011) Body dissatisfaction among adolescent boys and girls: The effects of body mass, peer appearance culture and internalization of appearance ideals. *J Youth Adolesc* **40**, 59-71.
10. Sneade I, Badmin N, Furnham A. (2002) Body image dissatisfaction: Gender differences in eating attitudes, self-esteem, and reasons for exercise. *J Psychol* **136**, 581-96.
11. Bucchianeri MM, Arikian AJ, Hannan PJ et al. (2013) Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Body Image* **10**, 1-7.
12. McCabe MP, Ricciardelli LA. (2004) Body image dissatisfaction among males across the lifespan: A review of past literature. *J Psychosom Res* **56**, 675-85.
13. Nichter M. Fat talk: What girls and their parents say about dieting: Harvard University Press; 2009.
14. Presnell K, Bearman SK, Stice E. (2004) Risk factors for body dissatisfaction in adolescent boys and girls: A prospective study. *Int J Eat Disord* **36**, 389-401.
15. Ferguson C, Muñoz M, Garza A et al. (2014) Concurrent and prospective analyses of peer, television and social media influences on body dissatisfaction, eating disorder symptoms and life satisfaction in adolescent girls. *J Youth Adolesc* **43**, 1-14.

16. McCabe MP, Ricciardelli LA. (2001) Parent, peer, and media influences on body image and strategies to both increase and decrease body size among adolescent boys and girls. *Adolescence* **36**, 225.
17. Helfert S, Warschburger P. (2013) The face of appearance-related social pressure: Gender, age and body mass variations in peer and parental pressure during adolescence. *Child Adolesc Psychiatry Ment Health* **7**, 16.
18. Porapakkam Y, Boonyarattapan P. Report of the third national health examination survey in thailand. Bangkok: Ministry of Public Health, 2006.
19. Akeplakorn V, Porapakkham Y, Taneepanichsakul S et al. Report of the fourth national health examination survey in thailand. Nonthaburi: Ministry of Public Health, 2010.
20. World Health Organization. Global physical activity questionnaire [cited 2015 January]. Available from:  
[http://www.who.int/chp/steps/resources/GPAQ\\_Analysis\\_Guide.pdf](http://www.who.int/chp/steps/resources/GPAQ_Analysis_Guide.pdf).
21. Janz KF, Lutuchy EM, Wenthe P et al. (2008) Measuring activity in children and adolescents using self-report: Paq-c and paq-a. *Med Sci Sports Exerc* **40**, 767.
22. Stunkard AJ, Sorensen T, Schulsinger F. (1983) Use of the danish adoption register for the study of obesity and thinness. *Res Publ Assoc Res Nerv Ment Dis* **60**, 115.
23. Centers for Disease Control and Prevention. Youth risk behavior surveillance 2013 [updated September 24, 2013; cited 2014 December 9]. Available from:  
[http://www.cdc.gov/healthyyouth/yrbs/questionnaire\\_rationale.htm](http://www.cdc.gov/healthyyouth/yrbs/questionnaire_rationale.htm).

24. Centers for Disease Control and Prevention. National health and nutrition examination survey 2013 [updated February 3, 2014; cited 2014 December 9]. Available from: [http://www.cdc.gov/nchs/nhanes/nhanes\\_questionnaires.htm](http://www.cdc.gov/nchs/nhanes/nhanes_questionnaires.htm).
25. de Onis M, Onyango AW, Borghi E et al. (2007) Development of a who growth reference for school-aged children and adolescents. *Bull World Health Organ* **85**, 660-7.
26. Sharps MJ, Price-Sharps JL, Hanson J. (2001) Body image preference in the united states and rural thailand: An exploratory study. *J Psychol* **135**, 518-26.
27. Maddison R, Hoorn S, Jiang Y et al. (2009) The environment and physical activity: The influence of psychosocial, perceived and built environmental factors. *Int J Behav Nutr Phys Act* **6**, 19.
28. Dave H, Desai R, Phatak A et al. (2014) Po-0001 assessment of physical activity among adolescents: A cross- sectional study in anand district, india. *Arch Dis Child* **99**, A251.
29. Haase A, Steptoe A, Sallis JF et al. (2004) Leisure-time physical activity in university students from 23 countries: Associations with health beliefs, risk awareness, and national economic development. *Prev Med* **39**, 182-90.
30. Wardle J, Haase A, Steptoe A et al. (2004) Gender differences in food choice: The contribution of health beliefs and dieting. *Ann Behav Med* **27**, 107-16.
31. Baker AH, Wardle J. (2003) Sex differences in fruit and vegetable intake in older adults. *Appetite* **40**, 269-75.

32. Maier IB, Özel Y, Wagnerberger S et al. (2013) Dietary pattern and leisure time activity of overweight and normal weight children in germany: Sex-specific differences. *Nutr J* **12**, 14-.
33. Lutfiyya MN, Chang LF, Lipsky MS. (2012) A cross-sectional study of us rural adults' consumption of fruits and vegetables: Do they consume at least five servings daily? *BMC Public Health* **12**, 280-.
34. Lee S-K, Keenan DP, Ryu HK. (2007) Identification of weight-control behaviors practiced by diverse groups of college students. *Nutr Res Pract* **1**, 218-23.
35. Lampard A, MacLehose R, Eisenberg M et al. (2014) Weight-related teasing in the school environment: Associations with psychosocial health and weight control practices among adolescent boys and girls. *J Youth Adolesc* **43**, 1770-80.
36. Kim O, Kim K. (2005) Body mass index, body shape satisfaction, and weight control behaviors among korean girls. *Psychol Rep* **96**, 676-80.



**Table 5. 1** Characteristics of 10-12 grade student participants

Participant characteristics	Gender		p-value*
	Female n (%)	Male n (%)	
<b>BMI Category</b>			0.001
Very underweight	7 (0.7)	21 (2.1)	
Underweight	60 (5.7)	98 (9.6)	
Normal weight	849 (81.1)	682 (67.0)	
Overweight	84 (8.0)	138 (13.6)	
Obese	47 (4.5)	79 (7.8)	
<b>Age</b>			< 0.001
15 years	256 (24.4)	160 (15.7)	
16 years	409 (38.9)	408 (40.1)	
17 years	317 (30.2)	342 (33.6)	
18 years or more	69 (6.6)	108 (10.6)	
<b>School grade</b>			< 0.001
10th	406 (38.7)	311 (30.9)	
11th	409 (39.0)	409 (40.6)	
12th	234 (22.3)	288 (28.6)	
<b>School type</b>			< 0.001
Single Gender	497 (47.1)	700 (58.2)	
Mixed Gender	559 (52.9)	326 (31.8)	
<b>School program</b>			< 0.001
Math-Science	543 (51.5)	556 (54.6)	
Arts-Math	122 (11.6)	182 (17.9)	
Arts	199 (18.9)	124 (12.2)	
Others	191 (18.1)	156 (15.3)	
<b>Father's education</b>			< 0.001
Grade 6 or lower	287 (27.4)	261 (25.9)	
Grade 12	342 (32.6)	272 (27.0)	
College/diploma	138 (13.2)	109 (10.8)	
Bachelor	218 (20.8)	255 (25.3)	
Master or higher	63 (6.0)	112 (11.1)	
<b>Mother's education</b>			< 0.001
Grade 6 or lower	312 (29.8)	271 (26.9)	
Grade 12	344 (32.8)	267 (26.5)	
College/diploma	120 (11.5)	110 (10.9)	
Bachelor	238 (22.7)	286 (28.4)	
Master or higher	34 (3.2)	73 (7.2)	
<b>Household income<sup>#</sup></b>			0.003
10,000 baht or less	160 (15.3)	106 (10.4)	
10,001-30,000 baht	439 (41.9)	417 (41.1)	
30,001-50,000 baht	194 (18.5)	228 (22.5)	
50,001 or more	255 (24.3)	264 (26.0)	

\* Variables were analyzed using Chi-square.

<sup>#</sup> 1 US Dollar = approximately 33 Thai Baht

**Table 5.2** Frequency of participants' body dissatisfaction levels by gender

Level of Body dissatisfaction*	Gender		p-value
	Female	Male	
	n (%)	n (%)	< 0.001
-4	1 (0.1)	3 (0.3)	
-3	0 (0.0)	10 (1.0)	
-2	21 (2.0)	86 (8.4)	
-1	145 (13.8)	260 (25.4)	
0	191 (18.1)	211 (20.6)	
1	427 (40.6)	282 (27.5)	
2	219 (20.8)	134 (13.1)	
3	41 (3.9)	35 (3.4)	
4	4 (0.4)	3 (0.3)	
5	3 (0.3)	0 (0.0)	

\* Body dissatisfaction measured as a discrepancy score between the current and ideal figure that participant selected (current – ideal). Negative score indicates desire for bigger figure, positive score for smaller figure.

### 3 Differences in BMI, body dissatisfaction, physical activity, and weight management practices among 10 -12 grade Thai students

Variables	Gender												p-value	
	Females in single gender schools			Females in mixed gender schools			Males in single gender schools			Males in mixed gender schools			Gender	School types
	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD		
BMI	495	20.14	3.00	552	20.96	4.58	696	21.57	4.51	323	20.94	4.65	< 0.001	0.598
BI	495	18.37	1.63	552	19.11	2.34	696	20.73	2.59	322	20.14	2.99	< 0.001	0.490
body dissatisfaction*	497	1.17	0.73	556	1.14	0.85	700	1.16	0.79	324	1.02	0.80	0.084	0.025
bigger figure†	51	-1.10	0.30	116	-1.16	0.44	235	-1.30	0.54	124	-1.36	0.62	< 0.001	0.214
smaller figure‡	369	1.42	0.60	326	1.53	0.75	340	1.49	0.69	114	1.42	0.59	< 0.001	0.557
physical activity §	497	2.09	0.53	559	2.05	0.54	700	2.28	0.68	326	2.53	0.74	< 0.001	< 0.001
weight management practices (number)	484	7.60	3.69	495	9.15	4.41	674	6.67	3.83	291	7.95	4.13	< 0.001	< 0.001

Standard deviation, BMI = body mass index

Body dissatisfaction measured as a discrepancy score between the current and ideal figure that participant selected (current – ideal).

† whose current figure was smaller than the ideal figure.

‡ whose current figure was bigger than the ideal figure.

§ score indicates higher physical activity level

4 Food choice behaviors of 10 -12 grade Thai students analyzed by univariate analysis with gender and school types as fixed factors

Food items	Gender												p-value	
	Females in single gender schools			Females in mixed gender schools			Males in single gender schools			Males in mixed gender schools			Gender	School types
	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD		
Choices *	491	8.07	3.64	558	5.52	4.65	700	8.29	4.18	322	6.40	4.74	<0.01	< 0.001
Fruit Juice (time/day)	497	0.45	0.54	559	0.61	0.68	700	0.52	0.65	323	0.64	0.77	0.120	< 0.001
Vegetables (time/day)	497	0.82	0.74	559	0.91	0.87	700	0.73	0.73	323	0.93	0.92	0.375	< 0.001
Grains (time/day)	491	1.27	1.03	559	1.41	1.21	700	1.26	1.05	322	1.47	1.20	0.636	0.001
Protein (time/day)	497	0.40	0.57	558	1.19	1.14	700	0.64	0.75	323	1.11	1.09	<0.05	< 0.001
Sweet drink (time/day)	497	0.61	0.67	559	0.80	0.82	700	0.68	0.73	323	0.86	0.88	0.067	< 0.001
Milk (glass/day)	497	0.90	0.93	559	0.77	0.80	700	1.23	1.11	326	1.15	1.14	< 0.001	<0.05
Breakfast (days/week)	497	6.08	1.66	559	4.58	2.40	700	5.71	2.00	326	4.53	2.56	<0.05	< 0.001
Physical activity (time/day)	497	2.74	0.57	559	2.47	0.78	700	2.69	0.68	326	2.53	0.80	0.993	< 0.001
Snacks (times/week)	497	3.14	1.94	559	3.26	2.11	700	2.53	2.03	326	2.87	2.09	< 0.001	<0.05

Standard deviation, BMI = body mass index

Choices indicate total scores calculated from 8 items. Higher score indicates healthier food choices behaviors.

**Table 5.5** Differences in weight management practices used by Thai male and female students in the past 12 months

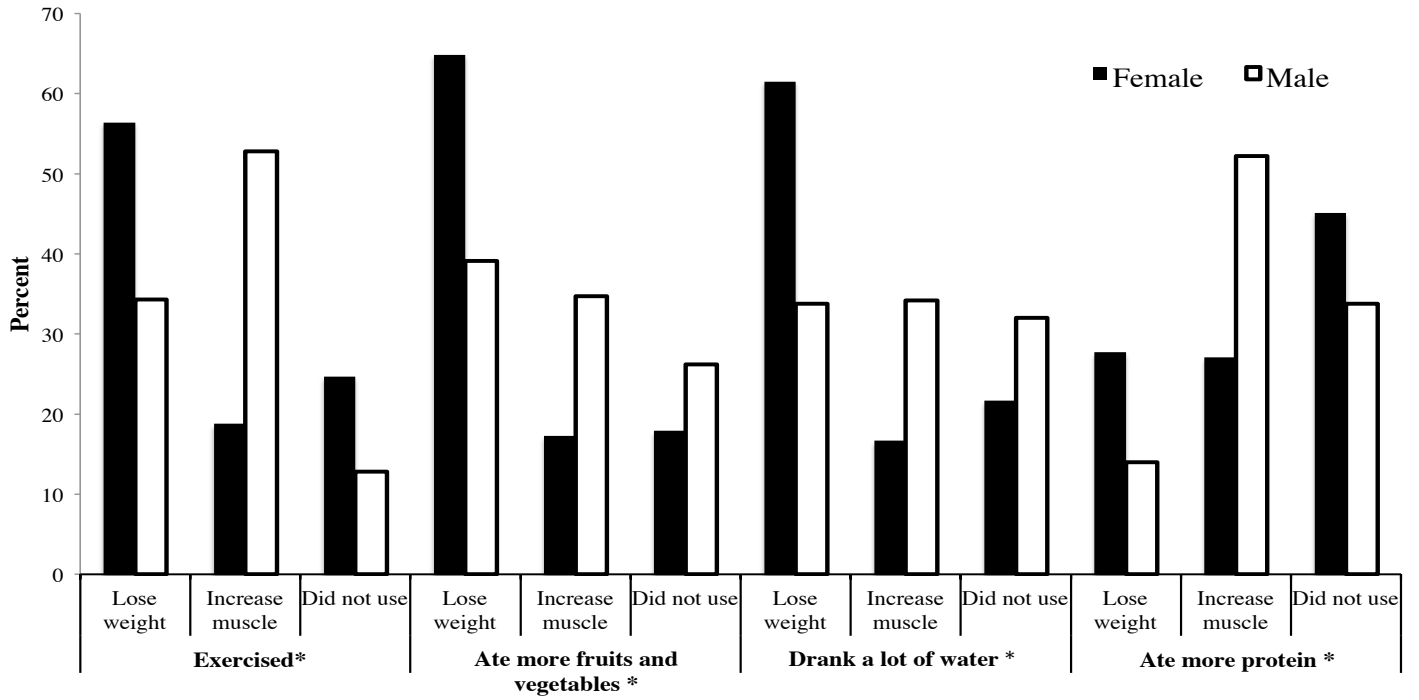
Weight management practices	Gender		p-value *
	Female n (%)	Male n (%)	
<b>Exercised</b>			< 0.001
Lose weight/decrease body fat	584 (56.4)	338 (34.3)	
Increase muscle	195 (18.8)	520 (52.8)	
Did not use	256 (24.7)	126 (12.8)	
<b>Ate more fruits and vegetables</b>			< 0.001
Lose weight/decrease body fat	682 (64.8)	398 (39.1)	
Increase muscle	182 (17.3)	353 (34.7)	
Did not use	188 (17.9)	266 (26.2)	
<b>Drank a lot of water</b>			< 0.001
Lose weight/decrease body fat	648 (61.5)	344 (33.8)	
Increase muscle	176 (16.7)	348 (34.2)	
Did not use	229 (21.7)	325 (32.0)	
<b>Ate more protein</b>			< 0.001
Lose weight/decrease body fat	291 (27.7)	142 (14.0)	
Increase muscle	285 (27.1)	531 (52.2)	
Did not use	474 (45.1)	344 (33.8)	
<b>Ate less sugar, candy, sweets</b>			< 0.001
Lose weight/decrease body fat	599 (57.6)	411 (40.4)	
Increase muscle	60 (5.8)	136 (13.4)	
Did not use	381 (36.6)	471 (46.3)	
<b>Ate less fat</b>			< 0.001
Lose weight/decrease body fat	672 (63.9)	405 (39.7)	
Increase muscle	32 (3.0)	101 (9.9)	
Did not use	347 (33.0)	514 (50.4)	
<b>Ate less amount of food</b>			< 0.001
Lose weight/decrease body fat	679 (64.5)	393 (38.5)	
Increase muscle	31 (2.9)	99 (9.7)	
Did not use	343 (32.6)	528 (51.8)	
<b>Ate fewer carbohydrates</b>			< 0.001
Lose weight/decrease body fat	550 (53.2)	326 (32.0)	
Increase muscle	72 (7.0)	183 (17.9)	
Did not use	412 (39.8)	511 (50.1)	
<b>Changed eating habits</b>			< 0.001
Lose weight/decrease body fat	545 (51.9)	320 (31.3)	
Increase muscle	49 (4.7)	104 (10.2)	
Did not use	456 (43.4)	597 (58.5)	
<b>Ate less junk food or fast food</b>			< 0.001
Lose weight/decrease body fat	489 (47.2)	325 (33.2)	
Increase muscle	62 (6.0)	108 (11.0)	
Did not use	485 (46.8)	545 (55.7)	

**Table 5.5** continued

Weight management practices	Gender		p-value *
	Female n (%)	Male n (%)	
<b>Switched to foods with lower calories</b>			< 0.001
Lose weight/decrease body fat	559 (53.1)	279 (27.3)	
Increase muscle	41 (3.9)	95 (9.3)	
Did not use	453 (43.0)	648 (63.4)	
<b>Skipped meal</b>			< 0.001
Lose weight/decrease body fat	390 (37.2)	265 (25.9)	
Increase muscle	22 (2.1)	36 (3.5)	
Did not use	636(60.7)	722 (70.6)	
<b>Used a liquid diet formula</b>			< 0.001
Lose weight/decrease body fat	161 (15.3)	71 (7.0)	
Increase muscle	50 (4.8)	96 (9.4)	
Did not use	840 (79.9)	854 (83.6)	
<b>Followed a special diet</b>			< 0.001
Lose weight/decrease body fat	180 (17.1)	66 (6.4)	
Increase muscle	22 (2.1)	31 (3.0)	
Did not use	850 (80.8)	928 (90.5)	
<b>Took non-prescribed pills</b>			< 0.001
Lose weight/decrease body fat	108 (10.3)	43 (4.2)	
Increase muscle	35 (3.3)	62 (6.1)	
Did not use	909 (86.4)	917 (89.7)	
<b>Joined a weight loss program</b>			0.001
Lose weight/decrease body fat	91 (8.6)	47 (4.6)	
Increase muscle	32 (3.0)	36 (3.5)	
Did not use	931 (88.3)	942 (91.9)	
<b>Took diet pills prescribed by a doctor</b>			< 0.001
Lose weight/decrease body fat	65 (6.2)	23 (2.3)	
Increase muscle	26 (2.5)	32 (3.1)	
Did not use	957 (91.3)	967 (94.6)	
<b>Took laxative</b>			< 0.001
Lose weight/decrease body fat	97 (9.2)	18 (1.8)	
Increase muscle	4 (0.4)	12 (1.2)	
Did not use	954 (90.4)	995 (97.1)	
<b>Smoked</b>			0.001
Lose weight/decrease body fat	26 (2.5)	32 (3.1)	
Increase muscle	4 (0.4)	23 (2.2)	
Did not use	1022 (97.1)	968 (94.6)	
<b>Induced vomiting</b>			0.319
Lose weight/decrease body fat	25 (2.4)	18 (1.8)	
Increase muscle	8 (0.8)	13 (1.3)	
Did not use	1022 (96.9)	994 (97.0)	

\* Variables were analyzed using Chi-square

**Figure 1**



**Figure 5. 1** Top four weight management practices used by Thai male and female student participants

\* indicates statistically significant using Chi-square ( $p < 0.05$ ).

## CHAPTER VI

### WEIGHT MANAGEMENT PRACTICES, FOOD CHOICE BEHAVIORS, AND PHYSICAL ACTIVITY OF THAI HIGH SCHOOL STUDENTS BY TYPE OF BODY DISSATISFACTION

#### **Abstract**

**Objective:** The objective of this study was to compare food choices, physical activity, and weight management practices used by adolescents with different types of body dissatisfaction.

**Methods:** Height, weight, body image perception, food choice behaviors, physical activities, and weight management practices were obtained by a questionnaire given to high schools students in nine schools in the Bangkok Metropolitan Region.



**Results:** Participants chose the figure that looked most like their current and ideal body using Stunkard's figure rating scale. Participants were categorized by the discrepancy between current and ideal figures into no dissatisfaction (ND: n = 406), wanted bigger figure (BF: n = 539), or wanted thinner figure (TF: n= 1177) groups. The TF group had a higher BMI and used more weight management practices, but was less physically active, and had similar food choices as the ND group. The BF group had the lowest BMI and used the fewest weight management practices compared to other groups, but had similar physical activity levels and food choices to the ND group. The most reported weight management practice used by the TF group was to eat less food, while the BF group reported using exercise to increase their muscle size. Overall food choice behaviors between the three groups were not significantly different; however, the BF group consumed soda and snacks less often than the ND and TF group.

**Discussion:** The results from this study can be used as fundamental information to develop programs that promote healthy eating, physical activity, and healthy weight management.

## **Introduction**

In the past, women in East Asian societies such as China, Korea, and Thailand were not focused on body dissatisfaction, overweight concerns, and eating disorders problems.<sup>1</sup> This might have resulted from the nature of the agricultural countries, which were labor-intensive societies. Additionally, East Asian countries were more associated with poverty, poor health, malnutrition, and thinness.<sup>2</sup> In recent years, there has been increasing evidence of body image dissatisfaction among both male and female Asian

participants.<sup>1,3-7</sup> Body dissatisfaction is associated with many negative factors such as decreased self-esteem,<sup>8</sup> depression,<sup>9</sup> reduced social effectiveness,<sup>1</sup> and is an important predictor of eating disorders.<sup>10,11</sup> Stice and Shaw described body dissatisfaction as “negative subjective evaluations of one's physical body, such as figure, weight, stomach and hips.”<sup>12</sup> This can lead to unhealthy weight loss and/or muscle building practices. Unhealthy weight management practices or disordered weight control behaviors (DWCB) are associated with increased risk of developing eating disorders<sup>13</sup> as well as gaining weight.<sup>14</sup>

∞

Over the past three decades, Thailand has undergone a rapid change from an agricultural to an industrial society,<sup>15</sup> which has caused Thai people to have more urbanized and Westernized lifestyles. Urbanization and Westernization have several impacts on people's lifestyles in the Asia-Pacific region. For example, physical activity has declined and sugar and fat consumption have increased.<sup>16,17</sup> Thais used to perform labor-intensive physical activity because of the nature of their agrarian lifestyle, but lifestyles have become more sedentary since the industrial transition.<sup>15</sup> These changes have been linked to the prevalence of obesity in Thailand, which has drastically increased over the past 20 years, from 11.7% in 1991 to 34.6% in 2009 among Thai adults.<sup>18,19</sup> Urbanization and Westernization also impacted Thai eating habits, which experienced a decrease in fruit and vegetable consumption.<sup>15</sup> In 2009, only 17.1% of adults in Thailand met the recommendations for fruits and vegetables, which is considered very low. Korea and Japan experienced similar situations in which the consumption of animal products drastically increased, while grain consumption decreased.<sup>20</sup>

Even though body misconception (under- or overestimation of weight) has been

observed among adult Thai women,<sup>5</sup> body image dissatisfaction has not been directly observed in Thai adolescents. Little information about weight management practices among Thais is available for adolescents. The purposes of this study were to observe body dissatisfaction and weight perception among Thai adolescents and also compare food choices, physical activity, and weight management practices used by adolescents with different types of body dissatisfaction.

### **Methods**

∞ This study was approved by the Oklahoma State University Institutional Review Board. Questionnaires were distributed to high schools students in nine schools in the Bangkok Metropolitan Region. After getting permission from the school principals, the primary investigator (PI) visited the schools and distributed a questionnaire in classes. A total of 2,837 questionnaires were collected; 715 questionnaires were excluded from the analysis due to incomplete responses.

Demographic information, height, current weight, ideal weight, body image perception, food choice behaviors, physical activity level, and weight management practices were included in the questionnaire. The questionnaire gauged the participants' weight perceptions by asking, "How do you describe your weight?" The participants responded with one of the following answers: underweight, about the right weight, slightly overweight, or very overweight.

BMI's were calculated from self-reported height and weight. The cut-offs used in the current study were calculated as an average of the WHO growth reference for each month in the year of age (15, 16, 17, or 18 years) within each gender (male or female).

Participants were classified into the following categories using Z score: very underweight ( $< -3$  SD), underweight ( $-3 \geq$  SD but  $< -2$  SD), healthy weight ( $\geq -2$  SD but  $\leq +1$  SD), overweight ( $> +1$  SD but  $\leq +2$  SD), or obese ( $> +2$ SD) using a WHO growth reference for school-aged children and adolescents.<sup>21</sup>

Body image dissatisfaction was assessed using Stunkard's figure rating scale (FRS).<sup>22</sup> The FRS is used to estimate body dissatisfaction by portraying nine contour drawings of male or female figures ranging from very thin to very large (numbered 1-9).<sup>22</sup> The participants were shown the FRS for their gender and were asked to choose 1) the figure that looks most like their current body and 2) the figure that looks most like their ideal body. Discrepancies between current and ideal figures were used to indicate the participants body dissatisfaction. Participants were then classified into no dissatisfaction (ND), wanted bigger figure (BF), and wanted thinner figure (TF). Participants in the ND group had no discrepancy between their current and ideal figures, while participants in the BF group had a current figure smaller than their ideal figure, and the TF group had a current figure bigger than their ideal figure.

A modified version of Youth Risk Behavior Surveillance (YRBSS) questionnaire was used to determine food choice behaviors.<sup>23</sup> Modifications were made on the food examples to match the common foods consumed by Thais. We also combined questions about different types of vegetable consumption into a single question including all types of vegetable consumption. Participants were asked nine questions to recall their diet in the past week. The question gauged how often the respondents consumed fruits, vegetables, breakfast, snacks, and main meals, as well as soda and other sweet drinks. All questions were scored from 0-6 points, except item seven (breakfast) that was scored

from 0-7 points, and then the total scores were calculated with possible scores of 0-55 points. Higher scores indicated healthier food choice behaviors.

The Physical Activity Questionnaire for Adolescents (PAQ-A)<sup>24</sup> was used to assess the physical activity level of the study's participants. The PAQ-A was designed for students in grades 9-12 and has good internal consistency (Cronbach alpha = 0.88).<sup>24</sup> The activities on question one of the PAQ-A were modified to match the common activities practiced by Thais. The PAQ-A consists of nine questions that asked the participants to report their activities in the past seven days. An average of eight items was calculated. Question nine was used to identify the participants who had unusual activity in the past seven days, and was not included in the calculation. Higher scores exhibited higher physical activity levels.

Weight management practices used by the participants were obtained using a modified version of the National Health and Nutrition Examination Survey (NHANES) questions<sup>25</sup> with a Cronbach alpha = 0.86. The questions consisted of lists of activities/practices and spaces for participants to indicate other activities not listed. Participants were asked to report weight management practices used in the past 12 months as well as their intention for practicing these activities. Their options for declaring intention included: lose weight/body fat, build/increase muscle, or never.

Data were analyzed using the SPSS statistical software package version 21.0 (SPSS Inc., Chicago, IL, USA). Chi-square was used to analyze categorical data. Levene's test was used to assess equality of variances. If the Levene's test is significant, the variables were analyzed using Kruskal-Wallis test with Games-Howell as a post-hoc

test. The following variables had  $p$ -value  $< 0.05$  in Levene's test: Current and ideal BMI, physical activity, number of weight management practices used, fruit juice, fruits, sweet drinks, and snacks. If the Levene's test was not significant, the variables were then analyzed using one-way ANOVA with Tukey's test as a post-hoc analysis. Significance was set at  $p < 0.05$ .

## Results

Table 6.1 represents the characteristics of participants with different levels of body dissatisfaction. Participants were categorized by the difference between current and ideal figures into no dissatisfaction (ND:  $n = 406$ ), wanted bigger figure (BF:  $n = 539$ ), or wanted thinner figure (TF:  $n = 1177$ ) groups. A majority of participants in all three groups had a healthy current weight and identified ideal weights in the healthy range. Only 29% of participants in the BF group were underweight or very underweight, and 29% in the TF group were overweight or obese. In agreement with the participants' level of body dissatisfaction, 83.3% of participants in the ND group described their weight as "about the right weight," while more than half of the participants in the BF group thought they were underweight or very underweight. About half of the participants in the TF group thought that they were slightly overweight or very overweight; however, 49.5% ( $n = 582$ ) of the TF group described themselves as having a healthy weight but still wanted a thinner figure when given FRS. Most of participants in the ND and BF group were males and 59.1% in the TF group were females.

Most participants who wanted thinner figures were enrolled in single gender schools. More than half of the participants in this study were in a Math-Science program.

The parents of the three groups had different levels of education. The fathers of the participants in the BF group were more likely to have a 12<sup>th</sup> grade or lower education, while the fathers of the TF group were more likely to have a bachelor's degree. Mothers were more likely to have 12<sup>th</sup> grade education in the ND group, 6<sup>th</sup> grade education or lower in the BF group, and a bachelor's degree in the TF group. The participants in all three groups were most likely to come from middle-income families (Table 6.1).

Weight perceptions of participants in each BMI category were represented in Table 6.2. The participants tended to have correct perceptions of their current weight in relation to their BMI classification. Over 60% of participants correctly identified their BMI classifications as underweight, healthy weight, overweight, or obese.

Coinciding with the BMI classifications, the participants in the TF group had the highest BMI ( $23.0 \pm 0.1 \text{ kg/m}^2$ ), whereas the ND group had a significantly higher BMI ( $19.4 \pm 0.1 \text{ kg/m}^2$ ) than the BF group ( $17.7 \pm 0.1 \text{ kg/m}^2$ ) (Table 6.3). Interestingly, the ideal BMI was similar between the ND and BF groups, while the TF group had a slightly but statistically significantly higher ideal BMI. Additionally, the TF group had the lowest physical activity level compared to the ND and BF groups. There were no differences between groups in overall food choice behaviors. All participants had similar levels of consumption of fruit juice, fruits and vegetables, and they all had breakfast around five days per week. However, the BF group consumed soda and snacks less often than the ND and TF groups. The BF group reported a higher consumption of milk and had more meals than the TF group. In terms of weight management practices used in the past 12 months, the TF group had the highest number of weight management practices used with an

average of 8.9 practices followed by the ND and BF groups, 7 and 5.7 practices, respectively.

Table 6.4 represents the weight management practices used by the participants in the past 12 months. Over 70% of the participants in the ND group reported exercising, eating more fruits and vegetables, and drinking a large amount of water either to lose weight or to increase muscle in the past 12 months. The participants from the BF and TF groups reported different weight management practices. Adolescents in the BF group were more likely to exercise, eat more protein, and eat more fruits and vegetables in order to increase their muscle size, while the majority of the TF group reported eating less food and fat, and eating more fruits and vegetables to lose weight and/or decrease body fat. Overall, the five most often-used weight management practices reported by the participants were exercising, eating more fruits and vegetables, drinking a large amount of water, eating more protein, and eating less sweets. A small number of participants reported the use of unhealthy weight loss practices such as taking laxatives or over-the-counter pills, smoking, or inducing vomiting. However, approximately 30% of the participants reported skipping meals to lose weight. Participants in the TF group were more likely to engage in the unhealthy weight loss practices such as skipping meals (reported by almost half of the TF group), using a liquid diet formula and taking laxatives compared to other groups. Adolescents who wanted BF were more likely to take non-prescribed pills to increase muscle.

Table 6.5 shows the correlation between body dissatisfaction and measured variables. A negative correlation between body dissatisfaction and measured variables indicates a correlation with a desire for a bigger figure, whereas the positive correlation



indicates a relationship with a desire for a smaller figure. The desire for a smaller figure was correlated with higher current weight and BMI, higher consumption of soda, sweet drinks, and snacks, and the use of more weight management practices. Additionally, their parents had higher education and higher household income. The desire for a bigger figure was correlated with higher physical activity levels, consumption of more milk, and more frequent meals.

### **Discussion**

∞ This study found body dissatisfaction to be considerable in male and female adolescents, with 80% of the participants reporting dissatisfaction with their current body when using the FRS. However, most participants in this study had current BMI values that fell in the healthy range, and they also had weight perceptions that aligned with their BMI classifications when participants were asked to describe their weight. A previous study observed that normal-weight Asian participants thought they were overweight more often than normal-weight participants in Western and Mediterranean regions.<sup>5</sup> The studies by Wardle et al <sup>5</sup> and Wan et al <sup>7</sup> also asked about the body weight perception. Wardle et al <sup>5</sup> observed that 31% of Thai male and 55% of female university students perceived themselves as overweight, even though most of their BMIs fell in the normal category. Similarly, Wan et al <sup>7</sup> found that 38% of Malaysian adolescents aged between 13-15 had incorrect perceptions of their current body shape, and 50% of normal weight participants considered themselves overweight. Among Hong Kong adults, 71.2% of underweight participants did not desire a bigger body, and 75.5% of those in the normal weight group wanted a slimmer body.<sup>6</sup> On the other hand, approximately 50% of normal weight participants in the current study wanted a thinner figure and over 85% of

participants with body dissatisfaction identified an ideal BMI that fell within the healthy range. On the contrary, the ideal BMI of Korean female participants fell in the underweight category, while American participants' ideal BMI fell in the normal category.<sup>1</sup> In sum, this current study observed lower percentage of participants who overestimated their weight and normal weight participants who desired a thinner figure, as well as a higher percentage of participants who desired to have healthy weight compared to the previous observations among Asian participants.

∞ Physical activity of the TF group, which primary consisted of females, was significantly lower than in the ND and BF groups, which the majority were males. Jensen and Steele<sup>26</sup> found a similar observation: preadolescent girls with body dissatisfaction had lower levels of physical activity than girls who did not report body dissatisfaction. Slater and Tiggermann<sup>27</sup> concluded that body image concerns may be involved in adolescent girls' decreased participation in physical activity. This study also observed a significant relationship between higher BMI and a desire for a smaller figure. It can be inferred that the TF group's lower levels of physical activity led to a higher BMI, which resulted in body dissatisfaction. Other studies observed that individuals with larger body sizes are more susceptible to developing body image dissatisfaction.<sup>28, 29</sup>

The participants with body dissatisfaction had similar overall food choice behaviors compared to participants with no dissatisfaction in the current study, which was similar to a study among college students in Spain.<sup>30</sup> The researchers observed that the eating habits, including fruit and vegetable consumption, were similar between wanting-to-lose-weight and not-wanting-to-lose-weight groups, and 92.1% of women in the wanting-to-lose-weight group had a normal BMI.<sup>30</sup> Navia and colleagues<sup>30</sup> concluded

that the participants who wanted to lose weight reported significantly lower consumption of sweet foods; however, the TF group reported higher consumption of sweet drinks than the ND group in this current study. In this current study and Navia et al <sup>30</sup>, participants were asked about the frequency of consumption of each food but did not identify the amount. The participants who intended to lose weight may have actually changed the amount of food they consumed as the TF group reported in the weight management practices used, but they did not change the consumption frequency. These may led to a similar food choice behaviors between the participants observed in the current and Navia et al <sup>30</sup> studies.

The most frequently reported weight management practice used by the participants was exercise, which is similar to what was reported by American <sup>31</sup> and Australian adolescents.<sup>32</sup> Thais in this study and American,<sup>31</sup> Australian,<sup>32</sup> and Korean<sup>33</sup> high school students all reported low rates of unhealthy weight management practices such as skipping meals, inducing vomiting, and taking pills.

In the current study, higher parental education and higher household income were correlated with wanting a smaller figure. In relation to the current findings, Austin, Haines, and Veugelers <sup>34</sup> observed that lower parental education and rural area living were associated with higher body dissatisfaction among preadolescent girls in Canada. Wang <sup>35</sup> found that children in China and Russia with higher household incomes were more likely to be obese. The existing literature found that obese participants reported higher body dissatisfaction.<sup>28,29</sup>

There are several limitations of the current study. The low reports of unhealthy weight loss practices may have been limited by the voluntary nature of the self-reported questionnaire. The students who chose not to participate as well as the students who participated in the study may not have wanted to report these behaviors. Secondly, weight management practices used by the participants were confined in the past 12 months, but we cannot indicate the current use of those practices. The ND group also reported the use of weight management practices. However, it is not clear if the ND group did not report body dissatisfaction because they already reached their desired body as a result of their past or current use of weight management practices. In order to clarify this point, researchers should determine their current use of these practices.

In conclusion, participants who wanted thinner figures had higher BMIs and used more weight management practices, but they were less physically active and had similar food choices as the participants who did not report body dissatisfaction. The BF group had the lowest BMI and used the fewest weight management practices compared to other groups, but they had similar physical activity levels and food choices as the ND group. The results from this study can be used as fundamental information to develop programs that promote healthy eating, physical activity, and healthy weight management.

## References

1. Jung J, Forbes GB. Body dissatisfaction and disordered eating among college women in China, South Korea, and the United States: Contrasting predictions from sociocultural and feminist theories. *Psychol Women Q.* 2007;31(4):381-93.
2. Lee S. Fat, fatigue and the feminine: the changing cultural experience of women in Hong Kong. *Cult Med Psychiatry.* 1999;23(1):51-73.
3. Sakamaki R, Amamoto R, Mochida Y, Shinfuku N, Toyama K. A comparative study of food habits and body shape perception of university students in Japan and Korea. *Nutr J.* 2005;4(1):31.
4. Sharps MJ, Price-Sharps JL, Hanson J. Body image preference in the United States and rural Thailand: An exploratory study. *J Psychol.* 2001;135(5):518-26.
5. Wardle J, Haase A, Steptoe A. Body image and weight control in young adults: international comparisons in university students from 22 countries. *Int J Obes (Lond).* 2005;30(4):644-51.
6. Cheung YTD, Lee AM, Ho SY, Li ETS, Lam TH, Fan SYS, Yip PSF. Who wants a slimmer body? The relationship between body weight status, education level and body shape dissatisfaction among young adults in Hong Kong. *BMC Public Health.* 2011;11(1):835.
7. Pon LW, Kandiah M, Mohd Nasir M. Body image perception, dietary practices and physical activity of overweight and normal weight Malaysian female adolescents. *Malays J Nutr.* 2004;10(2):131-47.

8. van den Berg PA, Mond J, Eisenberg M, Ackard D, Neumark-Sztainer D. The link between body dissatisfaction and self-esteem in adolescents: similarities across gender, age, weight status, race/ethnicity, and socioeconomic status. *J Adolesc Health*. 2010;47(3):290-6.
9. Gavin AR, Simon GE, Ludman EJ. The association between obesity, depression, and educational attainment in women: The mediating role of body image dissatisfaction. *J Psychosom Res*. 2010;69(6):573-81.
10. Rohde P, Stice E, Marti CN. Development and predictive effects of eating disorder risk factors during adolescence: Implications for prevention efforts. *Int J Eat Disord*. 2015;48(2):187-98.
11. White HJ, Haycraft E, Goodwin H, Meyer C. Eating disorder examination questionnaire: Factor structure for adolescent girls and boys. *Int J Eat Disord*. 2014;47(1):99-104.
12. Stice E, Shaw HE. Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *J Psychosom Res*. 2002;53(5):985-93.
13. Favaro A, Ferrara S, Santonastaso P. The spectrum of eating disorders in young women: a prevalence study in a general population sample. *Psychosom Med*. 2003;65(4):701-8.
14. Neumark-Sztainer D, Wall M, Story M, Standish AR. Dieting and unhealthy weight control behaviors during adolescence: associations with 10-year changes in body mass index. *J Adolesc Health*. 2012;50(1):80-6.

15. Kosulwat V. The nutrition and health transition in Thailand. *Public Health Nutr.* 2002;5(1a):183-9.
16. Powles J. Changing lifestyles and health. *Asia Pacific J Clin Nutr.* 1992;1(2):113-26.
17. Vorster HH, Bourne LT, Venter CS, Oosthuizen W. Contribution of nutrition to the health transition in developing countries: a framework for research and intervention. *Nutr Rev.* 1999;57(11):341-9.
18. Chuprapawan C. Report of The First National Health Examination Survey in Thailand. Bangkok: Ministry of Public Health 1992.
19. Akeplakorn V, Porapakham Y, Taneepanichsakul S, Pakcharoen H, Satiennoppakao V, Thaikla K. Report of the Fourth National Health Examination Survey in Thailand. Nonthaburi: Ministry of Public Health 2010.
20. Kim S, Moon S, Popkin BM. The nutrition transition in South Korea. *Am J Clin Nutr.* 2000;71(1):44-53.
21. Onis Md, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. Development of a WHO growth reference for school-aged children and adolescents. *Bull World Health Organ.* 2007;85:660-7.
22. Stunkard AJ, Sorensen T, Schulsinger F. Use of the Danish Adoption Register for the study of obesity and thinness. *Res Publ Assoc Res Nerv Ment Dis.* 1983;60:115.

23. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance. 2013 [updated September 24, 2013; cited 2014 December 9]; Available from: [http://www.cdc.gov/healthyyouth/yrbs/questionnaire\\_rationale.htm](http://www.cdc.gov/healthyyouth/yrbs/questionnaire_rationale.htm).
24. Janz KF, Lutuchy EM, Wenthe P, Levy SM. Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Med Sci Sports Exerc.* 2008;40(4):767.
25. Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey. 2013 [updated February 3, 2014; cited 2014 December 9]; Available from: [http://www.cdc.gov/nchs/nhanes/nhanes\\_questionnaires.htm](http://www.cdc.gov/nchs/nhanes/nhanes_questionnaires.htm).
26. Jensen CD, Steele RG. Brief report: body dissatisfaction, weight criticism, and self-reported physical activity in preadolescent children. *J Pediatr Psychol.* 2009;34(8):822-6.
27. Slater A, Tiggemann M. Gender differences in adolescent sport participation, teasing, self-objectification and body image concerns. *J Adolesc.* 2011;34(3):455-63.
28. Goldfield GS, Moore C, Henderson K, Buchholz A, Obeid N, Flament MF. Body dissatisfaction, dietary restraint, depression, and weight status in adolescents. *J Sch Health.* 2010;80(4):186-92.
29. Stice E, Whitenton K. Risk factors for body dissatisfaction in adolescent girls: a longitudinal investigation. *Dev Psychol.* 2002;38(5):669.
30. Navia B, Ortega RM, Requejo AM, Mena MC, Perea JM, López-Sobaler AM. Influence of the desire to lose weight on food habits, and knowledge of the characteristics



of a balanced diet, in a group of Madrid university students. *Eur J Clin Nutr.* 2003;57:S90-S3.

31. Serdula MK, Collins ME, Williamson DF, Anda RF, Pamuk E, Byers TE. Weight control practices of U.S. adolescents and adults. *Ann Intern Med.* 1993;119(7 Part 2):667.

32. Paxton S, Wertheim E, Gibbons K, Szmukler G, Hillier L, Petrovich J. Body image satisfaction, dieting beliefs, and weight loss behaviors in adolescent girls and boys. *J Youth Adolesc.* 1991;20(3):361-79.

∞ 33. Kim O, Kim K. Body mass index, body shape satisfaction, and weight control behaviors among korean girls. *Psychol Rep.* 2005;96(3):676-80.

34. Austin SB, Haines J, Veugelers P. Body satisfaction and body weight: gender differences and sociodemographic determinants. *BMC Public Health.* 2009;9(1):313.

35. Wang Y. Cross-national comparison of childhood obesity: the epidemic and the relationship between obesity and socioeconomic status. *Int J Epidemiol.* 2001;30(5):1129-36.

**Table 6. 1** Participants' characteristics

Characteristics	Level of Dissatisfaction			p-value*
	No dissatisfaction	Wanted bigger figure	Wanted thinner figure	
	n (%)	n (%)	n (%)	
<b>Current BMI</b>				< 0.001
Very underweight	3 (0.8)	19 (3.6)	9 (0.8)	
Underweight	17 (4.3)	136 (25.5)	7 (0.6)	
Healthy weight	369 (92.5)	375 (70.4)	810 (69.3)	
Overweight	8 (3.5)	0 (0.0)	219 (18.7)	
Obese	2 (0.5)	3 (0.6)	124 (10.6)	
<b>Ideal BMI</b>				< 0.001
Very underweight	6 (1.5)	9 (1.7)	13 (1.1)	
Underweight	28 (7.0)	32 (6.0)	52 (4.5)	
Healthy weight	354 (88.7)	479 (89.9)	1019 (87.2)	
Overweight	8 (2.0)	13 (2.4)	70 (6.0)	
Obese	3 (0.8)	0 (0.0)	14 (1.2)	
<b>Weight perception</b>				< 0.001
Very underweight	4 (1.0)	45 (8.4)	6 (0.5)	
Slightly underweight	42 (10.3)	246 (45.7)	16 (1.4)	
About the right weight	338 (83.3)	239 (44.4)	582 (49.5)	
Slightly overweight	18 (4.4)	6 (1.1)	423 (36.0)	
Very overweight	4 (1.0)	2 (0.4)	149 (12.7)	
<b>Gender</b>				< 0.001
Female	191 (47.0)	167 (31.0)	695 (59.1)	
Male	211 (52.0)	359 (66.7)	454 (38.6)	
Transgender	4 (1.0)	12 (2.2)	26 (2.2)	
<b>Age</b>				0.948
15 years	84 (20.8)	112 (21.0)	227 (19.4)	
16 years	152 (37.6)	208 (39.0)	473 (40.5)	
17 years	135 (33.4)	168 (31.5)	369 (31.6)	
18 years or more	33 (8.2)	46 (8.6)	99 (8.5)	
<b>School grade</b>				0.542
10th	138 (34.8)	189 (35.5)	399 (34.2)	
11th	166 (41.9)	198 (37.2)	472 (40.4)	
12th	92 (23.2)	145 (27.3)	296 (25.4)	
<b>School type</b>				< 0.001
Single Gender	204 (50.2)	296 (54.9)	727 (61.8)	
Mixed Gender	202 (49.8)	243 (45.1)	450 (38.2)	

**Table 6.1** continued

Characteristics	Level of Dissatisfaction			p-value*
	No dissatisfaction	Wanted bigger figure	Wanted thinner figure	
	n (%)	n (%)	n (%)	
<b>School program</b>				0.028
Math-Science	205 (50.7)	271 (50.8)	637 (54.4)	
Arts-Math	52 (12.9)	97 (18.2)	171 (14.6)	
Arts	82 (20.3)	72 (13.5)	175 (14.9)	
Others	65 (16.1)	93 (17.4)	189 (16.1)	
<b>Father's education</b>				0.011
Grade 6 or lower	117 (29.2)	170 (32.0)	272 (23.4)	
Grade 12	114 (28.4)	165 (31.0)	348 (30.0)	
College/diploma	49 (12.2)	52 (9.8)	152 (13.1)	
Bachelor	90 (22.4)	105 (19.7)	284 (24.5)	
Master or higher	31 (7.7)	40 (7.5)	105 (9.0)	
<b>Mother's education</b>				0.021
Grade 6 or lower	110 (27.5)	173 (32.5)	310 (26.7)	
Grade 12	132 (33.0)	157 (29.5)	336 (29.0)	
College/diploma	51 (12.8)	61 (11.5)	121 (10.4)	
Bachelor	90 (22.5)	112 (21.1)	330 (28.4)	
Master or higher	17 (4.3)	29 (5.5)	63 (5.4)	
<b>Household income<sup>#</sup></b>				0.014
10,000 baht or less	49 (12.2)	79 (14.8)	137 (11.8)	
10,001-30,000 baht	175 (43.5)	241 (45.2)	460 (39.5)	
30,001-50,000 baht	78 (19.4)	108 (20.3)	244 (20.9)	
50,001 or more	100 (24.9)	105 (19.7)	324 (27.8)	

\* Variables were analyzed using Chi-square.

<sup>#</sup> 1 US Dollar = approximately 33 Thai Baht

## 5.2 Weight perceptions of participants compared to calculated BMI categories

Weight Perception	Calculated BMI category*				p-value
	Underweight	Healthy Weight	Overweight	Obese	
	n (%)	n (%)	n (%)	n (%)	<0.001
weight	136 (70.8)	218 (14.0)	4 (1.8)	1 (0.8)	
the right weight	51 (26.6)	1078 (69.3)	19 (8.4)	1 (0.8)	
ly overweight	4 (2.1)	243 (15.6)	149 (65.6)	46 (35.7)	
overweight	1 (0.5)	17 (1.1)	55 (24.2)	154 (62.8)	

Categories classified using WHO growth reference for school-aged children and adolescents. Data were analyzed using Chi-square.

**5.3 Comparisons in BMI, physical activity, food choices, and number of weight management practices among study participants with different level of body dissatisfaction**

Variables	Level of Dissatisfaction						p-value
	No dissatisfaction		Wanted bigger figure		Wanted thinner figure		
	n	mean ± SE	n	mean ± SE	n	mean ± SE	
BMI (kg/m <sup>2</sup> )	400	19.4 ± 0.1 <sup>a</sup>	536	17.7 ± 0.1 <sup>b</sup>	1170	23.0 ± 0.1 <sup>c</sup>	< 0.001
BMI (kg/m <sup>2</sup> )	400	19.2 ± 0.1 <sup>a</sup>	536	19.4 ± 0.1 <sup>a</sup>	1170	19.9 ± 0.1 <sup>b</sup>	< 0.001
Physical activity *	406	2.34 ± 0.04 <sup>a</sup>	539	2.25 ± 0.03 <sup>a</sup>	1177	2.15 ± 0.02 <sup>b</sup>	< 0.001
Food choices *	401	7.35 ± 0.23	536	6.90 ± 0.19	1172	7.29 ± 0.13	0.183
Soft Juice (time/day)	406	0.61 ± 0.04	537	0.57 ± 0.03	1176	0.52 ± 0.02	0.051
Soft drinks (time/day)	406	0.86 ± 0.04	537	0.85 ± 0.04	1176	0.82 ± 0.02	0.553
Vegetables (time/day)	403	1.38 ± 0.06	537	1.33 ± 0.05	1172	1.33 ± 0.03	0.771
Fruit (time/day)	406	0.80 ± 0.05 <sup>a</sup>	536	0.93 ± 0.04 <sup>b</sup>	1176	0.74 ± 0.03 <sup>a</sup>	< 0.001
Sweet drink (time/day)	406	0.80 ± 0.04 <sup>a</sup>	537	0.78 ± 0.04 <sup>a</sup>	1176	0.67 ± 0.02 <sup>b</sup>	< 0.01
Milk (glass/day)	406	1.03 ± 0.05 <sup>ab</sup>	539	1.13 ± 0.05 <sup>a</sup>	1177	0.95 ± 0.03 <sup>b</sup>	< 0.01
Breakfast (days/week)	406	5.30 ± 0.11	539	5.29 ± 0.09	1177	5.32 ± 0.07	0.970
Snack (time/day)	406	2.63 ± 0.04 <sup>ab</sup>	539	2.72 ± 0.03 <sup>a</sup>	1177	2.57 ± 0.02 <sup>b</sup>	< 0.001
Snacks (time/week)	406	2.82 ± 0.10 <sup>a</sup>	539	3.28 ± 0.09 <sup>b</sup>	1177	2.80 ± 0.06 <sup>a</sup>	< 0.001
Number of weight management practices used	385	7.0 ± 0.2 <sup>a</sup>	506	5.7 ± 0.2 <sup>b</sup>	1091	8.9 ± 0.1 <sup>c</sup>	< 0.001

Standard error, BMI = body mass index. Values are expressed as means ± SE. For a given variable, values that share the same superscript letter are not significantly different from each other (p>0.05).

A higher score indicates higher physical activity levels or healthier food choices behaviors.

**Table 6. 4** Weight management practices used by Thai students with different level of body dissatisfaction

Weight management practices	Level of Dissatisfaction			p-value*
	No dissatisfaction	Wanted bigger figure	Wanted thinner figure	
	n (%)	n (%)	n (%)	
<b>Exercised</b>				< 0.001
Lose weight/decrease body fat	144 (36.5)	78 (14.6)	718 (63.7)	
Increase muscle	163 (41.4)	352 (65.7)	210 (18.6)	
Did not use	87 (22.1)	106 (19.8)	200 (17.7)	
<b>Ate more fruits and vegetables</b>				< 0.001
Lose weight/decrease body fat	170 (42.0)	99 (18.4)	840 (72.1)	
Increase muscle	135 (33.3)	291 (54.0)	116 (10.0)	
Did not use	100 (24.7)	149 (27.6)	209 (17.9)	
<b>Drank a lot of water</b>				< 0.001
Lose weight/decrease body fat	157 (38.8)	89 (16.5)	774 (66.4)	
Increase muscle	140 (34.6)	270 (50.2)	120 (10.3)	
Did not use	108 (26.7)	179 (33.3)	272 (23.3)	
<b>Ate more protein</b>				< 0.001
Lose weight/decrease body fat	60 (14.8)	50 (9.3)	335 (28.8)	
Increase muscle	180 (44.3)	344 (63.9)	305 (26.2)	
<b>Ate less sugar, candy, sweets</b>				< 0.001
Lose weight/decrease body fat	167 (41.6)	105 (19.6)	764 (65.7)	
Increase muscle	46 (11.5)	91 (17.0)	58 (5.0)	
Did not use	188 (46.9)	339 (63.4)	340 (29.3)	
<b>Ate less fat</b>				< 0.001
Lose weight/decrease body fat	179 (44.3)	102 (18.9)	824 (70.6)	
Increase muscle	38 (9.4)	61 (11.3)	36 (3.1)	
Did not use	187 (46.3)	376 (69.8)	307 (26.3)	
<b>Ate less amount of food</b>				< 0.001
Lose weight/decrease body fat	161 (39.8)	67 (12.4)	874 (74.8)	
Increase muscle	35 (8.6)	66 (12.2)	31 (2.7)	
Did not use	209 (51.6)	406 (75.3)	264 (22.6)	
<b>Ate fewer carbohydrates</b>				< 0.001
Lose weight/decrease body fat	136 (33.7)	78 (14.6)	680 (58.8)	
Increase muscle	62 (15.4)	114 (21.4)	83 (7.2)	
Did not use	105 (50.9)	341 (64.0)	394 (34.1)	
<b>Change eating habits</b>				< 0.001
Lose weight/decrease body fat	123 (30.4)	73 (13.5)	693 (59.3)	
Increase muscle	38 (9.4)	72 (13.4)	41 (3.5)	
Did not use	243(60.1)	394 (73.1)	434 (37.2)	
<b>Ate less junk food or fast food</b>				< 0.001
Lose weight/decrease body fat	128 (32.2)	89 (17.0)	619 (54.5)	
Increase muscle	44 (11.1)	78 (14.9)	50 (4.4)	
Did not use	225 (56.7)	355 (68.0)	466 (41.1)	

**Table 6.4** continued

Weight management practices	Level of Dissatisfaction			p-value*
	No dissatisfaction	Wanted bigger figure	Wanted thinner figure	
	n (%)	n (%)	n (%)	
<b>Switched to foods with lower calories</b>				< 0.001
Lose weight/decrease body fat	131 (32.3)	60 (11.1)	670 (57.2)	
Increase muscle	42 (10.4)	63 (11.7)	34 (2.9)	
Did not use	232 (57.3)	416 (77.2)	467 (39.9)	
<b>Skipped meal</b>				< 0.001
Lose weight/decrease body fat	87 (21.5)	43 (8.0)	542 (46.3)	
Increase muscle	15 (3.7)	21 (3.9)	22 (1.9)	
Did not use	303 (74.8)	471 (88.0)	607 (51.8)	
<b>Used a liquid diet formula</b>				< 0.001
Lose weight/decrease body fat	39 (9.6)	33 (6.1)	166 (14.2)	
Increase muscle	36 (8.9)	53 (9.9)	59 (5.1)	
Did not use	331 (81.5)	452 (84.0)	943 (80.7)	
<b>Followed a special diet</b>				< 0.001
Lose weight/decrease body fat	34 (8.4)	20 (3.7)	198 (16.9)	
Increase muscle	19 (4.7)	22 (4.1)	12 (1.0)	
Did not use	353 (86.9)	497 (92.2)	962 (82.1)	
<b>Took non-prescribed pills</b>				< 0.001
Lose weight/decrease body fat	23 (5.7)	22 (4.1)	106 (9.1)	
Increase muscle	19 (4.7)	61 (11.3)	19 (1.6)	
Did not use	364 (89.7)	456 (84.6)	1043 (89.3)	
<b>Joined a weight loss program</b>				0.002
Lose weight/decrease body fat	23 (5.7)	19 (3.5)	99 (8.4)	
Increase muscle	12 (3.0)	23 (4.3)	33 (2.8)	
Did not use	371 (91.4)	497 (92.2)	1042 (88.8)	
<b>Took diet pills prescribed by a doctor</b>				< 0.001
Lose weight/decrease body fat	15 (3.7)	16 (3.0)	57 (4.9)	
Increase muscle	16 (4.0)	26 (4.9)	17 (1.5)	
Did not use	374 (92.3)	494 (92.2)	1095 (93.7)	
<b>Took laxative</b>				< 0.001
Lose weight/decrease body fat	13 (3.2)	10 (1.9)	93 (7.9)	
Increase muscle	4 (1.0)	9 (1.7)	3 (0.3)	
Did not use	389 (95.8)	520 (96.5)	1079 (91.8)	
<b>Smoked</b>				0.170
Lose weight/decrease body fat	12 (3.0)	17 (3.2)	28 (2.4)	
Increase muscle	8 (2.0)	10 (1.9)	9 (0.8)	
Did not use	386 (95.1)	511 (95.0)	1133 (96.8)	
<b>Induced vomiting</b>				0.066
Lose weight/decrease body fat	4 (1.0)	8 (1.5)	30 (2.6)	
Increase muscle	6 (1.5)	8 (1.5)	7 (0.6)	
Did not use	396 (97.5)	523 (97.0)	1138 (96.9)	

\* Variables were analyzed using Chi-square

**Table 6. 5** Correlation between body dissatisfaction and measured variables

	Body Dissatisfaction
Current weight	0.522 ***
Current BMI	0.655***
Number of weight management practices used	0.333***
Physical activity	-0.068**
Food choices	0.038
Fruit juice	-0.040
Fruits	0.000
Vegetables	0.014
Soda	0.094***
Sweet drink	0.060**
Milk	-0.064**
Breakfast (days/week)	0.019
Meal (times/day)	-0.079***
Snacks	0.095***
Father's education	0.070**
Mother's education	0.051*
Household income	0.079***

\* p-value < 0.05, \*\* p-value < 0.01, \*\*\* p-value < 0.001

Note Body dissatisfaction has both negative score (indicates desire for bigger figure) and positive score (smaller figure)



## CHAPTER VII

### BEHAVIORS ASSOCIATED WITH MUSCULARITY DISSATISFACTION OF MALE HIGH SCHOOL STUDENTS IN THE BANGKOK METROPOLITAN REGION

The following manuscript has been submitted for publication in the *Journal of Adolescent Health*.

#### **Abstract**

**Purpose:** This study aimed to investigate muscularity dissatisfaction, weight management practices, food choices, and physical activity of male high school students in Thailand.

**Methods:** 1,056 male students from 7 schools in the Bangkok Metropolitan Region participated in this study. A questionnaire was used to obtain participants' characteristics,

body image perception, muscularity dissatisfaction, food choices, physical activity, and weight management practices.

**Results:** The participants were classified into no dissatisfaction (ND), wanted to increase muscularity (IM), and wanted to decrease muscularity (DM). About 3% of the participant self-identified as transgender and made up a relatively large percentage of the DM group. The BMI of the IM group was significantly lower than the ND and DM groups. Physical activity and food choices were not significantly different between the 3 groups. The IM group reported using fewer weight management practices compared to the other groups. Approximately 55% of the IM groups exercised and ate more protein to increase muscle. More than 60% of the participants in the DM group reported eating less food and fat, changing eating habits, and increasing exercise to lose weight and/or body fat.

**Conclusion:** Only 10% of the participants did not report muscularity dissatisfaction, but tried to change their weight, body fat, and muscle. The participants who wanted to increase muscularity also tried to lose body weight and fat, while increasing their muscle mass. Adolescents with different types of muscularity dissatisfaction had similar physical activity and food choices; however, they used different weight management practices to achieve their desired body.

**Keywords:** Muscularity dissatisfaction; Body dissatisfaction; Male; Thai; Adolescents; Food choices; Physical activity; Transgender

**Implications and contribution:** Studies on body dissatisfaction focusing on Asian boys' muscularity are lacking. The results from this study can be used to improve methods to

assess muscularity dissatisfaction and develop programs that promote healthy weight management among male adolescents.

## **Introduction**

Most research on body image dissatisfaction has focused on females; however, research has clearly shown that males are also dissatisfied with their bodies. While being overweight is associated with body image dissatisfaction among women, such a relationship has not been observed among overweight men [1]. Concerns in males differ from females. Males want to increase their size, specifically their muscularity, whereas females want skinnier bodies [2-4]. Common practices to achieve an ideal muscular body include exercise (working-out and lifting weights) and nutritional strategies (diet and supplements) [5, 6]. A recent study found that body dissatisfaction among male adolescents, who wanted either to be thinner or more muscular, was associated with more frequent use of unhealthy weight management behaviors, while girls, who wanted to be thinner, used both healthy and unhealthy weight management behaviors [7]. Among men, body image concerns include the desire to increase muscle mass and/or reduce body fat [8].

The findings of several studies suggest a difference in body image concerns of males across cultures. Yates and colleagues [9] observed that 40% of Japanese and Chinese male college students wanted bigger figures; however, 75% of Filipino participants wanted a smaller figure when using Stunkard's figure rating scales. Taiwanese male college students chose significantly more muscular images as their ideal figures compared to their selected current figures [10]. Interestingly, adult men across

cultural groups in the West have a similar goal of increasing their muscle mass. Adult male participants from France, Austria, and America preferred an average of 28 lbs. more muscle than their current body figure [11].

Muscularity dissatisfaction is associated with many negative factors such as decreased self-esteem, reduced life satisfaction, depressive symptoms [12] and muscle dysmorphia [13]. The prevalence of muscle dysmorphia has been associated with the desire to become more muscular. Muscle dysmorphia shares some similar behavioral and cognitive characteristics with anorexia nervosa including body image disturbance, excessive exercise, extreme or rigid diet plan, supplement and drug use, and feeling guilty if they are not be able to follow an exercise or diet plan [13].

Research about muscularity dissatisfaction and weight management practices among males in Asian countries is limited. This is the first study to examine muscularity dissatisfaction among Thai male adolescents. Body misconception (overestimation of weight) has been observed among adult Thai females [14]; however, this has not been studied among Thai males. Body misconception, either under- or overestimation of weight, can be a barrier to healthy weight loss and/or muscle building practices. Unhealthy weight management practices are associated with an increased risk of developing eating disorders [15, 16].

This study aims to gather current information about muscularity dissatisfaction and body perception among male high school students in the Bangkok metropolitan region. This study observed participants with different levels of muscularity

dissatisfaction, and compared their food choice behaviors, physical activity levels, and use of weight management practices.

## **Methods**

### *Participants*

This study was approved by the Oklahoma State University Institutional Review Board. After getting permission from the school principal of seven schools in Bangkok Metropolitan Region, Thailand, male students in 10<sup>th</sup> to 12<sup>th</sup> grade were asked to participate in the study. The participating schools included three boys and four mixed gender schools. Written informed consent was waived because the documentation of consent would be the only record linking the subject with the research. However, the parents of the students were informed about this study prior the questionnaire distribution and students were free to reject participation in this study. The questionnaire was distributed in classes and took less than 30 minutes to complete. Once the questionnaire was completed, the students returned the questionnaire to the PI in the same class period. A total of 1,056 questionnaires with complete responses were included in the analysis.

### *Measures*

A questionnaire used in this study included questions about demographic information, height, current and ideal weight, weight perception, muscularity dissatisfaction, food choice behaviors, physical activity, and weight management practices. Weight perception of the participants was obtained by asking the participants “How do you describe your weight?” The participants reported with the following responses: very underweight, slightly underweight, about the right weight, slightly

overweight, or very overweight. The participants' intentions for their body weight, body fat, and muscle size were acquired by asking, "Which of the following are you trying to do about your weight/body fat/muscle?" The participants responded with one of the following answers: lose, gain, stay the same, or not trying to do anything.

Self-reported height and weight were used to calculate participants' BMI. The cut-offs used in the current study were calculated using an average of the WHO growth reference for each month in the year of age (15, 16, 17, or 18 years). Participants were classified into the following categories using Z score: underweight if  $< -2$  SD; healthy weight if  $\geq -2$  SD but  $\leq +1$  SD; overweight if  $> +1$  SD but  $\leq +2$  SD; or obese if  $> +2$ SD.

Muscularity dissatisfaction was assessed using nine contour drawings of male-specific body image by Winitch [17]. The drawing figures range from very thin with no or little muscle mass, to very large with large muscle mass (numbered 1-9). The participants were asked to choose the figure that looks most like their current body and the figure that is closest to their ideal body. The participant's muscularity dissatisfaction was identified by the discrepancy between chosen current and ideal figures.

Questions adapted from the Youth Risk Behavior Surveillance (YRBSS) questionnaire [18] were used to assess food choice behaviors of the participants. The food examples were changed to match the common foods consumed by Thais. Questions about different types of vegetable consumption were combined into a single question including all types of vegetable consumption. The questionnaire contained nine questions, which asked the participants to recall their diet in the past week. The questions assessed how often the participants consumed fruits, vegetables, breakfast, snacks, and main meals, as

well as soda and other sweet drinks. The total scores (ranging from 0-55) were calculated, and higher scores indicated healthier food choice behaviors.

Physical activity levels were measured using Physical Activity Questionnaire for Adolescents (PAQ-A) [19]. The PAQ-A was designed for students in grades 9-12 with a Cronbach alpha = 0.88 [19]. Modifications were made on the activities listed in question one of the PAQ-A to match the activities commonly practiced activities by Thais. The participants were asked nine questions to recall their activities in the past seven days. An average score was calculated excluding question nine, which was only used to identify and exclude the participants who had unusual activity in the past seven days. Higher scores demonstrated higher physical activity levels.

A modified version of a National Health and Nutrition Examination Survey (NHANES) question [20] was used to assess weight management practices used by the study's participants in the past 12 months. The participants were asked to report their use of weight management practices listed or could indicate other activities not listed. A modification was made by further asking the intention of practicing activities in the question, either to lose weight/body fat and/or build/increase muscle. This question has good internal consistency (Cronbach alpha = 0.86).

### *Statistical Analysis*

Data were analyzed using the SPSS statistical software package version 21.0 (SPSS Inc., Chicago, IL, USA). Chi-square was used to analyze categorical data. Levene's test was used to assess equality of variances. If the results of Levene's test were significant, the variables were analyzed using Kruskal-Wallis test with Games-Howell as

a post-hoc test. If the Levene's test results were not significant, the variables were then analyzed using one-way ANOVA with Tukey's test as a post-hoc analysis. Significance was set at  $p < 0.05$ .

## **Results**

The characteristics of the participants are represented on Table 7.1. The participants were classified into no dissatisfaction (ND:  $n=107$ ) when there was no discrepancy between their current and ideal figure; wanted to increase muscularity (IM:  $n=869$ ) when their ideal figure was bigger than their current figure; and wanted to decrease muscularity (DM:  $n=80$ ) when their ideal figure was smaller than their current figure. Only 10% of the participants did not report muscularity dissatisfaction.

The majority of the participants had a healthy BMI and their reported ideal BMI also fell in the healthy range (Table 7.1). Interestingly, approximately 30% of the participants with no dissatisfaction described themselves as slightly overweight or very overweight. Similarly, 27.8% of the IM group also identified themselves as overweight. Over 50% of the participants in the DM group thought they were "about the right weight" but wanted to decrease their muscularity. Approximately 3% of the participants self-identified as male to female transgender, and these participants made up a significantly larger percentage of the participants who wanted to decrease muscularity than the ND and IM groups. There was no difference in the participants' age, school program, or father's and mother's educations between the three groups. However, participants in the ND and DM groups were more likely to be in 10<sup>th</sup> grade, while those in the IM group



were more likely in the 11<sup>th</sup> grade. The participants in middle-income families made up a larger percentage of the ND and DM groups than the IM group.

Although the Winitch drawing figures [17] selected by the ND group did not signify muscularity dissatisfaction, 43% reported trying to gain muscle, 63.6% were trying to lose body fat, and 42.1% reported trying to lose weight (Table 7.2). Over 50% of the participants in the IM group reported trying to gain muscle and lose their body fat. Likewise, the majority of the participants in the DM group reported making attempts to lose weight and body fat (Table 7.2).

Corresponding with the level of muscularity dissatisfaction, the current BMI of the IM group was significantly lower than the ND and DM groups (Table 7.3). The ideal BMI was significantly lower in the DM group compared to the ND group, but was similar to the IM group. Physical activity and overall food choice behaviors were not significantly different between the 3 groups (Table 7.3).

The IM group reported using the fewest weight management practices, while the number of weight management used by the ND and DM groups were similar (Table 7.3). Overall, the most often used weight management practices reported by the participants were exercising, eating more fruits and vegetables, drinking a lot of water, eating more protein, and eating less sweets (Table 7.4). More than 60% of the participants in the DM group reported eating less food and fat, changing eating habits, and increasing exercise to lose weight and/or body fat. In contrast, approximately 55% of participants in the IM groups exercised and ate more protein to increase muscle (Table 7.4). The IM and DM groups reported infrequent use of unhealthy weight management practices, such as taking

over-the-counter pills or laxatives, smoking, or inducing vomiting, except 47.5% of the participants in the DM groups reported skipping meals (Table 7.4).

## **Discussion**

This study observed muscularity dissatisfaction to be significant in Thai male high school students. Almost 90% of male participants reported dissatisfaction with their current body figure using the Winitch scale [17], and the majority of participants wanted to increase their muscularity. We observed a higher rate of transgender participants than the previous estimations in Thailand which were about 0.5% [21, 22]. In the current study, we expected to see a majority of the transgender participants wanting to decrease their muscularity because they wanted to look more feminine. Similar numbers of transgender participants wanted to either increase or decrease muscularity, but they made up a larger proportion of the DM group. Most of the studies in the Western societies observed that gay participants desired a more muscular figure [23, 24]. This might be because it is more common in Thailand than in the Western countries that many of the transgenders want to look like and dress like female.

Wardle and colleagues [14] observed that 31% of Thai men with healthy weight perceived themselves as overweight. This current study observed a lower rate (14.9%) of healthy weight participants who perceived themselves as overweight; however, more than one third of obese participants thought they were only slightly overweight. Interestingly, about 30% of the participants in the IM group, who wanted to increase their muscularity, perceived themselves as slightly overweight or overweight and reported trying to lose body weight along with trying to increase muscle. It can be inferred that the participants

thought of body weight, muscle mass, and adiposity as different components that could be managed separately.

The majority of the participants in the ND group were trying to change body weight, body fat, and muscle. Additionally, the ND group used significantly more weight management practices than the IM group. These factors suggest that using drawing figures might not be a sensitive enough tool to determine muscularity dissatisfaction. Even though the ND group reported intentions to change their body weight, fat, and muscle, the results of their rating of the drawing figures suggested no muscularity dissatisfaction.

YRBSS data showed that in U.S. male high school students, trying to lose weight was associated with more vigorous physical activities, exercise, and eating  $\geq 5$  servings of fruits and vegetables per day [25]. In this study, adolescents with different types of muscularity dissatisfaction had similar physical activity and food choice behaviors. However, the majority of the DM groups reported trying to lose weight, and the most reported weight management practices used by this group were exercises and consumption of more fruits and vegetables, which coincided with findings in the U.S. male high school students [25]. An explanation for similar food choice behaviors and physical activity might be a majority of participants in all groups desired to change weight, body fat, and muscle, despite their different levels of muscularity dissatisfaction.

In a study by Smolak and colleagues [26], middle-schools boys from a rural area in Ohio were asked how frequently in the past year they had used five muscle-building techniques: exercise, weight lifting, eating more, taking vitamins or supplements, and

using steroids or other drugs. Lifting weights and exercise were the most common strategies used by the respondents to increase their muscle, which was similar to the strategies of the IM group observed in the current study. Additionally, 14.6% of the middle-schools boys, with ages ranging from 11-16, reported trying steroids or other drugs to help build muscle at least once and 4% reported that they often used this muscle building technique [26]. A low rate of using unhealthy weight management practices was reported in this study, aside from skipping meals which was reported as a weight management practice used in the past 12 months by about half of the participants who wanted to decrease muscle. Unhealthy weight management practices were observed among the U.S. adolescents who wanted to lose weight or stay the same weight, with 17% of the participants in the YRBSS engaging in fasting, vomiting, or using diet pills or laxatives to lose weight [25]. Hadland and colleagues [27] reported that sexual minority male adolescents were significantly more likely to be engaged in unhealthy weight management behaviors than heterosexual male adolescents.

With the high rate of muscularity dissatisfaction in this study, we expected to observe a higher reported the use of unhealthy weight management practices than the current observations. The observations might be skewed because this study used a self-reported questionnaire, in which the responses were based on willingness of the participants to provide information. In additionally, because the transgender population in the current study was small, we were unable to conduct additional analyses to compare responses between heterosexual male and transgender participants.

In conclusion, almost 90% of Thai male high school students reported muscularity dissatisfaction and the majority of the participants correctly perceived their weight. Even

though about 10% of the participants did not report muscularity dissatisfaction, they reported trying to change their weight, body fat, and muscle. The participants who wanted to increase their muscularity also tried to lose body weight and fat, while increasing their muscle mass. Adolescents with different types of muscularity dissatisfaction had similar physical activity and food choice behaviors; however, they used different weight management practices to achieve their desired body figure.

The results from this study can be used as fundamental information to develop programs that promote healthy eating, physical activity, and healthy weight loss for adolescent males. Future research should incorporate questions about the current use of weight management practices because in the current study, the questionnaire was not limited to the participants' current use of the weight management practices, but spanned a period of 12 months. An additional question that limits reported weight management practices to those currently used will help to identify whether the ND group already reached their desired body due to previously used weight management practices or if they currently use these practices to maintain their desired body. In addition, in order to more accurately assess muscularity dissatisfaction, the drawing figures should be combined with additional assessments, such as question regarding their intentions for their weight, body fat, muscle mass, or specific body parts.

**Table 7. 1** Participants' characteristics

Characteristics	Level of Dissatisfaction			p-value*
	No dissatisfaction	Wanted to increase muscularity	Wanted to decrease muscularity	
	n (%)	n (%)	n (%)	
<b>Current BMI</b>				0.004
Very underweight	1 (0.9)	21 (2.4)	2 (2.6)	
Underweight	5 (4.7)	95 (11.0)	2 (2.6)	
Healthy weight	69 (64.5)	579 (67.2)	51 (66.2)	
Overweight	16 (15.0)	113 (13.1)	12 (15.6)	
Obese	16 (15.0)	54 (6.3)	10 (13.0)	
<b>Ideal BMI</b>				< 0.001
Very underweight	2 (1.9)	13 (1.5)	5 (6.5)	
Underweight	5 (4.7)	39 (4.5)	7 (9.1)	
Healthy weight	83 (77.6)	748 (87.0)	59 (76.6)	
Overweight	11 (10.3)	53 (6.2)	4 (5.2)	
Obese	6 (5.6)	7 (0.8)	2 (2.6)	
<b>Weight perception</b>				< 0.001
Very underweight	0 (0.0)	29 (3.3)	0 (0.0)	
Slightly underweight	9 (8.4)	177 (20.4)	3 (3.8)	
About the right weight	61 (57.0)	422 (48.6)	45 (56.3)	
Slightly overweight	25 (23.4)	177 (20.4)	24 (30.0)	
Very overweight	12 (11.2)	64 (7.4)	8 (10.0)	
<b>Gender</b>				< 0.001
Male	102 (96.2)	854 (98.4)	65 (81.3)	
Transgender	4 (3.8)	14 (1.6)	15 (18.8)	
<b>Age</b>				0.412
15 years	22 (21.0)	126 (14.6)	18 (22.8)	
16 years	38 (36.2)	354 (41.1)	29 (36.7)	
17 years	34 (32.4)	291 (33.8)	25 (31.6)	
18 years or more	11 (10.5)	91 (10.6)	7 (8.9)	
<b>School grade</b>				0.001
10th	46 (44.2)	236 (27.7)	34 (43.0)	
11th	32 (30.8)	363 (42.6)	28 (35.4)	
12th	26 (25.0)	254 (29.8)	17 (21.5)	
<b>School type</b>				0.336
Single Gender	67 (62.6)	605 (69.6)	55 (68.8)	
Mixed Gender	40 (37.4)	264 (30.4)	25 (31.3)	

**Table 7.1** continued

Characteristics	Level of Dissatisfaction			p-value*
	No dissatisfaction	Wanted to increase muscularity	Wanted to decrease muscularity	
	n (%)	n (%)	n (%)	
<b>School program</b>				0.075
Math-Science	51 (48.6)	479 (55.6)	36 (46.2)	
Arts-Math	15 (14.3)	164 (19.0)	18 (23.1)	
Arts	14 (13.3)	102 (11.8)	9 (11.5)	
Others	25 (23.8)	117 (13.6)	15 (19.2)	
<b>Father's education</b>				0.329
Grade 6 or lower	31 (29.8)	216 (25.3)	25 (32.1)	
Grade 12	33 (31.7)	225 (26.3)	20 (25.6)	
College/diploma	11 (10.6)	92 (10.8)	11 (14.1)	
Bachelor	23 (22.1)	221 (25.8)	17 (21.8)	
Master or higher	6 (5.8)	101 (11.8)	5 (6.4)	
<b>Mother's education</b>				0.315
Grade 6 or lower	31 (29.8)	225 (26.4)	27 (34.6)	
Grade 12	35 (33.7)	219 (25.7)	21 (26.9)	
College/diploma	9 (8.7)	93 (10.9)	9 (11.5)	
Bachelor	25 (24.0)	250 (29.3)	17 (21.8)	
Master or higher	4 (3.8)	66 (7.7)	4 (5.1)	
<b>Household income #</b>				0.003
10,000 baht or less	13 (12.5)	85 (9.9)	10 (12.7)	
10,001-30,000 baht	52 (50.0)	334 (38.8)	45 (57.0)	
30,001-50,000 baht	16 (15.4)	203 (23.6)	14 (17.7)	
50,001 or more	23 (22.1)	238 (27.7)	10 (12.7)	

\*Variables were analyzed using Chi-square.

# 1 US Dollar = approximately 33 Thai Baht

7. 2 Reported intentions to change body weight, body fat, and muscle of participants with different levels of dissatisfaction

Intentions	Level of Dissatisfaction			p-value*
	No dissatisfaction	Increase Muscle Figure	Decrease Muscle Figure	
	n (%)	n (%)	n (%)	
<b>Weight</b>				< 0.001
Decrease	10 (9.3)	44 (5.1)	35 (43.8)	
Increase	46 (43.0)	588 (68.2)	10 (12.5)	
Stay the same	29 (27.1)	146 (16.9)	28 (35.0)	
Not trying to do anything	22 (20.6)	84 (9.7)	7 (8.8)	
<b>Fat</b>				< 0.001
Decrease	68 (63.6)	443 (51.0)	63 (79.7)	
Increase	5 (4.7)	98 (11.3)	1 (1.3)	
Stay the same	22 (20.6)	181 (20.8)	8 (10.1)	
Not trying to do anything	12 (11.2)	147 (16.9)	7 (8.9)	
<b>Weight</b>				< 0.001
Decrease	45 (42.1)	277 (31.9)	52 (65.0)	
Increase	12 (11.2)	208 (23.9)	1 (1.3)	
Stay the same	37 (34.6)	247 (28.4)	22 (27.5)	
Not trying to do anything	13 (12.1)	137 (15.8)	5 (6.3)	

Intentions were analyzed using Chi-square



7.3 Differences in BMI, physical activity, food choices, and number of weight management practices of male participants at levels of body dissatisfaction

Variables	Level of Dissatisfaction					
	No dissatisfaction		Wanted to increase muscularity		Wanted to decrease muscularity	
	n	mean ± SE	n	mean ± SE	n	mean ± SE
BMI	107	22.5 ± 0.5 <sup>a</sup>	864	21.0 ± 0.2 <sup>b</sup>	78	23.4 ± 0.6 <sup>a</sup>
MI	107	21.1 ± 0.4 <sup>a</sup>	864	20.5 ± 0.1 <sup>ab</sup>	78	20.0 ± 0.5 <sup>b</sup>
Physical activity *	107	2.39 ± 0.08	869	2.37 ± 0.02	80	2.20 ± 0.07
Food choices †	107	29.3 ± 0.6	869	28.7 ± 0.2	79	28.4 ± 0.7
Number of weight management practices used	98	8.3 ± 0.5 <sup>a</sup>	823	6.8 ± 0.1 <sup>b</sup>	74	9.1 ± 0.5 <sup>a</sup>

Standard error, BMI = body mass index. Values are expressed as means ± SE. For a given variable, values that share the same script letter are not significantly different from each other (p>0.05).

\* Higher score indicates higher physical activity levels.

† Higher score indicates healthier food choices behaviors.

**Table 7. 4** Weight management practices used by Thai male students with different levels of muscularity dissatisfaction

Weight management practices	Level of Dissatisfaction			p-value*
	No dissatisfaction	Increase Muscle Figure	Decrease Muscle Figure	
	n (%)	n (%)	n (%)	
<b>Exercised</b>				< 0.001
Lose weight/ body fat	49 (47.6)	251 (30.2)	52 (65.0)	
Increase muscle	41 (39.8)	469 (56.5)	16 (20.0)	
Did not use	13 (12.6)	110 (13.3)	12 (15.0)	
<b>Ate more fruits and vegetables</b>				< 0.001
Lose weight/ body fat	52 (49.5)	320 (37.1)	48 (60.0)	
Increase muscle	28 (26.7)	316 (36.7)	14 (17.5)	
Did not use	25 (23.8)	226 (26.2)	18 (22.5)	
<b>Drank a lot of water</b>				< 0.001
Lose weight/ body fat	54 (50.9)	264 (30.7)	47 (59.5)	
Increase muscle	24 (22.6)	316 (36.7)	13 (16.5)	
Did not use	28 (26.4)	281 (32.6)	19 (24.1)	
<b>Ate more protein</b>				< 0.001
Lose weight/ body fat	25 (23.6)	97 (11.3)	29 (36.2)	
Increase muscle	43 (40.6)	480 (55.7)	19 (23.8)	
Did not use	38 (35.8)	284 (33.0)	32 (40.0)	
<b>Ate less sugar, candy, sweets</b>				0.015
Lose weight/ body fat	49 (46.7)	334 (38.7)	46 (57.5)	
Increase muscle	12 (11.4)	117 (13.6)	7 (8.8)	
Did not use	44 (41.9)	412 (47.7)	27 (33.8)	
<b>Ate less fat</b>				< 0.001
Lose weight/ body fat	50 (47.6)	327 (37.8)	50 (62.5)	
Increase muscle	16 (15.2)	82 (9.5)	5 (6.3)	
Did not use	39 (37.1)	455 (52.7)	25 (31.3)	
<b>Ate fewer carbohydrates</b>				0.002
Lose weight/ body fat	45 (42.5)	257 (29.7)	37 (46.3)	
Increase muscle	22 (20.8)	154 (17.8)	11 (13.8)	
Did not use	39 (36.8)	453 (52.4)	32 (40.0)	
<b>Ate less amount of food</b>				< 0.001
Lose weight/ body fat	54 (50.9)	306 (35.4)	55 (68.8)	
Increase muscle	14 (13.2)	83 (9.6)	4 (5.0)	
Did not use	38 (35.8)	475 (55.0)	21 (26.3)	
<b>Ate less junk food or fast food</b>				< 0.001
Lose weight/ body fat	37 (37.0)	262 (31.5)	43 (57.3)	
Increase muscle	14 (14.0)	89 (10.7)	5 (6.7)	
Did not use	49 (49.0)	482 (57.9)	27 (36.0)	
<b>Change eating habits</b>				< 0.001
Lose weight/ body fat	36 (34.3)	252 (29.1)	50 (62.5)	
Increase muscle	12 (11.4)	89 (10.3)	3 (3.8)	
Did not use	57 (54.3)	525 (60.6)	27 (33.8)	

**Table 7.4** continued

Weight management practices	Level of Dissatisfaction			p-value*
	No dissatisfaction	Increase Muscle Figure	Decrease Muscle Figure	
	n (%)	n (%)	n (%)	
<b>Switched to foods with lower calories</b>				< 0.001
Lose weight/ body fat	41 (39.0)	215 (24.8)	41 (51.3)	
Increase muscle	13 (12.4)	76 (8.8)	8 (10.0)	
Did not use	51 (48.6)	576 (66.4)	31 (38.8)	
<b>Skipped meal</b>				< 0.001
Lose weight/ body fat	37 (34.9)	205 (23.6)	38 (47.5)	
Increase muscle	6 (5.7)	24 (2.8)	6 (7.5)	
Did not use	63 (59.4)	638 (73.6)	36 (45.0)	
<b>Used a liquid diet formula</b>				< 0.001
Lose weight/ body fat	13 (12.3)	48 (5.5)	14 (17.5)	
Increase muscle	15 (14.2)	78 (9.0)	6 (7.5)	
Did not use	78 (73.6)	739 (85.4)	60 (75.0)	
<b>Took non-prescribed pills</b>				0.036
Lose weight/ body fat	5 (4.7)	32 (3.7)	8 (10.1)	
Increase muscle	3 (2.8)	58 (6.7)	3 (3.8)	
Did not use	98 (92.5)	776 (89.6)	68 (86.1)	
<b>Followed a special diet</b>				< 0.001
Lose weight/ body fat	10 (9.4)	50 (5.8)	12 (15.0)	
Increase muscle	9 (8.5)	19 (2.2)	3 (3.8)	
Did not use	87 (82.1)	800 (92.1)	65 (81.3)	
<b>Joined a weight loss program</b>				< 0.001
Lose weight/ body fat	10 (9.4)	29 (3.3)	10 (12.5)	
Increase muscle	5 (4.7)	31 (3.6)	1 (1.3)	
Did not use	91 (85.8)	809 (93.1)	69 (86.3)	
<b>Took diet pills prescribed by a doctor</b>				0.143
Lose weight/ body fat	2 (1.9)	17 (2.0)	5 (6.3)	
Increase muscle	2 (1.9)	29 (3.3)	2 (2.5)	
Did not use	102 (96.2)	820 (94.7)	73 (91.3)	
<b>Smoked</b>				0.972
Lose weight/ body fat	4 (3.8)	25 (2.9)	3 (3.8)	
Increase muscle	2 (1.9)	19 (2.2)	2 (2.5)	
Did not use	100 (94.3)	842 (94.9)	74 (93.7)	
<b>Took laxative</b>				0.374
Lose weight/ body fat	3 (2.8)	13 (1.5)	3 (3.8)	
Increase muscle	2 (1.9)	10 (1.2)	0 (0.0)	
Did not use	101 (95.3)	846 (97.4)	77 (96.3)	
<b>Induced vomiting</b>				0.013
Lose weight/ body fat	2 (1.9)	12 (1.4)	4 (5.0)	
Increase muscle	4 (3.8)	9 (1.0)	0 (0.0)	
Did not use	100 (94.3)	848 (97.6)	76 (95.0)	

\*Variables were analyzed using Chi-square

## References

- [1] Tiggemann M. Gender differences in the interrelationships between weight dissatisfaction, restraint, and self-esteem. *Sex Roles* 1994;30:319-330.
- [2] Ricciardelli LA, McCabe MP. Self-esteem and negative affect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscles among adolescent boys and girls. *Sex Roles* 2001;44:189-207.
- [3] Ricciardelli LA, McCabe MP. A biopsychosocial model of disordered eating and the pursuit of muscularity in adolescent boys. *Psychol Bull* 2004;130:179.
- [4] Cafri G, Thompson JK, Ricciardelli L, et al. Pursuit of the muscular ideal: physical and psychological consequences and putative risk factors. *Clin Psychol Rev* 2005;25:215-239.
- [5] Tarnopolsky MA. Building muscle: nutrition to maximize bulk and strength adaptations to resistance exercise training. *Eur J Sport Sci* 2008;8:67-76.
- [6] Murray SB, Rieger E, Hildebrandt T, et al. A comparison of eating, exercise, shape, and weight related symptomatology in males with muscle dysmorphia and anorexia nervosa. *Body Image* 2012;9:193-200.
- [7] Roy M, Gauvin L. Associations between different forms of body dissatisfaction and the use of weight-related behaviors among a representative population-based sample of adolescents. *Eat Weight Disord* 2013;18:61-73.

- [8] Hildebrandt T, Langenbucher J, Schlundt DG. Muscularity concerns among men: development of attitudinal and perceptual measures. *Body Image* 2004;1:169-181.
- [9] Yates A, Edman J, Aruguete M. Ethnic differences in BMI and body/self-dissatisfaction among Whites, Asian subgroups, Pacific Islanders, and African-Americans. *J Adolesc Health* 2004;34:300-307.
- [10] Yang C-FJ, Gray P, Harrison G, Pope J. Male body image in Taiwan versus the West: Yanggang Zhiqi meets the Adonis complex. *Am J Psychiatry* 2005;162:263-269.
- [11] Pope HG, Gruber AJ, Mangweth B, et al. Body image perception among men in three countries. *Am J Psychiatry* 2000;157:1297-1301.
- [12] Olivardia R, Pope Jr HG, Borowiecki III JJ, et al. Biceps and body image: the relationship between muscularity and self-esteem, depression, and eating disorder symptoms. *Psychol Men Masculin* 2004;5:112.
- [13] Maida DM, Armstrong SL. The classification of muscle dysmorphia. *Int J Mens Health* 2005;4:73-91.
- [14] Wardle J, Haase A, Steptoe A. Body image and weight control in young adults: international comparisons in university students from 22 countries. *Int J Obes (Lond)* 2005;30:644-651.
- [15] White S, Reynolds-Malear JB, Cordero E. Disordered eating and the use of unhealthy weight control methods in college students: 1995, 2002, and 2008. *Eat Disord* 2011;19:323-334.

[16] Grigg M, Bowman J, Redman S. Disordered eating and unhealthy weight reduction practices among adolescent females. *Prev Med* 1996;25:748-756.

[17] Lynch SM, Zellner DA. Figure preferences in two generations of men: The use of figure drawings illustrating differences in muscle mass. *Sex roles* 1999;40:833-843.

[18] Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance. Available at: [www.cdc.gov/healthyyouth/yrbs/questionnaire\\_rationale.htm](http://www.cdc.gov/healthyyouth/yrbs/questionnaire_rationale.htm) Accessed December 9 2014.

[19] Janz KF, Lutuchy EM, Wenthe P, et al. Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Med Sci Sports Exerc* 2008;40:767.

[20] Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey. Available at: [www.cdc.gov/nchs/nhanes/nhanes\\_questionnaires.htm](http://www.cdc.gov/nchs/nhanes/nhanes_questionnaires.htm) Accessed December 9 2014.

[21] Winter S. Why are there so many kathoey in Thailand? unpublished paper at: [www.transgenderasia.org/paper\\_why\\_are\\_there\\_so\\_many\\_kathoey.htm](http://www.transgenderasia.org/paper_why_are_there_so_many_kathoey.htm) 2002. Accessed April 25, 2015.

[22] Totman R. *The third sex: Kathoey: Thailand's ladyboys*: Souvenir Press, 2011.

[23] Smith AR, Hawkeswood SE, Bodell LP, et al. Muscularity versus leanness: an examination of body ideals and predictors of disordered eating in heterosexual and gay college students. *Body Image* 2011;8:232-236.

[24] Calzo JP, Corliss HL, Blood EA, et al. Development of muscularity and weight concerns in heterosexual and sexual minority males. *Health Psychol* 2013;32:42.

[25] Lowry R, Galuska DA, Fulton JE, et al. Weight management goals and practices among U.S. high school students: associations with physical activity, diet, and smoking. *J Adolesc Health* 2002;31:133-144.

[26] Smolak L, Murnen SK, Thompson JK. Sociocultural influences and muscle building in adolescent boys. *Psychol Men Masculin* 2005;6:227-239.

[27] Hadland SE, Austin SB, Goodenow CS, et al. Weight misperception and unhealthy weight control behaviors among sexual minorities in the general adolescent population. *J Adolesc Health* 2014;54:296-303.

## CHAPTER VIII

### PREDICTORS OF BODY DISSATISFACTION AND WEIGHT MANAGEMENT PRACTICES OF THAI ADOLESCENTS

#### **Abstract**

**Purpose:** The purpose of this study was to evaluate predictors of body dissatisfaction and weight management practices used by Thai adolescents.

**Methods:** 2,082 10 -12 grade students from 9 schools in the Bangkok Metropolitan Region, Thailand participated in the study. A questionnaire included questions about age, gender, parental education, household income, self-reported height and weight to calculate body mass index (BMI), body dissatisfaction, food choices, physical activity, weight management practices used, and the influence of sociocultural factors on body dissatisfaction. Multiple regression analysis examined predictors of body dissatisfaction and number of weight management practices.



**Results:** A desire for a smaller figure was predicted by higher current BMI, education levels of father and household income, and being male and receiving more comments from primary caregivers predicted a desire for a bigger figure ( $R^2 = 0.543$ ). A desire for a smaller figure was the strongest predictor of the number of weight management practices used. Wanting a smaller body size; being female; having higher BMI, healthier food choices, and physical activity levels; receiving more frequent feedback from primary caregivers and best friends; and perceiving greater media influence predicted use of more weight management practices ( $R^2 = 0.263$ ).

**Discussion:** The findings indicate risk factors of body dissatisfaction and use of more weight management practices among Thai adolescents. A prevention program should be developed regarding the risk factors of body dissatisfaction specifically for the target populations.

**Keywords:** Body dissatisfaction; Thai; Adolescents; Sociocultural factors; Weight management practices; Risk factors

## **Introduction**

A high prevalence of body dissatisfaction has been observed among males and females across cultures and age groups [1-6]. In the past, Asian countries such as China, Hong Kong, Korea, and Thailand were associated with poverty, malnutrition, and thinness [7]. Nowadays, increasing literature has observed a high prevalence of body dissatisfaction among Asian participants [8, 9], and some studies observed higher body dissatisfaction in Asian participants than Western participants [4, 8, 10, 11]. Jung and Forbes [11] observed that Korean adolescent boys and girls showed higher body dissatisfaction compared to US boys and girls. Similar observations in older age groups

found higher body dissatisfaction among Asian (Korean and Chinese) than US college students [8]. In addition, the body dissatisfaction level was significantly different between Korean and Chinese participants, with the Korean students having the highest level of body dissatisfaction [8]. These results suggested that the level of body dissatisfaction not only differs between Western and non-Western cultures, but also differs between the countries that share some similar cultures.

Several factors such as gender, age, demographic and sociocultural factors have been shown to be associated with body dissatisfaction. Body dissatisfaction of males is different from females. While most females want to have skinnier bodies, some males want to increase their size, especially their muscularity [12-15]. A large body of literature found that BMI was an important predictor of body dissatisfaction; higher BMI or weight status was significantly associated with higher body dissatisfaction [6, 12, 16-18]. Body dissatisfaction has been shown to increase with age in Asian adolescents in the US [10], but the relationship was not observed in Caucasian, African-American, or Hispanic participants [10, 18]. A negative association between socioeconomic status and body dissatisfaction has been observed in US adolescents; participants with low levels of socioeconomic status have greater body dissatisfaction [19, 20]. A study among preadolescent girls in Canada observed higher body dissatisfaction in the participants living in rural areas [21]. In the context of parental education, Canadian participants with lower parental education were more likely to have higher body dissatisfaction [21]. Similarly, Robinson and colleagues [22] reported that white girls with lower parental education reported higher body dissatisfaction, but the relationship was not observed in other racial or ethnic groups.

In terms of sociocultural factors, inconsistent results of the influence of parents, peers, and media on body dissatisfaction were observed. Pressure from parents, peers, and media significantly influenced body dissatisfaction in Malaysian [12], Chinese [23], and American [24] adolescents. However, a study by Quick et al. [18] among US adolescents did not find a significant contribution of parental weight teasing to body dissatisfaction, but less peer weight teasing was shown to be associated with higher body dissatisfaction. Among adolescents in Singapore, sociocultural factors affected body dissatisfaction between boys and girls differently. Family and peer pressure, but not media predicted body dissatisfaction in girls, whereas, media and peer pressure increased body dissatisfaction among boys, but the family's comments did not have an effect [25].

The negative effects of body dissatisfaction such as decreased self-esteem [20], reduced social effectiveness [8], depression [26], and eating disorders [8, 27, 28] have been well documented in the literature. Participants with body dissatisfaction are at risk of engaging in unhealthy weight control behaviors [3, 16]. Unhealthy weight control behaviors are associated with increased risk of developing eating disorders [3, 29] as well as gaining weight [30].

Even though predictors of body dissatisfaction have been well documented, the different levels of body dissatisfaction and its predictors differ across samples. Therefore, it is important to identify risk and protective factors of body dissatisfaction and weight management practices used specifically in the Thai population. There are only a few studies about body dissatisfaction available in the Thai population [31] and no previous research examined the influence of sociocultural factors on body attitudes and related behaviors. There remains a need to examine risk factors of body dissatisfaction among

Asian countries. Additionally, no research about the predictors of body dissatisfaction among Thais has been published. The present study is the first study that evaluates factors, including sociocultural factors, that contribute to body dissatisfaction and weight management practices used among Thai adolescents.

## **Methods**

### **Participants**

This study was approved by the Oklahoma State University Institutional Review Board. The participating schools were selected using convenience sampling. Nine schools in Bangkok Metropolitan Region, Thailand were contacted, and all nine schools agreed to participate. The school principals allowed the principal investigator (PI) to distribute a questionnaire to 5-8 classes of 10<sup>th</sup> -12<sup>th</sup> grade students based on schedule availability. Informed consent was waived because it would have been the only document identifying the participants. The parents of the students were notified about this study prior the questionnaire distribution. Both parents and students were informed that the students were free to reject participation in this study. The questionnaire was distributed in classes in June – July 2014, and the participants returned the questionnaire to the PI in the same class period. A total of 2,833 questionnaires were returned, but 751 questionnaires were excluded due to incomplete responses.

### **Measures**

A questionnaire included questions about age, gender, parental education, household income, self-reported height and weight to calculate body mass index (BMI), body dissatisfaction, food choices, physical activity, weight management practices used, and the influence of sociocultural factors on body dissatisfaction.

Body dissatisfaction was assessed using Stunkard's figure rating scale (FRS) [32]. The scale consisted of 9 gender specific drawing figures. The drawing figures varied in size from very thin to very large, numbered 1-9. The participants were asked to choose the figure that looks most like their current body, and the figure that looks most like their ideal body. Body dissatisfaction was identified if a discrepancy between current and ideal figure existed. Negative scores indicated the participant wanted a bigger figure, and positive scores represented a desire for a smaller figure.

A modified version of questions from the Youth Risk Behavior Surveillance Survey (YRBSS) was used to determine food choices of the participants [33]. The food examples were adapted to the common food consumed by Thais. Questions about vegetable consumption were combined into a single question asking about overall vegetable consumption. The questionnaire captured frequency of consumption of fruit juice, fruit, vegetables, soda, sweet drinks, milk, breakfast, main meals, and snacks. The questionnaire consisted of 9 questions asking the participant to recall their consumption of each food in the past 7 days. The total scores from 9 items were calculated (range from 0-55), and the higher scores indicated healthier food choices.

Physical activity level was determined using the Physical Activity Questionnaire for Adolescents (PAQ-A) [34]. The first question in the questionnaire was modified by changing the activities listed to match the common activities practiced by Thais. The questionnaire asked the participants to recall the level of their activities at different times of day or week (i.e. physical education class, lunch, after school, or weekend) in the past 7 days. Each question was scored on a 5-point Likert scale. A final score was an average of 8 questions, which ranged from 1 to 5. Higher scores indicated higher physical activity

levels. PAQ-A was designed for students in grades 9-12, with good internal consistency (Cronbach alpha = 0.88) [34].

A modified version of a question from the National Health and Nutrition Examination Survey (NHANES) [35] was used to gather the number of weight management practices used by the participants in the past 12 months. Examples of the practices listed on the scale were modified to match the common behaviors of Thais. The participants were asked to check all practices that they performed in the past 12 months. The number of weight management practices used by the participants was computed.

The influence of sociocultural factors on body dissatisfaction was determined using a modification of the Sociocultural Influences Questionnaire [36]. The original questionnaire had separate sections for father, mother, best male friends, and best female friends. Due to the length of the questionnaire, the following modifications were made. First, this study combined father and mother to one section for primary caregiver. We also asked the participants to indicate whom they identified as their primary caregiver. Second, the best male friends and best female friends were combined into one section for best friends. Questions asked about frequency of the feedback that the participants received from a primary caregiver and best friends, and the perception from media to lose weight, gain weight, or increase muscle. Example questions included “Does your primary caregiver/best friend encourage you to lose weight?” and “Do the media (i.e. T.V, movies, magazines and newspaper) give the idea that you should be slimmer?” Items were rated on a 5-point Likert scale from “never” to “always”, scoring from 1 to 5. Final scores of each category (primary caregiver, best friends, and media) were calculated. The final scores ranged from 9-45 for the primary caregiver and best friends, and 10-50 for

media. Higher scores indicated higher perceived pressure from those factors. The scales have high levels of internal consistency with adolescent boys and girls in grades 10 to 12, with Cronbach alpha > 0.84 [36].

### **Statistical analysis**

Data were analyzed using the SPSS statistical software package version 21.0 (SPSS Inc., Chicago, IL, USA). Multiple regression modeling was performed to evaluate the variables that predicted body dissatisfaction and the number of weight management practices used by the participants. The enter method was used to enter independent variables into the equation. The predictive variables entered in the equation for body dissatisfaction included age, gender, food choices, physical activity, parental education, household income, and sociocultural factors. In the second equation, the number of weight management practices used was treated as the dependent variable, and age, gender, food choices, physical activity, parental education, household income, sociocultural factors, and body dissatisfaction were treated as independent variables. Because gender was a significant predictor of body dissatisfaction and number of weight management practices, separate regression analyses were conducted for males and females. Significance was set at  $p < 0.05$ .

### **Results**

Table 8.1 shows the participants' characteristics. Similar numbers of male (49.3%) and female (50.7%) students participated in the study with an age range from 15-18 years old. The majority of participants were 16 or 17 years old. In this sample, 41.5% of the participants were from middle-income families. More than half of the participants

referred to their mother when responding to the primary caregiver questions in the Sociocultural Influences Questionnaire, and 17.1% referred to their father.

The means and standard deviations for the study variables are included in Table 8.2. The mean BMI was 20.97 kg/m<sup>2</sup>. The participants mean score for food choice behaviors was 28.12 out of 55, and the mean physical activity score was 2.21 out of 5. With the scores less than half of the maximum points, the data suggested that the participants did not have healthy food choice behaviors or frequent physical activity. Mean scores for the influence of sociocultural factors were 15.30 for primary caregiver, 14.15 from best friends, and 28.33 from media (Table 8.2); all were scored less than half of the maximum points. These also indicated that the participants did not often receive feedback or comments from primary caregivers, best friends, or the media. The participants reported an average of 7.72 weight management practices used in the past 12 months.

The mean score of body dissatisfaction reported by the participants using FRS was 0.5 (Table 8.2). However, only 19.4% of the participants did not report body dissatisfaction (Table 8.3). Most participants wanted a smaller figure (a positive score on the FRS), but about 25% wanted a bigger figure, which was represented by negative scores (Table 8.3). This caused the average score of body dissatisfaction to be close to zero.

### **Predictors of Body Dissatisfaction**

Multiple regression analysis in the total sample showed a significant effect of the combined predictor variables on body dissatisfaction,  $F(11, 1708) = 184.44, p < 0.001$ ,



$R^2 = 0.543$  (Table 8.4). However, only gender, father's education, household income, current BMI, and primary caregiver's feedback made a significant contribution to body dissatisfaction (Table 8.4). Current BMI was the strongest predictor of body dissatisfaction, with a higher BMI being associated with a desire for smaller figure. Being male and receiving more comments from primary caregivers predicted a desire for a bigger figure. Desire for a smaller figure was predicted by higher education level of the father and household income (Table 8.4).

Because gender significantly influenced body dissatisfaction, separate multiple regression analyses for female ( $R^2 = 0.513$ ) and male ( $R^2 = 0.544$ ) participants were performed. When the regressions specific to gender were performed, some variables became non-significant predictors of body dissatisfaction. For females, all significant predictors were similar to the regression analysis of all participants, except father's education, which was no longer a significant predictor (Table 8.4). Only current BMI and feedback from primary caregivers significantly predicted body dissatisfaction among male adolescents (Table 8.4).

### **Predictors of Number of Weight Management Practices Used**

The combined predictor variables for the total sample showed a significant effect on the number of weight management practices used  $F(12, 1606) = 47.86, p < 0.001, R^2 = 0.263$  (Table 8.5). The following variables were significant predictors of the number of weight management practices: body dissatisfaction, gender, mother's education, current BMI, food choices, physical activity, comments from primary caregivers and best friends, and media influences (Table 8.5). A desire for a smaller figure was the strongest predictor

of the number of weight management practices used. Being female, having higher BMI, healthier food choices, higher physical activity levels, receiving more frequent feedback from primary caregivers and best friends, and perceiving higher media influences predicted use of more weight management practices (Table 8.5).

Gender significantly predicted the weight management practices used, so the separate regression models for females and males were analyzed. Both regression analyses showed significant effects of the combined predictor variables on body dissatisfaction (female:  $R^2 = 0.228$ , male:  $R^2 = 0.286$ ) (table 8.5). The following variables that were significant predictors in the total participants model became non-significant in the gender-specific models. In the regression analysis for females, food choices and best friends were no longer significant predictors, and mother's education, physical activity, and best friends were no longer significant predictors in the regression analysis for males.

## **Discussion**

This study identified risk factors of body dissatisfaction and use of more weight management practices among Thai adolescents. Approximately 55% of the variation in body dissatisfaction was explained by gender, BMI, fathers' education, household income, and comments from primary caregivers. In agreement with previous literature [6, 12, 16-18], the current study also observed that BMI is a significant contributor of body dissatisfaction in Thai adolescents. The findings in this study support evidence that males and females have different body dissatisfaction [13-15], because in this study, males were more likely to want to increase their body size, while females wanted to decrease body size. Even though de Guzman et al. [10] observed that body dissatisfaction increased with

age in Asian adolescents living in the US, age was not shown to be a significant predictor of body dissatisfaction in Thai adolescents. We also hypothesized that lower physical activity level and poorer food choice behaviors would contribute to body dissatisfaction; however, neither variable was a significant predictor of body dissatisfaction among Thai adolescents. It is possible that adolescents with body dissatisfaction had changed their physical activity and food habits to change their body shape.

In the current study, higher socioeconomic status (SES) was associated with a desire for skinnier bodies in the total sample and among females participants, which contrasts with the observations in US adolescents by Paxton et al. [19] and van den Berg et al. [20] that lower SES was associated with higher body dissatisfaction. However, both studies used the Body Shape Satisfaction Scale [37] to assess body dissatisfaction, which identified satisfaction with 10 different parts of their body, but did not indicate whether participants wanted to reduce or increase the size of each part. The explanation of the contradictory finding can also be explained by the country's development status. In developed countries like the US, higher BMI was associated with lower SES. In contrast, individuals with higher SES tended to have higher BMI in developing countries, such as Thailand [38, 39]. Opposite findings were also observed in the contribution of parental education to body dissatisfaction. Lower parental education was associated with higher body dissatisfaction in Canadian and American adolescents [21, 22]. However, higher fathers' education significantly contributed to a greater desire for a skinnier body in the total sample in this current study.

In previous studies, varied results of the contribution of sociocultural factors on body dissatisfaction were observed in different samples. Different tools were used to

assess the influence of sociocultural factors and body dissatisfaction, which might contribute to those variations. For example, in Malaysian adolescents, family, peer, and media weight-related pressures were associated with increased body dissatisfaction [12] as assessed by the Body Dissatisfaction Scale [40], which does not indicate whether the participants wanted a bigger or smaller figure. The FRS was used to evaluate body dissatisfaction in the current study; the FRS identified whether the participants wanted a bigger or smaller figure. In the present study, Thai adolescents who received comments about body and weight-related behaviors from their primary caregiver more often showed an increased desire for a bigger figure, whereas pressure from best friends and media did not have an effect on body dissatisfaction.

In this study, body dissatisfaction with a desire for a smaller figure and being female were significant predictors of the number of weight management practices used. As observed in our previous studies, use of more weight management practices was reported by females compared to male participants [41], and participants who wanted a smaller figure reported the highest use of weight management practices compared to participants who did not report body dissatisfaction or wanted a bigger figure (Chapter 6). Similarly, male participants who reported wanting to decrease their muscularity used more weight management practices compared to adolescents with no dissatisfaction and those who wanted to increase muscularity [42]. In this study, higher BMI predicted body dissatisfaction and also significantly contributed to use of more weight management practices. Adolescents in the US who were dissatisfied with their body weight reported trying to lose weight or gain muscle [43]. Participants who used more weight management practices might be more likely to engage in unhealthy weight management

behaviors, and the unhealthy weight management behaviors have been associated with increased risk of developing eating disorders [3, 29]. Boutelle et al. [44] observed that overweight adolescents used more unhealthy weight management practices (i.e. induced vomiting, took diet pills or laxatives), and were less likely to be engaged in healthy weight control behaviors such as increased physical activity levels compared to non-overweight adolescents.

In this study, healthier food choice behaviors in males and higher physical activity levels in females were associated with more weight management practices used. As observed in the YRBSS, male and female students who reported trying to lose weight had more frequent vigorous physical activity and strengthening exercises, and male students reported eating 5 or more servings of fruits and vegetables [45]. These coincide with our previous studies [41, 42] that the weight management practices most often used by Thai adolescents were exercise and eating more fruits and vegetables. Few Thai adolescents reported engaging in unhealthy weight management behaviors [41, 42].

Higher maternal education was associated with decreased use of weight management practices in the total sample and in female participants. This contrasts with the finding that higher paternal education level was associated with an increased desire for a smaller figure in this study, and with a previous study that observed that higher maternal education was associated with eating disorders in Swedish females [46]. All sociocultural factors, which included more comments on body and weight-related behaviors from primary caregivers and best friends, and media pressure, significantly predicted more frequent use of weight management practices in the current study. These outcomes are consistent with the findings in Malaysian adolescents [12].

There are several limitations in this study. The variables included in this study predicted a significant amount of variation in body dissatisfaction and number of weight management practices; however, there might be other factors not considered in this study that accounted for the changes in the dependent variables such as health knowledge of both participants and parents, parenting styles, and thin-ideal internalization. Some significant predictors in the overall participant model became non-significant in the gender-specific models. If the factor lost significance in both female and male regression models, this might be because the sample size was smaller. On the other hand, if the factor was significant in one gender, but not in another, it should be a gender-specific contributor. All participants were from the Bangkok Metropolitan Region, which might not represent adolescents throughout Thailand. Replicate studies with more diverse samples or different age groups are important to verify the accuracy of findings and also will be a better representative of the Thai population.

In summary, these findings indicated risk factors of body dissatisfaction among Thai adolescents were gender, fathers' education, household income, current BMI, and comments from primary caregivers. An increased use of weight management practices among Thai adolescents was predicted by body dissatisfaction, gender, mothers' education, BMI, food choice behaviors, physical activity levels and sociocultural factors. Compared to previous studies, the predicted contributors of body dissatisfaction differ between studies, which have different participant characteristics and used different measurement tools. Also, in the current study, food choices were significant predictors of number of weight management practices for males, and physical activity for females.

The findings suggest that the components of intervention or prevention program should be incorporated differently for different target groups. Prevention programs of body dissatisfaction among Thai adolescents might consider promoting healthy weight or BMI as a priority. Parents should be informed about the consequences of their weight-related comments on their children's body dissatisfaction and weight-related behaviors. The intervention aiming to promote healthy weight management should incorporate sociocultural factors into the program, because all factors were related to an increased use of weight management practices. Additionally, some factors should be highlighted differently between genders such as eating healthy should be emphasized among female adolescents, and being more physically active should be encouraged among male adolescents.

**Table 8.1** Participants' characteristics

Variables	Total n (%)
<b>Age</b>	
15 years	416 (20.1)
16 years	817 (39.5)
17 years	659 (31.9)
18 years	177 (9.6)
<b>Father's education</b>	
Grade 6 or lower	548 (26.6)
Grade 12	614 (29.8)
College/diploma	247 (12.0)
Bachelor	473 (23.0)
Master or higher	175 (8.5)
<b>Mother's education</b>	
Grade 6 or lower	583 (28.4)
Grade 12	611 (29.7)
College/diploma	230 (11.2)
Bachelor	524 (25.5)
Master or higher	107 (5.2)
<b>Household income</b>	
10,000 baht or less	266 (12.9)
10,001-30,000 baht	856 (41.5)
30,001-50,000 baht	422 (20.5)
50,001 or more	519 (25.2)
<b>Primary caregiver*</b>	
Mother	1072 (51.5)
Father	357 (17.1)
Grandmother	98 (4.7)
Others	146 (7.1)
Did not specify	409 (19.6)

\* Primary caregiver is the person that the participants referred to when answering the primary caregiver section in the Sociocultural Influences Questionnaire.



**Table 8.2** Mean scores of measured variables

<b>Variables</b>	<b>Mean</b>	<b>SD</b>
Current BMI (kg/m <sup>2</sup> )	20.97	4.27
Food choices	28.12	6.02
Physical activity	2.21	0.64
Primary caregiver	15.30	5.04
Best friends	14.15	5.15
Media	28.33	6.83
Number of weight management practices used	7.72	4.11
Body dissatisfaction	0.50	1.30

**Note** SD = standard deviation

**Table 8.3** Frequency of body dissatisfaction reported by the study participants

<b>Body dissatisfaction*</b>	<b>n (%)</b>
-4	4 (0.2)
-3	10 (0.5)
-2	107 (5.2)
-1	405 (19.5)
0	402 (19.4)
1	709 (34.1)
2	353 (17.0)
3	76 (3.7)
4	7 (0.3)
5	3 (0.1)

**Note** \*negative scores = wanted a bigger figure, positive scores = wanted a smaller figure

**Table 8.4** Factors predicting body dissatisfaction of Thai high school students

Predictor variables	Total (R <sup>2</sup> = 0.543)			Female (R <sup>2</sup> = 0.513)			Male (R <sup>2</sup> = 0.544)		
	B	S.E.	β	B	S.E.	β	B	S.E.	β
Gender †	-0.774***	0.045	-0.299						
Age	-0.003	0.024	-0.002	0.029	0.030	0.022	-0.051	0.041	-0.032
Father's education	0.047*	0.024	0.049	0.035	0.030	0.038	0.065	0.037	0.066
Mother's education	0.016	0.025	0.016	0.039	0.032	0.041	-0.015	0.038	-0.015
Household income	0.098***	0.026	0.077	0.146***	0.032	0.128	0.011	0.045	0.007
Current BMI	0.216***	0.005	0.710	0.212***	0.007	0.715	0.222***	0.008	0.731
Food choices	-0.003	-0.004	-0.016	-0.007	0.005	-0.037	0.001	0.006	0.004
Physical activity	-0.031	0.036	-0.015	0.028	0.050	0.013	-0.087	0.053	-0.043
Primary caregiver	-0.025***	0.006	-0.093	-0.029***	0.008	-0.111	-0.022*	0.008	-0.081
Best friend	-0.010	0.006	-0.035	-0.003	0.008	-0.012	-0.016	0.008	-0.061
Media	0.004	0.003	0.021	0.003	0.004	0.016	0.005	0.005	0.027

**Note** B = Unstandardized Coefficients, β = Standardized Coefficients

† Gender was coded as follow: 0 = female, 1 = male

\* p <0.05, \*\*\* p<0.001

**Table 8.5** Factors predicting the number of weight management practices used by Thai high school students

Predictor variables	Total (R <sup>2</sup> =0.263)			Female (R <sup>2</sup> =0.228)			Male (R <sup>2</sup> =0.286)		
	B	S.E.	β	B	S.E.	β	B	S.E.	β
Gender †	-1.549***	0.203	-0.189						
Body dissatisfaction	0.733***	0.100	0.232	0.893***	0.147	0.252	0.552***	0.133	0.199
Age	0.076	0.101	0.016	-0.031	0.138	-0.007	0.214	0.147	0.048
Father's education	0.073	0.098	0.024	0.092	0.140	0.028	0.031	0.133	0.011
Mother's education	-0.393***	0.102	-0.126	-0.601***	0.148	-0.179	-0.218	0.135	-0.077
Household income	-0.028	0.109	-0.007	0.109	0.149	0.027	-0.169	0.158	-0.041
Current BMI	0.157***	0.031	0.161	0.107*	0.045	0.101	0.211***	0.041	0.249
Food choices	0.043**	0.016	0.063	-0.001	0.021	-0.001	0.101***	0.023	0.154
Physical activity	0.443**	0.149	0.067	0.943***	0.230	0.123	0.02	0.187	0.004
Primary caregiver	0.113***	0.023	0.133	0.112**	0.036	0.12	0.11***	0.030	0.147
Best friend	0.057*	0.023	0.067	0.061	0.035	0.066	0.057	0.030	0.077
Media	0.085***	0.013	0.143	0.104***	0.190	0.164	0.059*	0.018	0.113

**Note** B = Unstandardized Coefficients, β = Standardized Coefficients

† Gender was coded as follow: 0 = female, 1 = male

\* p <0.05, \*\* p <0.01, \*\*\* p<0.001

## References

- [1] Yates A, Edman J, Aruguete M. Ethnic differences in BMI and body/self-dissatisfaction among Whites, Asian subgroups, Pacific Islanders, and African-Americans. *J Adolesc Health* 2004;34:300-307.
- [2] Pallan M, Hiam L, Duda J, et al. Body image, body dissatisfaction and weight status in south Asian children: a cross-sectional study. *BMC Public Health* 2011;11:21-8.
- [3] Nouri M, Hill LG, Orrell-Valente JK. Media exposure, internalization of the thin ideal, and body dissatisfaction: Comparing Asian American and European American college females. *Body Image* 2011;8:366-372.
- [4] Wardle J, Haase A, Steptoe A. Body image and weight control in young adults: international comparisons in university students from 22 countries. *Int J Obes (Lond)* 2006;30:644-651.
- [5] Pon LW, Kandiah M, Mohd Nasir M. Body image perception, dietary practices and physical activity of overweight and normal weight Malaysian female adolescents. *Malays J Nutr* 2004;10:131-147.
- [6] Lawler M, Nixon E. Body dissatisfaction among adolescent boys and girls: the effects of body mass, peer appearance culture and internalization of appearance ideals. *J Youth Adolesc* 2011;40:59-71.
- [7] Lee S. Fat, fatigue and the feminine: the changing cultural experience of women in Hong Kong. *Cult Med Psychiatry* 1999;23:51-73.

- [8] Jung J, Forbes GB. Body dissatisfaction and disordered eating among college women in China, South Korea, and the United States: Contrasting predictions from sociocultural and feminist theories. *Psychol Women Q* 2007;31:381-393.
- [9] Sakamaki R, Amamoto R, Mochida Y, et al. A comparative study of food habits and body shape perception of university students in Japan and Korea. *Nutr J* 2005;4:31-6.
- [10] de Guzman NS, Nishina A. A longitudinal study of body dissatisfaction and pubertal timing in an ethnically diverse adolescent sample. *Body Image* 2014;11:68-71.
- [11] Jung J, Forbes G, Lee Y-j. Body dissatisfaction and disordered eating among early adolescents from Korea and the US. *Sex Roles* 2009;61:42-54.
- [12] Mellor D, McCabe M, Ricciardelli L, et al. Sociocultural influences on body dissatisfaction and body change behaviors among Malaysian adolescents. *Body Image* 2009;6:121-128.
- [13] Ricciardelli LA, McCabe MP. Self-esteem and negative affect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscles among adolescent boys and girls. *Sex Roles* 2001;44:189-207.
- [14] Ricciardelli LA, McCabe MP. A biopsychosocial model of disordered eating and the pursuit of muscularity in adolescent boys. *Psychol Bull* 2004;130:179-205.

- [15] Cafri G, Thompson JK, Ricciardelli L, et al. Pursuit of the muscular ideal: physical and psychological consequences and putative risk factors. *Clin Psychol Rev* 2005;25:215-239.
- [16] Cromley T, Knatz S, Rockwell R, et al. Relationships between body satisfaction and psychological functioning and weight-related cognitions and behaviors in overweight adolescents. *J Adolesc Health* 2012;50:651-653.
- [17] Xanthopoulos MS, Borradaile KE, Hayes S, et al. The impact of weight, sex, and race/ethnicity on body dissatisfaction among urban children. *Body Image* 2011;8:385-389.
- [18] Quick V, Eisenberg ME, Bucchianeri MM, et al. Prospective predictors of body dissatisfaction in young adults: 10-year longitudinal findings. *Emerg Adulthood* 2013;1:271-282.
- [19] Paxton SJ, Eisenberg ME, Neumark-Sztainer D. Prospective predictors of body dissatisfaction in adolescent girls and boys: A five-year longitudinal study. *Dev Psychol* 2006;42:888-899.
- [20] van den Berg PA, Mond J, Eisenberg M, et al. The link between body dissatisfaction and self-esteem in adolescents: similarities across gender, age, weight status, race/ethnicity, and socioeconomic status. *J Adolesc Health* 2010;47:290-296.
- [21] Austin SB, Haines J, Veugelers P. Body satisfaction and body weight: gender differences and sociodemographic determinants. *BMC Public Health* 2009;9:313-9.

- [22] Robinson TN, Chang JY, Haydel KF, et al. Overweight concerns and body dissatisfaction among third-grade children: The impacts of ethnicity and socioeconomic status. *J Pediatr* 2001;138:181-187.
- [23] Chen H, Gao X, Jackson T. Predictive models for understanding body dissatisfaction among young males and females in China. *Behav Res Ther* 2007;45:1345-1356.
- [24] Ata R, Ludden A, Lally M. The effects of gender and family, friend, and media influences on eating behaviors and body image during adolescence. *J Youth Adolesc* 2007;36:1024-1037.
- [25] Lwin MO, Malik S. The role of media exposure, peers, and family on body dissatisfaction amongst boys and girls in Singapore. *J Child Media* 2011;6:69-82.
- [26] Gavin AR, Simon GE, Ludman EJ. The association between obesity, depression, and educational attainment in women: The mediating role of body image dissatisfaction. *J Psychosom Res* 2010;69:573-581.
- [27] Rohde P, Stice E, Marti CN. Development and predictive effects of eating disorder risk factors during adolescence: Implications for prevention efforts. *Int J Eat Disord* 2015;48:187-198.
- [28] White HJ, Haycraft E, Goodwin H, et al. Eating disorder examination questionnaire: Factor structure for adolescent girls and boys. *Int J Eat Disord* 2014;47:99-104.



- [29] Favaro A, Ferrara S, Santonastaso P. The spectrum of eating disorders in young women: a prevalence study in a general population sample. *Psychosom Med* 2003;65:701-708.
- [30] Neumark-Sztainer D, Wall M, Story M, et al. Dieting and unhealthy weight control behaviors during adolescence: associations with 10-year changes in body mass index. *J Adolesc Health* 2012;50:80-86.
- [31] Sharps MJ, Price-Sharps JL, Hanson J. Body image preference in the United States and rural Thailand: An exploratory study. *J Psychol* 2001;135:518-526.
- [32] Stunkard AJ, Sorensen T, Schulsinger F. Use of the Danish Adoption Register for the study of obesity and thinness. *Res Publ Assoc Res Nerv Ment Dis* 1983;60:115-20.
- [33] Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance Survey. Available at: [http://www.cdc.gov/healthyyouth/yrbs/questionnaire\\_rationale.htm](http://www.cdc.gov/healthyyouth/yrbs/questionnaire_rationale.htm) Accessed December 9 2014.
- [34] Janz KF, Lutuchy EM, Wenthe P, et al. Measuring activity in children and adolescents using self-report: PAQ-C and PAQ-A. *Med Sci Sports Exerc* 2008;40:767-72.
- [35] Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey. Available at: [http://www.cdc.gov/nchs/nhanes/nhanes\\_questionnaires.htm](http://www.cdc.gov/nchs/nhanes/nhanes_questionnaires.htm) Accessed December 9 2014.

- [36] McCabe MP, Ricciardelli LA. The structure of the perceived sociocultural influences on body image and body change questionnaire. *Int J Behav Med* 2001;8:19-41.
- [37] Pingitore R, Spring B, Garfield D. Gender differences in body satisfaction. *Obes Res* 1997;5:402-409.
- [38] Pampel FC, Denney JT, Krueger PM. Obesity, SES, and economic development: a test of the reversal hypothesis. *Soc Sci Med* 2012;74:1073-1081.
- [39] Dinsa GD, Goryakin Y, Fumagalli E, et al. Obesity and socioeconomic status in developing countries: a systematic review. *Obes Rev* 2012;13:1067-1079.
- [40] McCabe MP, Ricciardelli LA. A longitudinal study of pubertal timing and extreme body change behaviors among adolescent boys and girls. *Adolescence* 2004;39:145-166.
- [41] Chongwatpol P, Gates GE. Gender differences in body image perception, weight management practices, and food choices of high school students in the Bangkok metropolitan region. Submitted to *Public Health Nutr*.
- [42] Chongwatpol P, Gates GE. Behaviors associated with muscularity dissatisfaction of male high school students in the Bangkok metropolitan region. Submitted to the *J Adolesc Health*.
- [43] Fredrickson J, Kremer P, Swinburn B, et al. Weight perception in overweight adolescents: Associations with body change intentions, diet and physical activity. *J Health Psychol* 2015;20:774-784.

[44] Boutelle K, Neumark-Sztainer D, Story M, et al. Weight control behaviors among obese, overweight, and nonoverweight adolescents. *J Pediatr Psychol* 2002;27:531-540.

[45] Lowry R, Galuska DA, Fulton JE, et al. Weight management goals and practices among U.S. high school students: associations with physical activity, diet, and smoking. *J Adolesc Health* 2002;31:133-144.

[46] Ahren JC, Chiesa F, Af Klinteberg B, et al. Psychosocial determinants and family background in anorexia nervosa--results from the Stockholm Birth Cohort Study. *Int J Eat Disord* 2012;45:362-369.

## CHAPTER IX

### CONCLUSION

The overall study recruited both male and female adolescent participants and obtained two aspects of body dissatisfaction, which were adiposity (from males and females) and muscularity dissatisfaction (only from males). In the first manuscript, adiposity dissatisfaction, physical activity, food choices, and weight management practices of males and females who attended single- and mixed gender schools were compared. The second manuscript included both male and female adolescents and categorized participants into 3 groups by adiposity dissatisfaction: no dissatisfaction, wanted thinner and bigger figures. Then the physical activity, food choices, and weight management practices were compared between the 3 groups. In the third manuscript, only male participants were included in the analysis. The male participants were classified into 3 groups by their muscularity dissatisfaction: no dissatisfaction, wanted to increase and decrease muscularity. The physical activity, food choices, and weight management

practices of each group were compared. The last manuscript evaluated factors, including sociocultural factors, that contributed to body dissatisfaction and number of weight management practices used among Thai adolescents.

Over 80% of male and female adolescents reported being dissatisfied with their current body shape. Males and females students had similar levels of body dissatisfaction. However, the majority of females wanted skinnier bodies, while males wanted either bigger or smaller figures. Thai students in the current study had lower physical activity levels compared to adolescents from other countries. Gender and school environment affected food choices, physical activity, and weight management practices used. Females had significantly less physical activity, poorer food choice behaviors, and used more weight management practices than male students. Students in single gender schools were less physically active, used less weight management practices, but had healthier food choices compared to students in mixed gender schools.

The majority of the participants in this study had correct perceptions of their weight classification and most of the participants had healthy BMIs. Half of the participants that had healthy weight reported wanting thinner figures, but over 85% of participants with body dissatisfaction identified an ideal BMI that fell within the healthy range. The participants in the “wanted thinner figure” group had the highest BMI and the physical activity of this group was significantly lower than the “no dissatisfaction” and “wanted bigger figure” groups. However, this might be because the majority of the “no dissatisfaction” and “wanted bigger figure” groups were males who were more physically active than females as previously observed. The participants with body dissatisfaction had similar overall food choice behaviors to participants with no dissatisfaction. The

“wanted thinner figure” group reported use of the most weight management practices followed by “no dissatisfaction” and “wanted bigger figure” groups.

Muscularity dissatisfaction was significant in Thai male high school students, with almost 90% of male participants reporting dissatisfaction with their current muscularity. The majority of participants wanted to increase their muscularity, and they reported trying to lose body weight along with trying to increase muscle. Even though some participants did not report muscularity dissatisfaction, they were trying to change body weight, body fat, and muscle, and also used more weight management practices than the participants who wanted to increase muscularity. Male adolescents with different types of muscularity dissatisfaction had similar physical activity and food choice behaviors.

Multiple regression analyses observed that among Thai adolescents, being male and receiving more comments from primary caregivers predicted desire for a bigger figure and desire for a smaller figure was predicted by higher education level of the father and household income. The use of more weight management practices among Thai adolescents was predicted by a desire for a smaller figure; being female; having higher BMI, healthier food choices, and higher physical activity levels; receiving more frequent feedback from primary caregivers and best friends; and perceiving higher media influences.

## **Recommendations**

To address the limitations and to further advance the findings from the current research, the following suggestions are offered for future research. First, the convenience

samples were used in this study, so it was not representative of Thai adolescents nationally. The study should be replicated with a nationally representative sample or in other age groups in order to examine the generalization of the findings. Secondly, body dissatisfaction assessed by FRS should be considered differently for male participants than females because the male adolescents either wanted a smaller or bigger figure while most females wanted a smaller figure. Use of the average dissatisfaction score will result in underreporting of body dissatisfaction among male participants. In male participants, the dissatisfaction score from the FRS should be calculated for those who desired for smaller or bigger figures separately. Thirdly, participants with no dissatisfaction also reported the use of weight management practices during the past 12 months, but the questionnaire did not distinguish between past and current use of these practices. Researchers should further determine the current use of these practices. Finally, even though some male participants did not report muscularity dissatisfaction when using the Winitch figures, they reported intentions to change their body weight, fat, and muscle when asked about their weight management practices. When assessing muscularity dissatisfaction, the Winitch figures should be combined with additional assessments, such as questions regarding their intentions for their weight, body fat, muscle mass, or specific body parts.

The current findings provided implications for the development of intervention and prevention programs. Healthy weight management practices such as choosing healthier food choices and increasing physical activity levels should be promoted in the Thai students with body dissatisfaction as general practices to reach their desired bodies. The information obtained could be integrated into the schools' policies differently for

different school types. Single gender schools should encourage their students to be more physically active, while the mixed gender schools should promote healthy eating. For example, normally Thai schools provide 1-2 classes of physical education (PE) per week; increasing PE classes will help increase physical activity levels. Also, health and fitness knowledge should be incorporated in PE classes as well. Currently this information has not been integrated in the PE curriculum of Thai schools. The availability of snacks, soft drinks and sugary sweet drinks should be control as well as increased availability of healthy food choices in the school settings. Parents should be educated about how their weight-related comments influence their children's body perception. Moreover, strategies to address parents and peers' comments, and media influences, which play a role in weight-related behaviors, should be incorporated in the prevention or intervention program targeting healthy weight management practices for adolescents.



## APPENDICES

### APPENDIX A: QUESTIONNAIRE FOR BOYS IN ENGLISH

#### **Questionnaire for research project (Male)**

The Influence of Body Image Perception on Weight Management Practices, Physical Activity Levels and Food Choice Behaviors among Thai Adolescents

1. The purpose of this study is to assess the influence of body image perception on weight management practices, physical activity levels and food choice behaviors among Thai adolescents. The questionnaire includes the following questions

Section 1: Questions about body weight and shape, 11 items

Section 2: Questions about food choice behaviors in the last 7 days, 9 items

Section 3: Questions about physical activity levels in the last 7 days, 9 items

Section 4: Questions about weight management practices in the past 12 months, 3 items

Section 5: Questions about the influence of sociocultural factors on body image dissatisfaction

- Feedback/comment from primary caregiver, 14 items
- Feedback/comment from best friends, 13 items
- Media influence, 10 items

Section 6: Demographic information

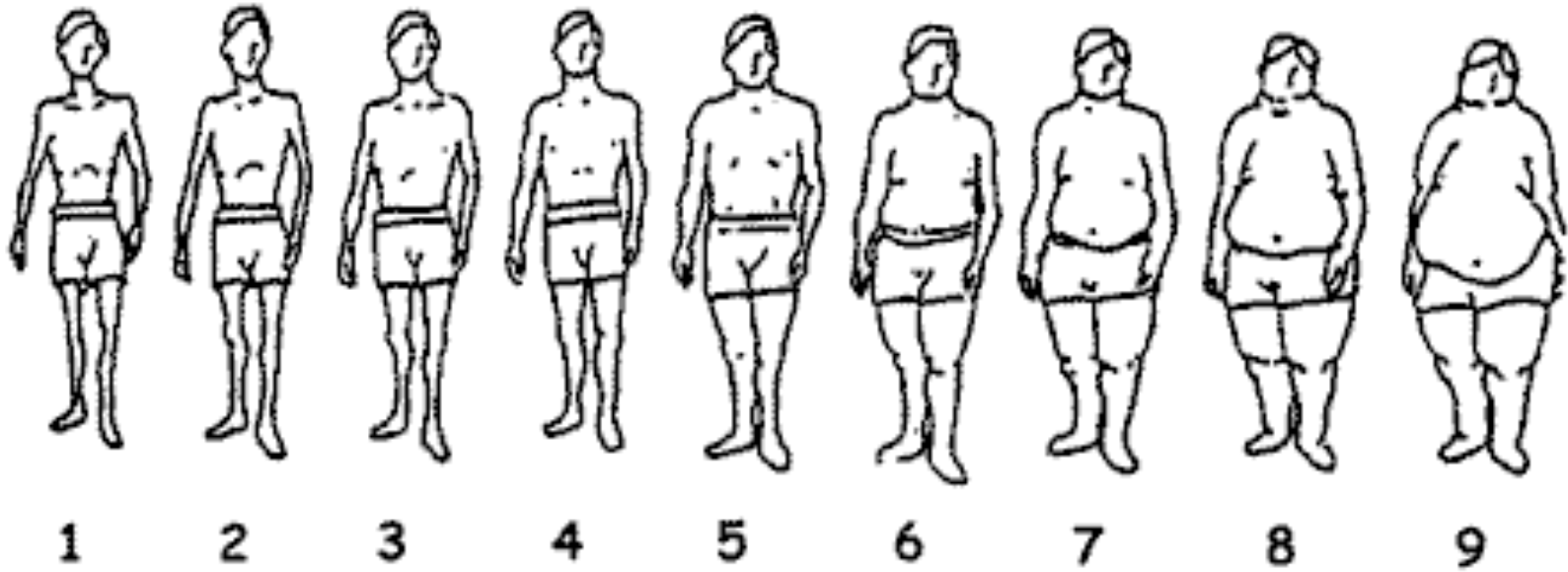
2. Please answer all the questions as honestly and accurately as you can. This is very important.

3. The records of this study will be kept private and the respondents will remain anonymous

## Section 1: Questions about body weight and shape

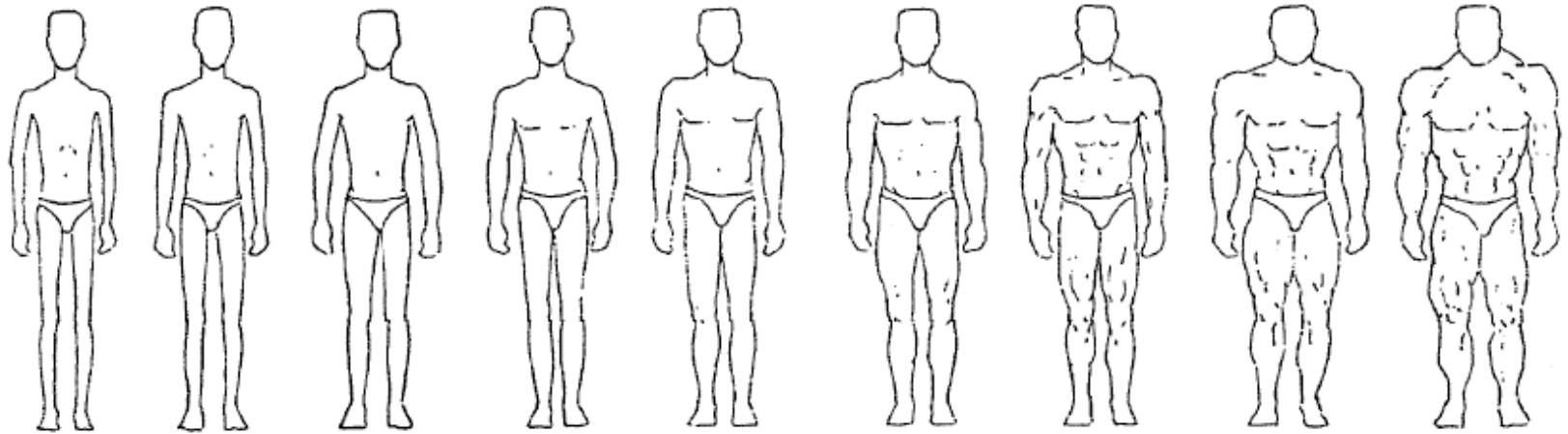
Please mark ✓ in  before the statement that best describes your answer or fill in the blank

1. How do you describe your weight?
  1.  Very underweight
  2.  Slightly underweight
  3.  About the right weight
  4.  Slightly overweight
  5.  Very overweight
  
2. Which of the following are you trying to do about your weight?
  1.  Lose weight
  2.  Gain weight
  3.  Stay the same weight
  4.  I am not trying to do anything about my weight
  
3. Which of the following are you trying to do about your body fat?
  1.  Lose body fat
  2.  Gain body fat
  3.  Stay the same body fat
  4.  I am not trying to do anything about body fat
  
4. Which of the following are you trying to do about the size of your muscle?
  1.  Increase
  2.  Decrease
  3.  Stay the same size
  4.  I am not trying to do anything about my muscle size
  
5. How much do you weigh without your shoes on? \_\_\_\_\_ kg.
6. What is your ideal weight? \_\_\_\_\_ kg.
7. How tall are you without your shoes on? \_\_\_\_\_ cm.



Please answer the following questions based on the numbered figures above

8. Which figure looks most like your current body? \_\_\_\_\_
9. Which figure looks most like your ideal body? \_\_\_\_\_



**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**Please answer the following questions based on the numbered figures above**

10. Which figure looks most like your current body? \_\_\_\_\_
11. Which figure looks most like your ideal body? \_\_\_\_\_

**Section 2: Questions about food choice behaviors in the last 7 days**

The following questions ask about food you ate or drank during the **past 7 days**. Please mark ✓ in the box that best describes your answer. Think about all the meals and snacks you had from the time you got up until you went to bed. Be sure to include food you ate at home, at school, at restaurants, or anywhere else.

For example In the past 7 days, you drank fruit juices for breakfast and lunch everyday = 2 times per day

Or in the past 7 days, you ate fruits on Monday at lunch and on Friday at dinner = 1 to 3 times during the past 7 days

	Did not consume during the past 7 days	1 to 3 times during the past 7 days	4 to 6 times during the past 7 days	1 times per day	2 times per day	3 times per day	4 times per day
1. 100% fruit juices such as orange juice, apple juice, or grape juice? (Do not count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.)							
2. Fruits (Do not count fruit juice.)							
3. Vegetables							
4. A can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not count diet soda or diet pop.)							
5. Sweet drinks such as iced coffee, frappucino, milk tea, bubble tea							

6. During the past 7 days, how many glasses of milk did you drink? (Count the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.)

1.  I did not drink milk during the past 7 days
2.  1 to 3 glasses during the past 7 days

- 3.  4 to 6 glasses during the past 7 days
- 4.  1 glass per day
- 5.  2 glasses per day
- 6.  3 glasses per day
- 7.  4 or more glasses per day

7. During the past 7 days, on how many days did you eat breakfast?

- 1.  0 days
- 2.  1 day
- 3.  2 days
- 4.  3 days
- 5.  4 days
- 6.  5 days
- 7.  6 days
- 8.  7 days

8. During the past 7 days, on the average, how many times do you eat meal except snacks?

- 1.  One time
- 2.  Two times
- 3.  Three times
- 4.  Four times or more

9. During the past 7 days, how often do you take snacks apart from regular meal?

- 1.  Rarely
- 2.  Once or twice per week
- 3.  Three or four times per week
- 4.  More than 4 times per week

**Section 3: Questions about physical activity levels in the last 7 days**

**The following questions ask about food you ate or drank during the past 7 days.**

Please mark ✓ in the box that best describes your answer

1. Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)

Mark ✓ in the “No” box on the activity that you have not done

If the activity that you done is not on the list, please “specify” the name of activity in the “other”

Example You played soccer in the morning before class, at lunch, and right after school on Monday – Friday = 3 times per day \* 5 days = 15 times in the past 7 days.  
Or you played badminton on Tuesday and Friday = 2 times in the past 7 days.

	No	1-2	3-4	5-6	7 times or more
Walking for exercise					
Bicycling					
Jogging or running					
Aerobics					
Swimming					
Dance					
Badminton					
Soccer					
Volleyball					
Basketball					
Weight lifting					
Yoga					
Other_____					
Other_____					
Other_____					

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)
  1.  I don't do PE
  2.  Hardly ever
  3.  Sometimes
  4.  Quite often
  5.  Always
  
3. In the last 7 days, what did you normally do at lunch (besides eating lunch)? (Check one only.)
  1.  Sat down (talking, reading, doing schoolwork)
  2.  Stood around or walked around
  3.  Ran or played a little bit
  4.  Ran around and played quite a bit
  5.  Ran and played hard most of the time
  
4. In the last 7 days, on how many days right after school, did you do sports, dance, or play games in which you were very active? (Check one only.)
  1.  None
  2.  1 time last week
  3.  2 or 3 times last week
  4.  4 times last week
  5.  5 times last week
  
5. In the last 7 days, on how many evenings did you do sports, dance, or play games in which you were very active? (Check one only.)
  1.  None
  2.  1 time last week
  3.  2 or 3 times last week
  4.  4 or 5 last week
  5.  6 or 7 times last week
  
6. On the last weekend, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)
  1.  None
  2.  1 time
  3.  2 — 3 times
  4.  4 — 5 times
  5.  6 or more times



7. Which one of the following describes you best for the last 7 days? Read all five statements before deciding on the one answer that describes you.

1.  All or most of my free time was spent doing things that involve little physical effort
2.  I sometimes (1 – 2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics)
3.  I often (3 – 4 times last week) did physical things in my free time
4.  I quite often (5 – 6 times last week) did physical things in my free time
5.  I very often (7 or more times last week) did physical things in my free time

8. Mark ✓ in the box on how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	None	Little bit	Medium	Often	Very often
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

9. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

1.  Yes
2.  No

If Yes, what prevented you? \_\_\_\_\_

**Section 4: Questions about weight management practices in the past 12 months**

1. During the past 12 months have you tried to lose weight or decrease body fat?
  1.  Yes
  2.  No
  
2. During the past 12 months have you tried to increase your muscle size?
  1.  Yes
  2.  No
  
3. In the past 12 Months, have you done any of the following practices? If yes, please indicate the purpose of each practice you have done. (Check all that applied)

Mark ✓ in the “No” box on the practices that you have not done in the past 12 months in “Never”

If the practices that you done is not on the list, please “specify” the name of activity in the “other” and indicate the purpose of the practice

	Yes		Never
	To lose weight or decrease body fat	To build muscle or increase muscle size	
Ate less food (amount)			
Switched to foods with lower calories			
Ate less fat			
Ate fewer carbohydrates			
Ate more protein (including whey, protein shake)			
Exercised			
Skipped meal			
Used a liquid diet formula such as <i>Herbalife</i> or <i>meal replacement shake</i>			
Joined a weight loss program such as <i>Slimming center</i> or <i>Body shape</i>			
Followed a special diet such as <i>South Beach</i> , <i>Ornish</i>			
Took diet pills prescribed by a doctor			
Took other pills. Medicine, herbs, or supplements not needing a prescription			
Started to smoke or began to smoke again			
Took laxative or vomited			

Drank a lot of water			
Ate more fruits, vegetables, salad			
Ate less sugar, candy, sweets			
Change eating habits (didn't eat late at night, ate several small meals a day)			
Ate less junk food or fast food			
Other _____			
Other _____			
Other _____			
Other _____			

**Section 5: Questions about the influence of sociocultural factors on body image dissatisfaction**

**5.1 Type of Feedback (Comments) from Primary caregiver (or important adult in your life e.g. aunt, uncle)**

Please mark ✓ in the box that best describes your answer

Note Extremely positive means good comments, extremely negative means bad comments

1. Who is your primary caregiver (e.g. father, mother, nanny, aunt, uncle, etc.)

Please specify 1 person \_\_\_\_\_

	<b>Extremely positive</b>	<b>Positive</b>	<b>In between</b>	<b>Negative</b>	<b>Extremely negative</b>
2. What type of feedback do you get from your primary caregiver about the size or shape of your body					
3. What type of feedback do you get from your primary caregiver about your eating pattern to change your body size or shape?					
4. What type of feedback do you get from your primary caregiver about your level of exercise to change your body size or shape?					

	<b>Always</b>	<b>Almost always</b>	<b>Frequently</b>	<b>Sometimes</b>	<b>Never</b>
5. Does your primary caregiver encourage you to <b>lose weight</b> ?					
6. Does your primary caregiver encourage you to <b>gain weight</b> ?					
7. Does your primary caregiver encourage you to become <b>more muscular</b> ?					
8. Does your primary caregiver diet to lose weight?					

9. Does your primary caregiver try to put on weight?					
10. Does your primary caregiver try to become more muscular?					
11. Does your primary caregiver tease you because you are too thin?					
12. Does your primary caregiver tease you because you should eat less?					
13. Does your primary caregiver tease you because they think you are not muscular enough?					

14. How important to you is what your primary caregiver thinks about the shape of your body?

1.  Extremely important
2.  Fairly important
3.  In between
4.  Fairly unimportant
5.  Extremely unimportant

## 5.2 Type of Feedback (Comments) from best friends

Please mark ✓ in the box that best describes your answer

Note Extremely positive means good comments, extremely negative means bad comments

	<b>Extremely positive</b>	<b>Positive</b>	<b>In between</b>	<b>Negative</b>	<b>Extremely negative</b>
1. What type of feedback do you get from your best friends about the size or shape of your body					
2. What type of feedback do you get from your best friends about your eating pattern to change your body size or shape?					
3. What type of feedback do you get from your best friends about your level of exercise to change your body size or shape?					

	<b>Always</b>	<b>Almost always</b>	<b>Frequently</b>	<b>Sometimes</b>	<b>Never</b>
4. Do your best friends encourage you to <b>lose weight</b> ?					
5. Do your best friends encourage you to <b>gain weight</b> ?					
6. Do your best friends encourage you to become <b>more muscular</b> ?					
7. Do your best friends diet to lose weight?					
8. Do your best friends try to put on weight?					
9. Do your best friends try to become more muscular?					
10. Do your best friends tease you because you are too thin?					
11. Do your best friends tease you because you should eat less?					
12. Do your best friends tease you because they think you are not muscular enough?					

13. How important to you is what your best friends think about the shape of your body?

1.  Extremely important
2.  Fairly important
3.  In between
4.  Fairly unimportant
5.  Extremely unimportant

### 5.3 Media Influences

Please mark ✓ in the box that best describes your answer

	Strongly agree	Agree	Unsure	Disagree	Strongly Disagree
1. Do the media (i.e. T.V, Movies, Magazines and Newspaper) give the idea that you should be <b>slimmer</b> ?					
2. Do the media give the idea that you should <b>eat less</b> to lose weight?					
3. Do the media give the idea that you should <b>exercise more</b> to gain weight?					
4. Do the media give the idea that you should <b>gain weight</b> ?					
5. Do the media give the idea that you should <b>exercise more</b> to gain weight?					
6. Do the media give the idea that you should <b>eat more</b> to gain weight?					
7. Do the media give the idea that you should be more <b>muscular</b> ?					
8. Do the media give the idea that you should <b>exercise more</b> to be more muscular?					
9. Do the media give the idea that you should <b>eat less</b> to be more muscular?					
10. Do the media give the idea that you should <b>eat more</b> to be more muscular?					

### Section 6 Demographic information

Please mark ✓ in  before the statement that best describes your answer or fill in the blank

1. What is your gender?

1.  Female

2.  Male

3.  Transgender

2. How old are you?
  1.  15 years old
  2.  16 years old
  3.  17 years old
  4.  18 years old or older
  
3. In what grade are you?
  1.  10th grade
  2.  11th grade
  3.  12th grade
  
4. What school are you in?
  1.  Girls' school
  2.  Boys' school
  3.  Mixed population school
  
5. What is your program?
  1.  Math-Sciences
  2.  Arts-Math
  3.  Arts
  4.  Others (please specify \_\_\_\_\_)
  
6. What is your father education level?
  1.  Grade 6<sup>th</sup> and lower
  2.  Grade 12<sup>th</sup>
  3.  College/Diploma
  4.  Bachelor
  5.  Master and higher
  
7. What is your mother education level?
  1.  Grade 6<sup>th</sup> and lower
  2.  Grade 12<sup>th</sup>
  3.  College/Diploma
  4.  Bachelor
  5.  Master and higher
  
8. What is estimated total household's monthly income
  1.  <10,000 baht
  2.  10,001-30,000 baht
  3.  30,001-50,000 baht
  4.  > 50,001 baht



## APPENDIX B: QUESTIONNAIRE FOR BOYS IN THAI

### แบบสอบถามเพื่อการวิจัย (เพศชาย)

เรื่อง อิทธิพลของการรับรู้ภาพลักษณ์ร่างกายของตนเองและวิธีการที่ใช้จัดการกับน้ำหนักและรูปร่างต่อกิจกรรมทางกายและพฤติกรรมการบริโภคอาหารในหมู่วัยรุ่นไทย

#### คำชี้แจง

1.แบบสอบถามฉบับนี้มีวัตถุประสงค์เพื่อศึกษา

อิทธิพลของการรับรู้ภาพลักษณ์ร่างกายของตนเองและวิธีการที่ใช้จัดการน้ำหนักต่อการออกกำลังกายและพฤติกรรมการเลือกอาหารในหมู่วัยรุ่นไทย เท่านั้น โดยมีรายละเอียดของคำถามดังต่อไปนี้

ตอนที่ 1 ข้อมูลเกี่ยวกับการประเมินรูปร่าง และ น้ำหนักของตนเอง จำนวน 11 ข้อ

ตอนที่ 2 ข้อมูลเกี่ยวกับพฤติกรรมการบริโภคอาหารภายใน 7 วันที่ผ่านมา จำนวน 9 ข้อ

ตอนที่ 3 ข้อมูลเกี่ยวกับกิจกรรมทางกายในเวลาว่างภายใน 7 วันที่ผ่านมา จำนวน 10 ข้อ

ตอนที่ 4 ข้อมูลเกี่ยวกับวิธีการที่ใช้จัดการกับน้ำหนักและรูปร่างในหนึ่งปีที่ผ่านมา จำนวน 3 ข้อ

ตอนที่ 5 ข้อมูลเกี่ยวกับอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกาย

- อิทธิพลของผู้ปกครอง จำนวน 14 ข้อ
- อิทธิพลของเพื่อนสนิท จำนวน 13 ข้อ
- อิทธิพลของสื่อ จำนวน 10 ข้อ

ตอนที่ 6 ข้อมูลเกี่ยวกับสถานภาพทั่วไป จำนวน 8 ข้อ

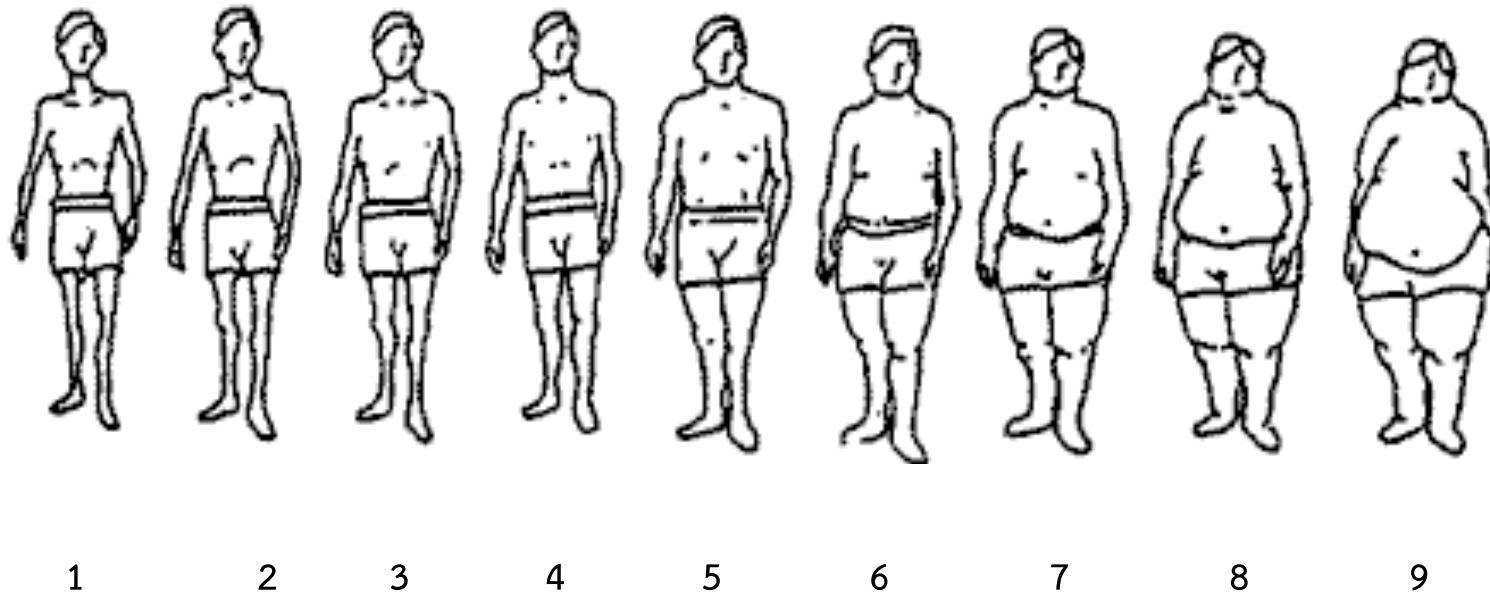
2.กรุณาเลือกคำตอบที่ตรงตามความเป็นจริงมากที่สุด เพราะคำตอบที่เป็นจริงและสมบูรณ์เท่านั้น จะช่วยให้การวิจัยในครั้งที่เกิดประโยชน์มากที่สุด

3. คำตอบของท่าน ผู้วิจัยจะเก็บเป็นความลับ และผู้ตอบแบบสอบถามจะไม่มีมีการระบุชื่อ และจะไม่สามารถสืบค้นกลับไปถึงผู้ตอบแบบสอบถามได้

**ตอนที่ 1 ข้อมูลเกี่ยวกับการประเมินรูปร่าง และ น้ำหนักของตนเอง**

**คำชี้แจง** โปรดทำเครื่องหมาย  ลงในช่อง  หน้าข้อความที่ตรงกับคำตอบของท่าน หรือเติมข้อความให้สมบูรณ์

1. คุณคิดว่าน้ำหนักของคุณอยู่ในกลุ่มใด
  1.  น้ำหนักน้อยกว่าเกณฑ์ปกติมาก
  2.  น้ำหนักน้อยกว่าเกณฑ์ปกติเล็กน้อย
  3.  น้ำหนักอยู่ในเกณฑ์ปกติ
  4.  น้ำหนักมากกว่าเกณฑ์ปกติเล็กน้อย
  5.  น้ำหนักมากกว่าเกณฑ์ปกติมาก
  
2. คุณพยายามจะทำอะไรกับน้ำหนักของคุณ
  1.  ลดน้ำหนัก
  2.  เพิ่มน้ำหนัก
  3.  ทำให้น้ำหนักคงที่
  4.  ไม่ได้พยายามที่จะทำอะไรกับน้ำหนัก
  
3. คุณพยายามจะทำอะไรกับไขมันในร่างกายของคุณ
  1.  ลดไขมันในร่างกาย
  2.  เพิ่มไขมันในร่างกาย
  3.  ทำให้ไขมันในร่างกายคงที่
  4.  ไม่ได้พยายามที่จะทำอะไรกับไขมันในร่างกาย
  
4. คุณพยายามจะทำอะไรกับมวล/ขนาดของกล้ามเนื้อของคุณ
  1.  ลดมวล/ขนาดของกล้ามเนื้อ
  2.  เพิ่มมวล/ขนาดของกล้ามเนื้อ
  3.  ทำให้มวล/ขนาดของกล้ามเนื้อคงที่
  4.  ไม่ได้พยายามที่จะทำอะไรกับมวล/ขนาดของกล้ามเนื้อ
  
5. น้ำหนักของคุณในปัจจุบันเมื่อถอดรองเท้าเท่ากับ \_\_\_\_\_ กิโลกรัม
  
6. น้ำหนักในอุดมคติของคุณเท่ากับ \_\_\_\_\_ กิโลกรัม
  
7. ส่วนสูงของคุณในปัจจุบันเมื่อถอดรองเท้าเท่ากับ \_\_\_\_\_ เซนติเมตร

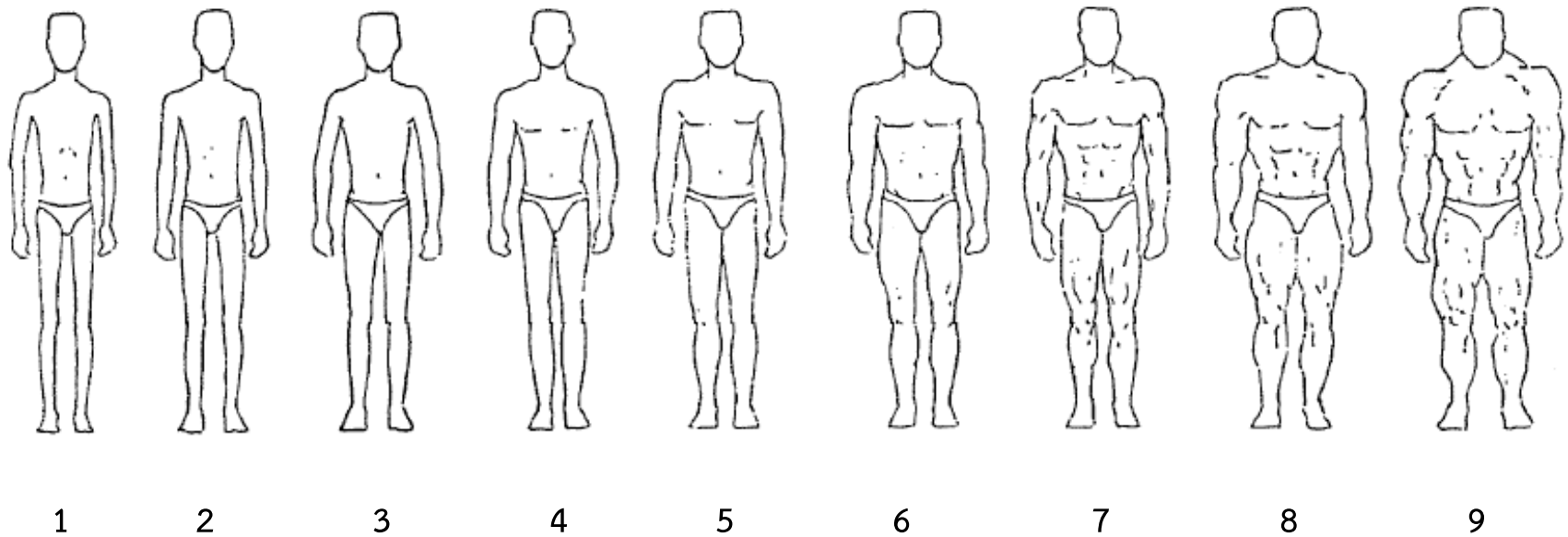


กรุณาตอบคำถามต่อไปนี้โดยอ้างอิงจากรูปภาพด้านบน

หมายเหตุ รูปถ่ายด้านบนเรียงลำดับจากรูปร่างที่มีมวลไขมันน้อย (หมายเลข 1) ไปจนถึง รูปร่างที่มีมวลไขมันมาก (หมายเลข 9)

8. รูปถ่ายใดเหมือนรูปร่างของคุณ “ปัจจุบัน” มากที่สุด \_\_\_\_\_

9. รูปถ่ายใดเหมือนรูปร่างใน “อุดมคติ” ของคุณมากที่สุด \_\_\_\_\_



กรุณาตอบคำถามต่อไปนี้โดยอ้างอิงจากรูปภาพด้านบน

หมายเหตุ รูปถ่ายด้านบนเรียงลำดับจากรูปร่างที่มีมวลกล้ามเนื้อน้อย (หมายเลข 1) ไปจนถึง รูปร่างที่มีมวลกล้ามเนื้อมาก (หมายเลข 9)

10. รูปภาพใดเหมือนรูปร่างของคุณ “ปัจจุบัน” มากที่สุด \_\_\_\_\_
11. รูปภาพใดเหมือนรูปร่างใน “อุดมคติ” ของคุณมากที่สุด \_\_\_\_\_

**ตอนที่ 2 ข้อมูลเกี่ยวกับพฤติกรรมกรบริโภคอาหารภายใน 7 วันที่ผ่านมา**

**คำชี้แจง** คำถามต่อไปนี้ถามถึงอาหารที่คุณบริโภคภายใน 7 วันที่ผ่านมา แล้วทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับกรบริโภคอาหารของคุณที่สุดเพียงหนึ่งช่อง (โปรดพิจารณาถึงอาหาร เครื่องดื่มและขนมขบเคี้ยวที่คุณบริโภคตั้งแต่ตื่นนอนจนถึงเวลาเข้านอน รวมไปถึงอาหารที่บริโภคที่บ้าน ที่โรงเรียน ที่ร้านอาหาร และอื่นๆ)

ยกตัวอย่าง ในเจ็ดวันที่ผ่านมา คุณดื่มน้ำผลไม้ในมือเช้า และ มื้อกลางวัน ของทุกวัน = บริโภค 2 ครั้ง ต่อ วัน

หรือ ในเจ็ดวันที่ผ่านมา คุณกินผลไม้ในมื้อกลางวันของวันจันทร์ และ มื้อเย็นของวันศุกร์ = บริโภค 1 ถึง 3 ครั้ง ภายใน 7 วันที่ผ่านมา

ประเภทของอาหาร	ไม่ได้บริโภค ภายใน 7 วันที่ผ่านมา	บริโภค 1 ถึง 3 ครั้ง ภายใน 7 วันที่ผ่านมา	บริโภค 4 ถึง 6 ครั้ง ภายใน 7 วันที่ผ่านมา	บริโภค 1 ครั้ง ต่อ วัน	บริโภค 2 ครั้ง ต่อ วัน	บริโภค 3 ครั้ง ต่อ วัน	บริโภค 4 ครั้ง ต่อ วัน
1. น้ำผลไม้ 100% หรือ น้ำผลไม้คั้นสด ยกตัวอย่างเช่น น้ำส้มคั้น, น้ำแอปเปิ้ล หมายเหตุ ไม่นับรวม น้ำอัดลมรสผลไม้							
2. ผลไม้ หมายเหตุ ไม่นับรวมน้ำผลไม้							
3. ผัก							
4. น้ำอัดลม ยกตัวอย่างเช่น โค้ก, แฟนต้า, สเลอปี, สไปรท์							
5. น้ำหวานทุกชนิด ยกตัวอย่างเช่น กาแฟเย็น, กาแฟปั่น, ชานมเย็น, ชานมไข่มุก, น้ำแดงเฮลซ์บลูบอย							

6. ใน 7 วันที่ผ่านมา คุณดื่มนมทั้งหมดกี่แก้วโดยประมาณ

1.  ไม่ได้ดื่มนมเลยภายในเจ็ดวันที่ผ่านมา
2.  หนึ่ง-สาม แก้ว ภายในเจ็ดวันที่ผ่านมา
3.  สี่-หก แก้ว ภายในเจ็ดวันที่ผ่านมา
4.  หนึ่ง แก้วต่อวัน
5.  สอง แก้วต่อวัน
6.  สาม แก้วต่อวัน
7.  สี่ แก้วหรือมากกว่าต่อวัน

7. ใน 7 วันที่ผ่านมา คุณรับประทานอาหารเช้าเป็นจำนวนทั้งหมดกี่วัน

1.  ไม่ได้ทานอาหารเช้าเลยภายในเจ็ดวันที่ผ่านมา
2.  หนึ่งวัน
3.  สองวัน
4.  สามวัน
5.  สี่วัน
6.  ห้าวัน
7.  หกวัน
8.  เจ็ดวัน

8. ใน 7 วันที่ผ่านมา โดยเฉลี่ยแล้วคุณทานอาหารมื้อหลักวันละกี่ครั้ง

1.  หนึ่งครั้ง ต่อวัน
2.  สองครั้ง ต่อวัน
3.  สามครั้ง ต่อวัน
4.  สี่ครั้งหรือมากกว่า ต่อวัน

9. ใน 7 วันที่ผ่านมา คุณรับประทานอาหารว่าง หรือ ขนมขบเคี้ยว ทั้งหมดกี่ครั้ง

1.  นานๆครั้ง
2.  หนึ่ง-สอง ครั้ง ต่ออาทิตย์
3.  สาม-สี่ ครั้ง ต่ออาทิตย์
4.  สี่ครั้งหรือมากกว่า ต่ออาทิตย์

**ตอนที่ 3 ข้อมูลเกี่ยวกับกิจกรรมทางกายในเวลาว่างภายใน 7 วันที่ผ่านมา**

**คำชี้แจง** คำถามต่อไปนี้ถามถึงกิจกรรมทางกายในเวลาว่างของคุณภายใน 7 วันที่ผ่านมา แล้วทำเครื่องหมาย ✓

ลงในช่องว่างที่ตรงกับกิจกรรมทางกายของคุณที่สุดเพียงหนึ่งช่อง

1. กรุณาเลือก กิจกรรม (ประเภทของการออกกำลังกายหรือกีฬา) และจำนวนครั้ง ที่คุณปฏิบัติภายใน 7 วันที่ผ่านมา  
หรือ

ถ้าไม่ได้ปฏิบัติกิจกรรมที่ระบุไว้ ให้ทำแล้วทำเครื่องหมาย ✓ ลงในช่อง “ไม่ได้ปฏิบัติ”

หรือ

ถ้ากิจกรรมที่คุณปฏิบัติไม่ได้ระบุในตาราง กรุณาระบุ “ชื่อ” ของกิจกรรมในช่อง “อื่นๆ” และเลือกจำนวนครั้งที่คุณปฏิบัติ

ยกตัวอย่าง คุณเตะฟุตบอลในเวลาเช้าก่อนเข้าเรียน พักกลางวัน และ หลังเลิกเรียน ในวันจันทร์-ศุกร์ = 3 (ครั้งต่อวัน) X 5 วัน (จันทร์-ศุกร์) = 15 ครั้ง ภายใน 7 วันที่ผ่านมา

หรือ คุณเล่นแบดมินตัน ในวันอังคาร และ วันศุกร์ = 2 ครั้ง ภายใน 7 วันที่ผ่านมา

ประเภทของกิจกรรม	ไม่ได้ปฏิบัติ	1-2 ครั้ง	3-4 ครั้ง	5-6 ครั้ง	≥ 7 ครั้ง
เดินเพื่อการออกกำลังกาย					
ปั่นจักรยาน					
วิ่ง หรือ จ็อกกิ้ง					
เดินแอโรบิค					
ว่ายน้ำ					
เต้น					
เตะฟุตบอล					
เล่นแบดมินตัน					
เล่นวอลเลย์บอล					
เล่นบาสเกตบอล					
ยกน้ำหนัก					
โยคะ					
อื่นๆ โปรดระบุ _____					
อื่นๆ โปรดระบุ _____					
อื่นๆ โปรดระบุ _____					

2. ใน 7 วันที่ผ่านมา เวลาส่วนใหญ่ในคาบพละ บ่อยแค่ไหนที่คุณกระตือรือร้นมากๆ (ทำกิจกรรมที่ทำให้หายใจแรงและหัวใจเต้นเร็ว)

1.  ไม่มี/ไม่ได้เข้าเรียนคาบพละ
2.  นานๆ ครั้ง
3.  บางครั้ง
4.  บ่อยๆ
5.  ตลอดเวลา/ทุกคาบ

3. ใน 7 วันที่ผ่านมา เวลาส่วนใหญ่ในคาบพละ บ่อยแค่ไหนที่คุณ ไม่กระตือรือร้นเลย (นั่งเฉยๆ หรือ ทำกิจกรรมที่ ไม่ได้ ทำให้หายใจแรงและหัวใจเต้นเร็ว)

1.  ไม่มี/ไม่ได้เข้าเรียนคาบพละ
2.  นานๆ ครั้ง
3.  บางครั้ง
4.  บ่อยๆ
5.  ตลอดเวลา/ทุกคาบ

4. ใน 7 วันที่ผ่านมา ปกติคุณทำอะไรในช่วงพักกลางวัน (นอกเหนือจากรับประทานอาหารกลางวัน)

1.  นั่งอยู่กับที่ (คุยกับเพื่อนๆ, อ่านหนังสือ, ทำการบ้าน)
2.  เดินไปมา
3.  วิ่งเล่นหรือทำกิจกรรมที่ต้องเคลื่อนไหวเล็กน้อย (มากกว่าเดิน)
4.  วิ่งเล่นหรือทำกิจกรรมที่ต้องเคลื่อนไหวปานกลาง (ที่ทำให้หัวใจเต้นเร็วขึ้น)
5.  วิ่งเล่นหรือทำกิจกรรมที่ต้องเคลื่อนไหวอย่างหนัก(ที่ทำให้หายใจเร็วขึ้นและหัวใจเต้นแรง)

5. ใน 7 วันที่ผ่านมา ในช่วงหลังเลิกเรียนโดยทันที “กี่วัน” ที่คุณเล่นกีฬาหรือทำกิจกรรมที่คุณกระตือรือร้นมากๆ (ทำกิจกรรมที่ทำให้หายใจแรงและหัวใจเต้นเร็ว)

1.  ไม่มี
2.  หนึ่งวัน ในอาทิตย์ที่ผ่านมา
3.  สอง-สามวัน ในอาทิตย์ที่ผ่านมา
4.  สี่-ห้าวัน ในอาทิตย์ที่ผ่านมา
5.  หก-เจ็ดวัน ในอาทิตย์ที่ผ่านมา

6. ใน 7 วันที่ผ่านมา ในช่วงเย็นหรือกลางคืน “กี่วัน” ที่คุณเล่นกีฬาหรือทำกิจกรรมที่คุณกระตือรือร้นมากๆ (ทำกิจกรรมที่ทำให้หายใจแรงและหัวใจเต้นเร็ว)

1.  ไม่มี
2.  หนึ่งวัน ในอาทิตย์ที่ผ่านมา
3.  สอง-สามวัน ในอาทิตย์ที่ผ่านมา
4.  สี่-ห้าวัน ในอาทิตย์ที่ผ่านมา
5.  หก-เจ็ดวัน ในอาทิตย์ที่ผ่านมา

7. ในวันหยุด (เสาร์-อาทิตย์) ที่ผ่านมา “กี่ครั้ง” ที่คุณเล่นกีฬาหรือทำกิจกรรมที่คุณกระตือรือร้นมากๆ (ทำกิจกรรมที่ทำให้หายใจแรงและหัวใจเต้นเร็ว)

1.  ไม่มี
2.  หนึ่งครั้ง
3.  สอง-สาม ครั้ง
4.  สี่-ห้า ครั้ง
5.  หกครั้ง หรือ มากกว่า

8. ในข้อใดต่อไปนี้อธิบายการใช้เวลาว่างของคุณใน 7 วันที่ผ่านมาได้ดีที่สุด (กรุณาอ่านทุกตัวเลือกก่อนตัดสินใจว่าตัวเลือกไหนตรงกับตัวคุณที่สุด)

1.  ฉันใช้เวลาว่างเกือบทั้งหมดของฉันทำกิจกรรมที่มีการเคลื่อนไหวเล็กน้อย
2.  ฉันใช้เวลาว่างออกกำลังกาย/เล่นกีฬาในบางครั้ง (1-2 ครั้ง ในอาทิตย์ที่แล้ว)
3.  ฉันมักจะใช้เวลาว่างออกกำลังกาย/เล่นกีฬา (3-4 ครั้ง ในอาทิตย์ที่แล้ว)
4.  ฉันใช้เวลาว่างออกกำลังกาย/เล่นกีฬาก่อนข้างบ่อย (5-6 ครั้ง ในอาทิตย์ที่แล้ว)
5.  ฉันใช้เวลาว่างออกกำลังกาย/เล่นกีฬาเป็นประจำ (7 ครั้ง หรือมากกว่า ในอาทิตย์ที่แล้ว)



9. กรุณาทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับความถี่ของกิจกรรมทางกาย/ออกกำลังกาย ของคุณ ในแต่ละวัน ของอาทิตย์ที่ผ่านมาที่สุดเพียงหนึ่งช่อง

วัน	ไม่ได้ทำ	เล็กน้อย	ปานกลาง	บ่อย	เป็นประจำ
1. วันจันทร์					
2. วันอังคาร					
3. วันพุธ					
4. วันพฤหัสบดี					
5. วันศุกร์					
6. วันเสาร์					
7. วันอาทิตย์					

10. ในอาทิตย์ที่แล้วคุณป่วยหรือมีสิ่งใดที่ทำให้คุณไม่ได้ทำกิจกรรมทางกาย/ออกกำลังกายตามปกติหรือไม่

1.  ใช่, โปรดระบุสาเหตุ \_\_\_\_\_
2.  ไม่ใช่

#### ตอนที่ 4 ข้อมูลเกี่ยวกับวิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงในช่อง  หน้าข้อความ หรือในช่องว่างที่ตรงกับคำตอบของท่าน

1. ในช่วง 12 เดือนที่ผ่านมา คุณได้พยายามลดน้ำหนัก หรือ ลดมวลไขมันหรือไม่

1.  ใช่
2.  ไม่ใช่

2. ในช่วง 12 เดือนที่ผ่านมา คุณได้พยายามเพิ่ม มวล/ขนาดของกล้ามเนื้อหรือไม่

1.  ใช่
2.  ไม่ใช่

3. ในช่วง 12 เดือนที่ผ่านมา คุณได้ใช้วิธีที่ระบุในตารางหรือไม่

ทำเครื่องหมาย ✓ ลงในช่องของกิจกรรมหรือวิธีที่ตรงกับวิธีที่คุณใช้ และจุดประสงค์ในการใช้วิธีนั้นๆ  
ในช่วง 12 เดือนที่ผ่านมา

หรือ

ถ้าไม่ได้ปฏิบัติกิจกรรม/วิธี ที่ระบุไว้ ให้ทำแล้วทำเครื่องหมาย ✓ ลงในช่อง “ไม่ได้ปฏิบัติ”

หรือ

ถ้ากิจกรรม/วิธี ที่คุณปฏิบัติไม่ได้ระบุในตาราง กรุณาระบุ “ชื่อ” ของกิจกรรมในช่อง “อื่นๆ”  
พร้อมกับเลือกจุดประสงค์ในการใช้วิธีนั้นๆ

กิจกรรม/วิธี	ใช้ใน 12 เดือนที่ผ่านมา		ไม่ได้ใช้
	เพื่อลดน้ำหนัก หรือ ลดมวลไขมัน	เพื่อเพิ่ม ขนาด/มวล กล้ามเนื้อ	
1. รับประทานอาหารในปริมาณที่น้อยลง			
2. เปลี่ยนไปกินอาหารที่มีจำนวนแคลอรีต่ำ/น้อย			
3. รับประทานไขมันน้อยลง			
4. รับประทานอาหารจำพวกแป้ง, คาร์โบไฮเดรต น้อยลง			
5. รับประทานโปรตีนมากขึ้น (รวมไปถึงเนื้อสัตว์, ไข่โปรตีน, โปรตีนเชค, โปรตีนบาร์ เป็นต้น)			
6. ออกกำลังกาย			
7. อดอาหาร หรือ งดมื้ออาหาร			
8. บริโภคผลิตภัณฑ์ในรูปแบบของเหลวเพื่อทดแทนมื้ออาหารหลัก เช่น เเฮอบาไลฟ์, โปรตีนเชค			
9. เข้าร่วมโปรแกรมลดน้ำหนักจากศูนย์บริการ หรือ สถาบันลดน้ำหนัก เช่น บอดีเชพ (Body Shape), สลิมอัพ เซนเตอร์ (Slim Up Center), คริสตีฟรอนซ์ (Kristie France)			
10. ใช้สูตรอาหารลดน้ำหนัก เช่น สูตรลดน้ำหนัก ของสมเด็จพระเทพฯ, สูตรลดน้ำหนักใน 3 วัน, สูตรลดน้ำหนัก 7 วัน			
11. ใช้จ่ายที่จ่ายโดยแพทย์			
12. ใช้จ่าย, อาหารเสริม, หรือ สมุนไพร ที่สามารถหาซื้อได้ทั่วไป โดยที่ไม่ต้องจ่ายใบสั่งยาจากแพทย์			
13. สูบบุหรี่			
14. ใช้จ่ายระบาย ยาถ่าย			
15. สว่างคอให้อาเจียน			
16. ดื่มน้ำมากๆ			
17. รับประทานผัก ผลไม้เพิ่มขึ้น			
18. รับประทานน้ำตาล ขนม น้อยลง			
19. เปลี่ยนพฤติกรรมกรรมการบริโภคอาหาร เช่น ไม่รับประทานอาหารตอนกลางคืน, รับประทานอาหารมื้อเล็กแต่บ่อยขึ้น			
20. รับประทานอาหารจำพวกอาหารขยะน้อยลง เช่น แมคโดนัลด์, เฟรนช์ฟรายส์			
21. อื่นๆ โปรดระบุ _____			
22. อื่นๆ โปรดระบุ _____			
23. อื่นๆ โปรดระบุ _____			
24. อื่นๆ โปรดระบุ _____			

**ตอนที่ 5 ข้อมูลเกี่ยวกับผลกระทบของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกาย**

**5.1 ชนิดของข้อเสนอแนะ หรือ ความคิดเห็น จากผู้ปกครอง/ผู้ดูแลหลัก**

**คำชี้แจง** โปรดเติมข้อความให้สมบูรณ์ หรือ ทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับคำตอบของท่าน

หมายเหตุ แจกอย่างมก หมายถึง ข้อเสนอแนะ/ความคิดเห็น “ที่ดี” และ แจกอย่างมก หมายถึง ข้อเสนอแนะ/ความคิดเห็นที่ “ไม่ดี”

1. ใครคือผู้ปกครองหรือผู้ดูแลหลักของคุณ (เช่น พ่อ, แม่, ป้า, ลุง, ยาย, พี่เลี้ยง, เป็นต้น)

โปรดระบุ 1 คน \_\_\_\_\_

	แจกอย่างมก	แจก	เป็นกลาง	แจก	แจกอย่างมก
2. ข้อเสนอแนะแบบไหนที่คุณได้รับจากผู้ปกครองเกี่ยวกับขนาดของร่างกายหรือรูปร่างของคุณ					
3. ข้อเสนอแนะแบบไหนที่คุณได้รับจากผู้ปกครองเกี่ยวกับพฤติกรรมมารับประทานอาหารเพื่อเปลี่ยนขนาดของร่างกายหรือรูปร่างของคุณ					
4. ข้อเสนอแนะแบบไหนที่คุณได้รับจากผู้ปกครองเกี่ยวกับระดับการออกกำลังกายเพื่อเปลี่ยนขนาดของร่างกายหรือรูปร่างของคุณ					

	ตลอดเวลา	เกือบตลอดเวลา	บ่อยๆ	บางครั้ง	ไม่เคย
5. ผู้ปกครองของคุณแนะนำให้คุณลดน้ำหนัก					
6. ผู้ปกครองของคุณแนะนำให้คุณเพิ่มน้ำหนัก					
7. ผู้ปกครองของคุณแนะนำให้คุณมีหุ่นที่ต่ำกว่านี้					
8. ผู้ปกครองของคุณควบคุมอาหารเพื่อลดน้ำหนัก					
9. ผู้ปกครองของคุณพยายามจะเพิ่มน้ำหนัก					
10. ผู้ปกครองของคุณพยายามจะมีหุ่นที่ต่ำกว่านี้					
11. ผู้ปกครองของคุณหยอกล้อคุณเพราะคุณผอมเกินไป					
12. ผู้ปกครองของคุณหยอกล้อคุณเพราะคุณอ้วนเกินไป					
13. ผู้ปกครองของคุณหยอกล้อคุณเพราะเขาคิดว่าคุณมีหุ่นที่ต่ำไม่พอ					

14. ความคิดของผู้ปกครองเกี่ยวกับรูปร่างของคุณมีความสำคัญกับคุณแค่ไหน

1.  สำคัญเป็นอย่างมาก
2.  สำคัญพอสมควร
3.  กลางๆ/ เฉยๆ
4.  ค่อนข้างไม่สำคัญ
5.  ไม่สำคัญเลย

5.2 ชนิดของข้อเสนอแนะ หรือ ความคิดเห็น จากเพื่อนสนิท

คำชี้แจง โปรดเติมข้อความให้สมบูรณ์ หรือ ทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับคำตอบของท่าน

หมายเหตุ แง่บวกอย่างมาก หมายถึง ข้อเสนอแนะ/ความคิดเห็น “ที่ดี” และ แง่ลบอย่างมาก หมายถึง ข้อเสนอแนะ/ความคิดเห็น “ไม่ดี”

	แง่บวก อย่างมาก	แง่บวก	เป็นกลาง	แง่ลบ	แง่ลบ อย่างมาก
1. ข้อเสนอแนะแบบไหนที่คุณได้รับจากเพื่อนสนิทเกี่ยวกับขนาดของร่างกายหรือรูปร่างของคุณ					
2. ข้อเสนอแนะแบบไหนที่คุณได้รับจากเพื่อนสนิทเกี่ยวกับพฤติกรรมมารับประทานอาหารเพื่อเปลี่ยนขนาดของร่างกายหรือรูปร่างของคุณ					
3. ข้อเสนอแนะแบบไหนที่คุณได้รับจากเพื่อนสนิทเกี่ยวกับระดับการออกกำลังกายเพื่อเปลี่ยนขนาดของร่างกายหรือรูปร่างของคุณ					

	ตลอดเวลา	เกือบตลอดเวลา	บ่อยๆ	บางครั้ง	ไม่เคย
4. เพื่อนสนิทของคุณแนะนำให้คุณลดน้ำหนัก					
5. เพื่อนสนิทของคุณแนะนำให้คุณเพิ่มน้ำหนัก					
6. เพื่อนสนิทของคุณแนะนำให้คุณมีหุ่นที่ต่ำกว่านี้					
7. เพื่อนสนิทของคุณควบคุมอาหารเพื่อลดน้ำหนัก					
8. เพื่อนสนิทของคุณพยายามจะเพิ่มน้ำหนัก					
9. เพื่อนสนิทของคุณพยายามจะมีหุ่นที่ต่ำกว่านี้					
10. เพื่อนสนิทของคุณหยอกล้อคุณเพราะคุณผอมเกินไป					
11. เพื่อนสนิทของคุณหยอกล้อคุณเพราะคุณอ้วนเกินไป					
12. เพื่อนสนิทของคุณหยอกล้อคุณเพราะเขาคิดว่าคุณมีหุ่นที่ลำไม่พอ					

13. ความคิดของเพื่อนสนิทเกี่ยวกับรูปร่างของคุณมีความสำคัญกับคุณแค่ไหน

1.  สำคัญเป็นอย่างมาก
2.  สำคัญพอสมควร
3.  กลางๆ/ เฉยๆ
4.  ค่อนข้างไม่สำคัญ
5.  ไม่สำคัญเลย

5.3 อิทธิพลของสื่อ (เช่น นิตยสาร, ภาพยนตร์, หนังสือพิมพ์, รายการโทรทัศน์)

คำชี้แจง โปรดเติมข้อความให้สมบูรณ์ หรือ ทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับคำตอบของท่าน

	เห็นด้วย อย่างยิ่ง	เห็นด้วย	ไม่แน่ใจ	ไม่เห็นด้วย	ไม่เห็นด้วย อย่างยิ่ง
1. สื่อทำให้คุณรู้สึกว่าคุณควรจะมีขนาดตัวที่เล็กลง					
2. สื่อทำให้คุณรู้สึกว่าคุณควรจะกินให้น้อยลงเพื่อที่จะลดน้ำหนัก					
3. สื่อทำให้คุณรู้สึกว่าคุณควรจะออกกำลังกายมากขึ้นเพื่อที่จะลดน้ำหนัก					
4. สื่อทำให้คุณรู้สึกว่าคุณควรจะมีน้ำหนัก					
5. สื่อทำให้คุณรู้สึกว่าคุณควรจะออกกำลังกายมากขึ้นเพื่อที่จะเพิ่มน้ำหนัก					
6. สื่อทำให้คุณรู้สึกว่าคุณควรจะกินให้มากขึ้นเพื่อที่จะเพิ่มน้ำหนัก					
7. สื่อทำให้คุณรู้สึกว่าคุณควรมีร่างกายที่ล่ำมากกว่านี้					
8. สื่อทำให้คุณรู้สึกว่าคุณควรจะออกกำลังกายมากขึ้นเพื่อที่จะมีร่างกายที่ล่ำมากกว่านี้					
9. สื่อทำให้คุณรู้สึกว่าคุณควรจะกินให้น้อยลงมากขึ้นเพื่อที่จะมีร่างกายที่ล่ำมากกว่านี้					
10. สื่อทำให้คุณรู้สึกว่าคุณควรจะกินให้มากขึ้นเพื่อที่จะมีร่างกายที่ล่ำมากกว่านี้					

ตอนที่ 6 ข้อมูลเกี่ยวกับสถานภาพทั่วไป

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงในช่อง  หน้าข้อความที่ตรงกับคำตอบของท่าน หรือเติมข้อความให้สมบูรณ์

1. เพศ

1.  หญิง      2.  ชาย    3.  เพศที่สาม/อื่นๆ

2. อายุ

1.  15 ปี 2.  16 ปี 3.  17 ปี 4.  18 ปี หรือมากกว่า

3. ชั้นปีการศึกษา

1.  มัธยมศึกษาปีที่ 4      2.  มัธยมศึกษาปีที่ 5      3.  มัธยมศึกษาปีที่ 6

4. ประเภทของโรงเรียน

1.  หญิงล้วน
2.  ชายล้วน
3.  สหฯ

5. สาขาการเรียน

1.  วิทยาศาสตร์ - คณิต
2.  ศิลปะ - คำนวณ
3.  ศิลปะ - ภาษา
4.  อื่นๆ (โปรดระบุ \_\_\_\_\_)

5. ระดับการศึกษาของบิดา

1.  ประถมศึกษาปีที่ 6 หรือต่ำกว่า
2.  มัธยมศึกษาปีที่ 6
3.  วิทยาลัย หรือ อนุปริญญา
4. ปริญญาตรี
4. ปริญญาโท หรือ สูงกว่า

6. ระดับการศึกษาของมารดา

1.  ประถมศึกษาปีที่ 6 หรือต่ำกว่า
2.  มัธยมศึกษาปีที่ 6
3.  วิทยาลัย หรือ อนุปริญญา
4. ปริญญาตรี
5. ปริญญาโท หรือ สูงกว่า

7. รายได้ของของครัวเรือน (ทั้งครอบครัว) ต่อเดือน

1.  น้อยกว่า 10,000 บาท
2.  10,001 – 30,000 บาท
3.  30,001 – 50,000 บาท
4.  50,001 บาท หรือ มากกว่า

## APPENDIX C: QUESTIONNAIRE FOR GIRLS IN ENGLISH

### Questionnaire for research project (Female)

The Influence of Body Image Perception on Weight Management Practices, Physical Activity Levels and Food Choice Behaviors among Thai Adolescents

1. The purpose of this study is to assess the influence of body image perception on weight management practices, physical activity levels and food choice behaviors among Thai adolescents. The questionnaire includes the following questions

Section 1: Questions about body weight and shape, 9 items

Section 2: Questions about food choice behaviors in the last 7 days, 9 items

Section 3: Questions about physical activity levels in the last 7 days, 9 items

Section 4: Questions about weight management practices in the past 12 months, 3 items

Section 5: Questions about the influence of sociocultural factors on body image dissatisfaction

- Feedback/comment from primary caregiver, 14 items
- Feedback/comment from best friends, 13 items
- Media influence, 10 items

Section 6: Demographic information

2. Please answer all the questions as honestly and accurately as you can. This is very important.

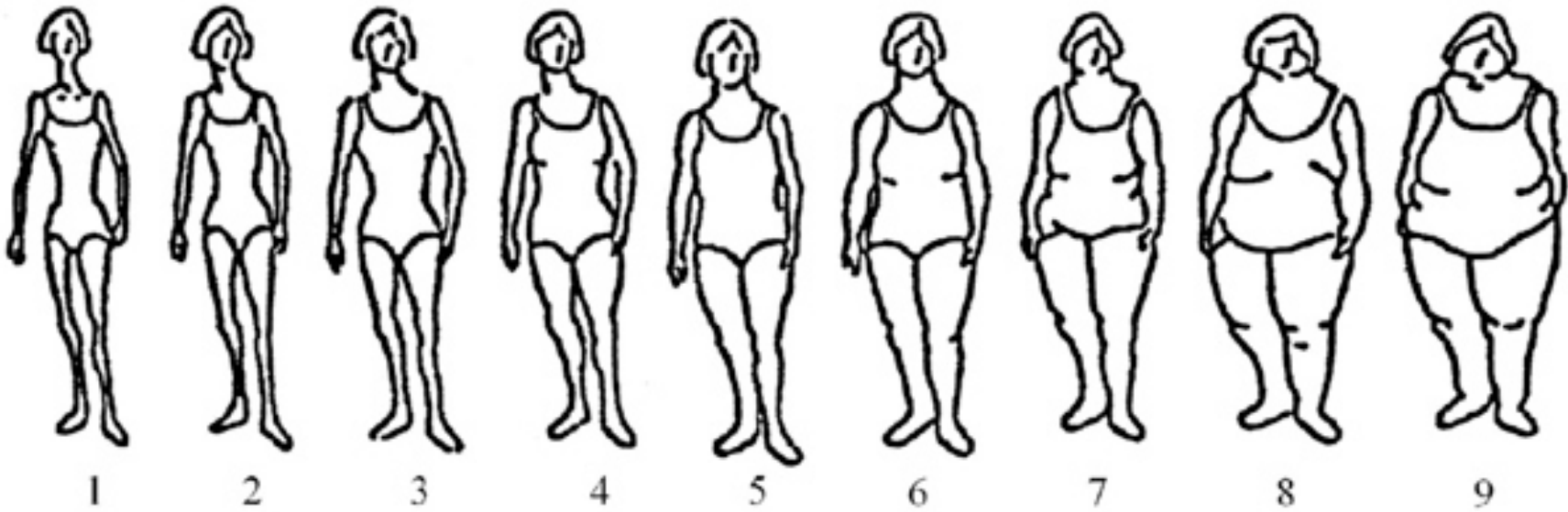
3. The records of this study will be kept private and the respondents will remain anonymous

## Section 1: Questions about body weight and shape

Please mark ✓ in  before the statement that best describes your answer or fill in the blank

1. How do you describe your weight?
  1.  Very underweight
  2.  Slightly underweight
  3.  About the right weight
  4.  Slightly overweight
  5.  Very overweight
  
2. Which of the following are you trying to do about your weight?
  1.  Lose weight
  2.  Gain weight
  3.  Stay the same weight
  4.  I am not trying to do anything about my weight
  
3. Which of the following are you trying to do about your body fat?
  1.  Lose body fat
  2.  Gain body fat
  3.  Stay the same body fat
  4.  I am not trying to do anything about body fat
  
4. Which of the following are you trying to do about the size of your muscle?
  1.  Increase
  2.  Decrease
  3.  Stay the same size
  4.  I am not trying to do anything about my muscle size
  
5. How much do you weigh without your shoes on? \_\_\_\_\_ kg.
6. What is your ideal weight? \_\_\_\_\_ kg.
7. How tall are you without your shoes on? \_\_\_\_\_ cm.





**Please answer the following questions based on the numbered figures above**

8. Which figure looks most like your current body? \_\_\_\_\_
9. Which figure looks most like your ideal body? \_\_\_\_\_

**Section 2: Questions about food choice behaviors in the last 7 days**

The following questions ask about food you ate or drank during the **past 7 days**. Please mark ✓ in the box that best describes your answer. Think about all the meals and snacks you had from the time you got up until you went to bed. Be sure to include food you ate at home, at school, at restaurants, or anywhere else.

For example In the past 7 days, you drank fruit juices for breakfast and lunch everyday = 2 times per day

Or in the past 7 days, you ate fruits on Monday at lunch and on Friday at dinner = 1 to 3 times during the past 7 days

	Did not consume during the past 7 days	1 to 3 times during the past 7 days	4 to 6 times during the past 7 days	1 times per day	2 times per day	3 times per day	4 times per day
1. 100% fruit juices such as orange juice, apple juice, or grape juice? (Do not count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.)							
2. Fruits (Do not count fruit juice.)							
3. Vegetables							
4. A can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not count diet soda or diet pop.)							
5. Sweet drinks such as iced coffee, frappucino, milk tea, bubble tea							

6. During the past 7 days, how many glasses of milk did you drink? (Count the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.)

1.  I did not drink milk during the past 7 days
2.  1 to 3 glasses during the past 7 days

3.  4 to 6 glasses during the past 7 days
  4.  1 glass per day
  5.  2 glasses per day
  6.  3 glasses per day
  7.  4 or more glasses per day
7. During the past 7 days, on how many days did you eat breakfast?
1.  0 days
  2.  1 day
  3.  2 days
  4.  3 days
  5.  4 days
  6.  5 days
  7.  6 days
  8.  7 days
8. During the past 7 days, on the average, how many times do you eat meal except snacks?
1.  One time
  2.  Two times
  3.  Three times
  4.  Four times or more
9. During the past 7 days, how often do you take snacks apart from regular meal?
5.  Rarely
  1.  Once or twice per week
  2.  Three or four times per week
  3.  More than 4 times per week

**Section 3: Questions about physical activity levels in the last 7 days**

**The following questions ask about food you ate or drank during the past 7 days.**

Please mark ✓ in the box that best describes your answer

1. Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)

Mark ✓ in the “No” box on the activity that you have not done

If the activity that you done is not on the list, please “specify” the name of activity in the “other”

Example You played soccer in the morning before class, at lunch, and right after school on Monday – Friday = 3 times per day \* 5 days = 15 times in the past 7 days.  
Or you played badminton on Tuesday and Friday = 2 times in the past 7 days.

	No	1-2	3-4	5-6	7 times or more
Walking for exercise					
Bicycling					
Jogging or running					
Aerobics					
Swimming					
Dance					
Badminton					
Soccer					
Volleyball					
Basketball					
Weight lifting					
Yoga					
Other_____					
Other_____					
Other_____					

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)
  1.  I don't do PE
  2.  Hardly ever
  3.  Sometimes
  4.  Quite often
  5.  Always
  
3. In the last 7 days, what did you normally do at lunch (besides eating lunch)? (Check one only.)
  1.  Sat down (talking, reading, doing schoolwork)
  2.  Stood around or walked around
  3.  Ran or played a little bit
  4.  Ran around and played quite a bit
  5.  Ran and played hard most of the time
  
4. In the last 7 days, on how many days right after school, did you do sports, dance, or play games in which you were very active? (Check one only.)
  1.  None
  2.  1 time last week
  3.  2 or 3 times last week
  4.  4 times last week
  5.  5 times last week
  
5. In the last 7 days, on how many evenings did you do sports, dance, or play games in which you were very active? (Check one only.)
  1.  None
  2.  1 time last week
  3.  2 or 3 times last week
  4.  4 or 5 last week
  5.  6 or 7 times last week
  
6. On the last weekend, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)
  1.  None
  2.  1 time
  3.  2 — 3 times
  4.  4 — 5 times
  5.  6 or more times

7. Which one of the following describes you best for the last 7 days? Read all five statements before deciding on the one answer that describes you.

1.  All or most of my free time was spent doing things that involve little physical effort
2.  I sometimes (1 – 2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics)
3.  I often (3 – 4 times last week) did physical things in my free time
4.  I quite often (5 – 6 times last week) did physical things in my free time
5.  I very often (7 or more times last week) did physical things in my free time

8. Mark ✓ in the box on how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	None	Little bit	Medium	Often	Very often
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

9. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

1.  Yes
2.  No

If Yes, what prevented you? \_\_\_\_\_

**Section 4: Questions about weight management practices in the past 12 months**

1. During the past 12 months have you tried to lose weight or decrease body fat?
  1.  Yes
  2.  No
  
2. During the past 12 months have you tried to increase your muscle size?
  1.  Yes
  2.  No
  
3. In the past 12 Months, have you done any of the following practices? If yes, please indicate the purpose of each practice you have done. (Check all that applied)

Mark ✓ in the “No” box on the practices that you have not done in the past 12 months in “Never”

If the practices that you done is not on the list, please “specify” the name of activity in the “other” and indicate the purpose of the practice

	Yes		Never
	To lose weight or decrease body fat	To build muscle or increase muscle size	
Ate less food (amount)			
Switched to foods with lower calories			
Ate less fat			
Ate fewer carbohydrates			
Ate more protein (including whey, protein shake)			
Exercised			
Skipped meal			
Used a liquid diet formula such as <i>Herbalife</i> or <i>meal replacement shake</i>			
Joined a weight loss program such as <i>Slimming center</i> or <i>Body shape</i>			
Followed a special diet such as <i>South Beach</i> , <i>Ornish</i>			
Took diet pills prescribed by a doctor			
Took other pills. Medicine, herbs, or supplements not needing a prescription			
Started to smoke or began to smoke again			
Took laxative or vomited			

Drank a lot of water			
Ate more fruits, vegetables, salad			
Ate less sugar, candy, sweets			
Change eating habits (didn't eat late at night, ate several small meals a day)			
Ate less junk food or fast food			
Other _____			
Other _____			
Other _____			
Other _____			



**Section 5: Questions about the influence of sociocultural factors on body image dissatisfaction**

**5.1 Type of Feedback (Comments) from Primary caregiver (or important adult in your life e.g. aunt, uncle)**

Please mark ✓ in the box that best describes your answer

Note Extremely positive means good comments, extremely negative means bad comments

1. Who is your primary caregiver (e.g. father, mother, nanny, aunt, uncle, etc.)  
Please specify 1 person \_\_\_\_\_

	<b>Extremely positive</b>	<b>Positive</b>	<b>In between</b>	<b>Negative</b>	<b>Extremely negative</b>
2. What type of feedback do you get from your primary caregiver about the size or shape of your body					
3. What type of feedback do you get from your primary caregiver about your eating pattern to change your body size or shape?					
4. What type of feedback do you get from your primary caregiver about your level of exercise to change your body size or shape?					

	<b>Always</b>	<b>Almost always</b>	<b>Frequently</b>	<b>Sometimes</b>	<b>Never</b>
5. Does your primary caregiver encourage you to <b>lose weight</b> ?					
6. Does your primary caregiver encourage you to <b>gain weight</b> ?					
7. Does your primary caregiver encourage you to become <b>more muscular</b> ?					
8. Does your primary caregiver diet to lose weight?					

9. Does your primary caregiver try to put on weight?					
10. Does your primary caregiver try to become more muscular?					
11. Does your primary caregiver tease you because you are too thin?					
12. Does your primary caregiver tease you because you should eat less?					
13. Does your primary caregiver tease you because they think you are not muscular enough?					

14. How important to you is what your primary caregiver thinks about the shape of your body?

1.  Extremely important
2.  Fairly important
3.  In between
4.  Fairly unimportant
5.  Extremely unimportant

## 5.2 Type of Feedback (Comments) from best friends

Please mark ✓ in the box that best describes your answer

Note Extremely positive means good comments, extremely negative means bad comments

	Extremely positive	Positive	In between	Negative	Extremely negative
1. What type of feedback do you get from your best friends about the size or shape of your body					
2. What type of feedback do you get from your best friends about your eating pattern to change your body size or shape?					
3. What type of feedback do you get from your best friends about your level of exercise to change your body size or shape?					

	<b>Always</b>	<b>Almost always</b>	<b>Frequently</b>	<b>Sometimes</b>	<b>Never</b>
4. Do your best friends encourage you to <b>lose weight</b> ?					
5. Do your best friends encourage you to <b>gain weight</b> ?					
6. Do your best friends encourage you to become <b>more muscular</b> ?					
7. Do your best friends diet to lose weight?					
8. Do your best friends try to put on weight?					
9. Do your best friends try to become more muscular?					
10. Do your best friends tease you because you are too thin?					
11. Do your best friends tease you because you should eat less?					
12. Do your best friends tease you because they think you are not muscular enough?					

13. How important to you is what your best friends think about the shape of your body?

1.  Extremely important
2.  Fairly important
3.  In between
4.  Fairly unimportant
5.  Extremely unimportant

### 5.3 Media Influences

Please mark ✓ in the box that best describes your answer

	Strongly agree	Agree	Unsure	Disagree	Strongly Disagree
1. Do the media (i.e. T.V, Movies, Magazines and Newspaper) give the idea that you should be <b>slimmer</b> ?					
2. Do the media give the idea that you should <b>eat less</b> to lose weight?					
3. Do the media give the idea that you should <b>exercise more</b> to gain weight?					
4. Do the media give the idea that you should <b>gain weight</b> ?					
5. Do the media give the idea that you should <b>exercise more</b> to gain weight?					
6. Do the media give the idea that you should <b>eat more</b> to gain weight?					
7. Do the media give the idea that you should be more <b>muscular</b> ?					
8. Do the media give the idea that you should <b>exercise more</b> to be more muscular?					
9. Do the media give the idea that you should <b>eat less</b> to be more muscular?					
10. Do the media give the idea that you should <b>eat more</b> to be more muscular?					

### Section 6 Demographic information

Please mark ✓ in  before the statement that best describes your answer or fill in the blank

1. What is your gender?

1.  Female

2.  Male

3.  Transgender

2. How old are you?

1.  15 years old

2.  16 years old

3.  17 years old
  4.  18 years old or older
3. In what grade are you?
    1.  10th grade
    2.  11th grade
    3.  12th grade
  4. What school are you in?
    1.  Girls' school
    2.  Boys' school
    3.  Mixed population school
  5. What is your program?
    1.  Math-Sciences
    2.  Arts-Math
    3.  Arts
    4.  Others (please specify \_\_\_\_\_)
  6. What is your father education level?
    1.  Grade 6<sup>th</sup> and lower
    2.  Grade 12<sup>th</sup>
    3.  College/Diploma
    4.  Bachelor
    5.  Master and higher
  7. What is your mother education level?
    1.  Grade 6<sup>th</sup> and lower
    2.  Grade 12<sup>th</sup>
    3.  College/Diploma
    4.  Bachelor
    5.  Master and higher
  8. What is estimated total household's monthly income
    1.  <10,000 baht
    2.  10,001-30,000 baht
    3.  30,001-50,000 baht
    4.  > 50,001 baht

## APPENDIX D: QUESTIONNAIRE FOR GIRLS IN THAI

### แบบสอบถามเพื่อการวิจัย (เพศหญิง)

เรื่อง อิทธิพลของการรับรู้ภาพลักษณ์ร่างกายของตนเองและวิธีการที่ใช้จัดการกับน้ำหนักและรูปร่างต่อกิจกรรมทางกายและพฤติกรรมการบริโภคอาหารในหมู่วัยรุ่นไทย

#### คำชี้แจง

1.แบบสอบถามฉบับนี้ มีวัตถุประสงค์เพื่อศึกษา

อิทธิพลของการรับรู้ภาพลักษณ์ร่างกายของตนเองและวิธีการที่ใช้จัดการน้ำหนักต่อการออกกำลังกายและพฤติกรรมการเลือกอาหารในหมู่วัยรุ่นไทย เท่านั้น โดยมีรายละเอียดของคำถามดังต่อไปนี้

ตอนที่ 1 ข้อมูลเกี่ยวกับการประเมินรูปร่าง และ น้ำหนักของตนเอง จำนวน 9 ข้อ

ตอนที่ 2 ข้อมูลเกี่ยวกับพฤติกรรมการบริโภคอาหารภายใน 7 วันที่ผ่านมา จำนวน 9 ข้อ

ตอนที่ 3 ข้อมูลเกี่ยวกับกิจกรรมทางกายในเวลาว่างภายใน 7 วันที่ผ่านมา จำนวน 10 ข้อ

ตอนที่ 4 ข้อมูลเกี่ยวกับวิธีการที่ใช้จัดการกับน้ำหนักและรูปร่างในหนึ่งปีที่ผ่านมา จำนวน 3 ข้อ

ตอนที่ 5 ข้อมูลเกี่ยวกับอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกาย

- อิทธิพลของผู้ปกครอง จำนวน 14 ข้อ
- อิทธิพลของเพื่อนสนิท จำนวน 13 ข้อ
- อิทธิพลของสื่อ จำนวน 10 ข้อ

ตอนที่ 6 ข้อมูลเกี่ยวกับสถานภาพทั่วไป จำนวน 8 ข้อ

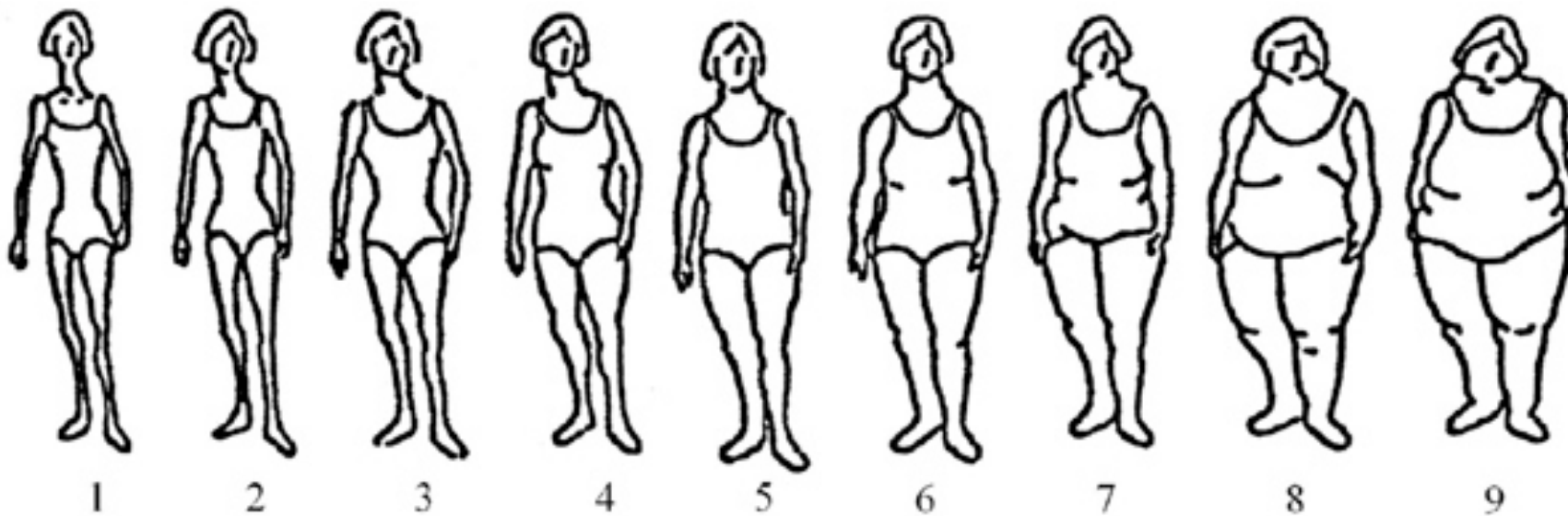
2.กรุณาเลือกคำตอบที่ตรงตามความเป็นจริงมากที่สุด เพราะคำตอบที่เป็นจริงและสมบูรณ์เท่านั้น จะช่วยให้การวิจัยในครั้งที่เกิดประโยชน์มากที่สุด

3. คำตอบของท่าน ผู้วิจัยจะเก็บเป็นความลับ และผู้ตอบแบบสอบถามจะไม่มีภาระระบุชื่อ และจะไม่สามารถสืบค้นกลับไปถึงผู้ตอบแบบสอบถามได้

**ตอนที่ 1 ข้อมูลเกี่ยวกับการประเมินรูปร่าง และ น้ำหนักของตนเอง**

**คำชี้แจง** โปรดทำเครื่องหมาย  ลงในช่อง  หน้าข้อความที่ตรงกับคำตอบของท่าน หรือเติมข้อความให้สมบูรณ์

1. คุณคิดว่าน้ำหนักของคุณอยู่ในกลุ่มใด
  1.  น้ำหนักน้อยกว่าเกณฑ์ปกติมาก
  2.  น้ำหนักน้อยกว่าเกณฑ์ปกติเล็กน้อย
  3.  น้ำหนักอยู่ในเกณฑ์ปกติ
  4.  น้ำหนักมากกว่าเกณฑ์ปกติเล็กน้อย
  5.  น้ำหนักมากกว่าเกณฑ์ปกติมาก
  
2. คุณพยายามจะทำอะไรกับน้ำหนักของคุณ
  1.  ลดน้ำหนัก
  2.  เพิ่มน้ำหนัก
  3.  ทำให้น้ำหนักคงที่
  4.  ไม่ได้พยายามที่จะทำอะไรกับน้ำหนัก
  
3. คุณพยายามจะทำอะไรกับไขมันในร่างกายของคุณ
  1.  ลดไขมันในร่างกาย
  2.  เพิ่มไขมันในร่างกาย
  3.  ทำให้ไขมันในร่างกายคงที่
  4.  ไม่ได้พยายามที่จะทำอะไรกับไขมันในร่างกาย
  
4. คุณพยายามจะทำอะไรกับมวล/ขนาดของกล้ามเนื้อของคุณ
  1.  ลดมวล/ขนาดของกล้ามเนื้อ
  2.  เพิ่มมวล/ขนาดของกล้ามเนื้อ
  3.  ทำให้มวล/ขนาดของกล้ามเนื้อคงที่
  4.  ไม่ได้พยายามที่จะทำอะไรกับมวล/ขนาดของกล้ามเนื้อ
  
5. น้ำหนักของคุณในปัจจุบันเมื่อถอดรองเท้าเท่ากับ \_\_\_\_\_ กิโลกรัม
6. น้ำหนักในอุดมคติของคุณเท่ากับ \_\_\_\_\_ กิโลกรัม
7. ส่วนสูงของคุณในปัจจุบันเมื่อถอดรองเท้าเท่ากับ \_\_\_\_\_ เซนติเมตร



กรุณาตอบคำถามต่อไปนี้โดยอ้างอิงจากรูปภาพด้านบน

หมายเหตุ รูปถ่ายด้านบนเรียงลำดับจากรูปร่างที่มีมวลไขมันน้อย (หมายเลข 1) ไปจนถึง รูปร่างที่มีมวลไขมันมาก (หมายเลข 9)

8. รูปถ่ายใดเหมือนรูปร่างของคุณ “ณ ปัจจุบัน” มากที่สุด \_\_\_\_\_
9. รูปถ่ายใดเหมือนรูปร่างใน “อุดมคติ” ของคุณมากที่สุด \_\_\_\_\_



**ตอนที่ 2 ข้อมูลเกี่ยวกับพฤติกรรมกรบริโภคอาหารภายใน 7 วันที่ผ่านมา**

**คำชี้แจง** คำถามต่อไปนี้ถามถึงอาหารที่คุณบริโภคภายใน 7 วันที่ผ่านมา แล้วทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับกรบริโภคอาหารของคุณที่สุดเพียงหนึ่งช่อง (โปรดพิจารณาถึงอาหาร, เครื่องดื่มและขนมขบเคี้ยวที่คุณบริโภคตั้งแต่ตื่นนอนจนถึงเวลาเข้านอน รวมไปถึงอาหารที่บริโภคที่บ้าน ที่โรงเรียน ที่ร้านอาหาร และอื่นๆ)

ยกตัวอย่าง ในเจ็ดวันที่ผ่านมา คุณดื่มน้ำผลไม้ในมือเช้า และ มื้อกลางวัน ของทุกวัน = บริโภค 2 ครั้ง ต่อ วัน

หรือ ในเจ็ดวันที่ผ่านมา คุณกินผลไม้ในมื้อกลางวันของวันจันทร์ และ มื้อเย็นของวันศุกร์ = บริโภค 1 ถึง 3 ครั้ง ภายใน 7 วันที่ผ่านมา

ประเภทของอาหาร	ไม่ได้บริโภค ภายใน 7 วันที่ผ่านมา	บริโภค 1 ถึง 3 ครั้ง ภายใน 7 วันที่ผ่านมา	บริโภค 4 ถึง 6 ครั้ง ภายใน 7 วันที่ผ่านมา	บริโภค 1 ครั้ง ต่อ วัน	บริโภค 2 ครั้ง ต่อ วัน	บริโภค 3 ครั้ง ต่อ วัน	บริโภค 4 ครั้ง ต่อ วัน
1. น้ำผลไม้ 100% หรือ น้ำผลไม้คั้นสด ยกตัวอย่างเช่น น้ำส้มคั้น, น้ำแอปเปิ้ล หมายเหตุ ไม่นับรวม น้ำอัลมอนด์ผลไม้							
2. ผลไม้ หมายเหตุ ไม่นับรวมน้ำผลไม้							
3. ผัก							
4. น้ำอัดลม ยกตัวอย่างเช่น โค้ก, เฟนต้า, สเตอปี, สไปรท์							
5. น้ำหวานทุกชนิด ยกตัวอย่างเช่น กาแฟเย็น, กาแฟปั่น, ชานมเย็น, ชานมไข่มุก, น้ำแดงเสลซึบลูบอย							

6. ใน 7 วันที่ผ่านมา คุณดื่มนมทั้งหมดกี่แก้วโดยประมาณ

1.  ไม่ได้ดื่มนมเลยภายในเจ็ดวันที่ผ่านมา
2.  หนึ่ง-สาม แก้ว ภายในเจ็ดวันที่ผ่านมา
3.  สี่-หก แก้ว ภายในเจ็ดวันที่ผ่านมา
4.  หนึ่ง แก้วต่อวัน
5.  สอง แก้วต่อวัน
6.  สาม แก้วต่อวัน

7.  สี่ แก้วหรือมากกว่าต่อวัน

7. ใน 7 วันที่ผ่านมา คุณรับประทาน**อาหารเช้า**เป็นจำนวนทั้งหมดกี่วัน

1.  ไม่ได้ทานอาหารเช้าเลยภายในเจ็ดวันที่ผ่านมา
2.  หนึ่งวัน
3.  สองวัน
4.  สามวัน
5.  สี่วัน
6.  ห้าวัน
7.  หกวัน
8.  เจ็ดวัน

8. ใน 7 วันที่ผ่านมา โดยเฉลี่ยแล้วคุณทาน**อาหารมื้อหลัก**วันละกี่ครั้ง

1.  หนึ่งครั้ง ต่อวัน
2.  สองครั้ง ต่อวัน
3.  สามครั้ง ต่อวัน
4.  สี่ครั้งหรือมากกว่า ต่อวัน

9. ใน 7 วันที่ผ่านมา คุณรับประทาน**อาหารว่าง** หรือ **ขนมขบเคี้ยว** ทั้งหมดกี่ครั้ง

1.  นานๆครั้ง
2.  หนึ่ง-สอง ครั้ง ต่ออาทิตย์
3.  สาม-สี่ ครั้ง ต่ออาทิตย์
4.  สี่ครั้งหรือมากกว่า ต่ออาทิตย์

**ตอนที่ 3 ข้อมูลเกี่ยวกับกิจกรรมทางกายในเวลาว่างภายใน 7 วันที่ผ่านมา**

**คำชี้แจง** คำถามต่อไปนี้ถามถึงกิจกรรมทางกายในเวลาว่างของคุณภายใน 7 วันที่ผ่านมา แล้วทำเครื่องหมาย ✓

ลงในช่องว่างที่ตรงกับกิจกรรมทางกายของคุณที่สุดเพียงหนึ่งช่อง

1. กรุณาเลือก กิจกรรม (ประเภทของการออกกำลังกายหรือกีฬา) และจำนวนครั้ง ที่คุณปฏิบัติภายใน 7 วันที่ผ่านมา  
หรือ

ถ้าไม่ได้ปฏิบัติกิจกรรมที่ระบุไว้ ให้ทำแล้วทำเครื่องหมาย ✓ ลงในช่อง “ไม่ได้ปฏิบัติ”

หรือ

ถ้ากิจกรรมที่คุณปฏิบัติไม่ได้ระบุในตาราง กรุณาระบุ “ชื่อ” ของกิจกรรมในช่อง “อื่นๆ” และเลือกจำนวนครั้งที่คุณปฏิบัติ  
ยกตัวอย่าง คุณเตะฟุตบอลในเวลาเช้าก่อนเข้าเรียน พักกลางวัน และ หลังเลิกเรียน ในวันจันทร์-ศุกร์ = 3 (ครั้งต่อวัน) X 5 วัน (จันทร์-ศุกร์) = 15 ครั้ง ภายใน 7 วันที่ผ่านมา หรือ คุณเล่นแบดมินตัน ในวันอังคาร และ วันศุกร์ = 2 ครั้ง ภายใน 7 วันที่ผ่านมา

ประเภทของกิจกรรม	ไม่ได้ปฏิบัติ	1-2 ครั้ง	3-4 ครั้ง	5-6 ครั้ง	≥ 7 ครั้ง
เดินเพื่อการออกกำลังกาย					
ปั่นจักรยาน					
วิ่ง หรือ จ็อกกิ้ง					
เดินแอโรบิค					
ว่ายน้ำ					
เต้น					
เตะฟุตบอล					
เล่นแบดมินตัน					
เล่นวอลเลย์บอล					
เล่นบาสเกตบอล					
ยกน้ำหนัก					
โยคะ					
อื่นๆ โปรดระบุ _____					
อื่นๆ โปรดระบุ _____					
อื่นๆ โปรดระบุ _____					

2. ใน 7 วันที่ผ่านมา เวลาส่วนใหญ่ในคาบพละ บ่อยแค่ไหนที่คุณกระตือรือร้นมากๆ

(ทำกิจกรรมที่ทำให้หายใจแรงและหัวใจเต้นเร็ว)

1.  ไม่มี/ไม่ได้เข้าเรียนคาบพละ
2.  นานๆ ครั้ง
3.  บางครั้ง
4.  บ่อยๆ
5.  ตลอดเวลา/ทุกคาบ

3. ใน 7 วันที่ผ่านมา เวลาส่วนใหญ่ในคาบพละ บ่อยแค่ไหนที่คุณ ไม่กระตือรือร้นเลย (นั่งเฉยๆ หรือ ทำกิจกรรมที่ ไม่ได้ ทำให้หายใจแรงและหัวใจเต้นเร็ว)

1.  ไม่มี/ไม่ได้เข้าเรียนคาบพละ
2.  นานๆ ครั้ง

3.  บางครั้ง
4.  บ่อยๆ
5.  ตลอดเวลา/ทุกคาบ
4. ใน 7 วันที่ผ่านมา ปกติคุณทำอะไรในช่วงพักกลางวัน (นอกเหนือจากรับประทานอาหารกลางวัน)
1.  นั่งอยู่กับที่ (คุยกับเพื่อนๆ, อ่านหนังสือ, ทำการบ้าน)
2.  เดินไปมา
3.  วิ่งเล่นหรือทำกิจกรรมที่ต้องเคลื่อนไหวเล็กน้อย (มากกว่าเดิน)
4.  วิ่งเล่นหรือทำกิจกรรมที่ต้องเคลื่อนไหวปานกลาง (ที่ทำให้หัวใจเต้นเร็วขึ้น)
5.  วิ่งเล่นหรือทำกิจกรรมที่ต้องเคลื่อนไหวอย่างหนัก(ที่ทำให้หายใจเร็วขึ้นและหัวใจเต้นแรง)
5. ใน 7 วันที่ผ่านมา ในช่วงหลังเลิกเรียนโดยทันที “กีวัน” ที่คุณเล่นกีฬาหรือทำกิจกรรมที่คุณกระตือรือร้นมาก (ทำกิจกรรมที่ทำให้หายใจแรงและหัวใจเต้นเร็ว)
1.  ไม่มี
2.  หนึ่งวัน ในอาทิตย์ที่ผ่านมา
3.  สอง-สามวัน ในอาทิตย์ที่ผ่านมา
4.  สี่-ห้าวัน ในอาทิตย์ที่ผ่านมา
5.  หก-เจ็ดวัน ในอาทิตย์ที่ผ่านมา
6. ใน 7 วันที่ผ่านมา ในช่วงเย็นหรือกลางคืน “กีวัน” ที่คุณเล่นกีฬาหรือทำกิจกรรมที่คุณกระตือรือร้นมาก (ทำกิจกรรมที่ทำให้หายใจแรงและหัวใจเต้นเร็ว)
1.  ไม่มี
2.  หนึ่งวัน ในอาทิตย์ที่ผ่านมา
3.  สอง-สามวัน ในอาทิตย์ที่ผ่านมา
4.  สี่-ห้าวัน ในอาทิตย์ที่ผ่านมา
5.  หก-เจ็ดวัน ในอาทิตย์ที่ผ่านมา
7. ในวันหยุด (เสาร์-อาทิตย์) ที่ผ่านมา “กีครั้ง” ที่คุณเล่นกีฬาหรือทำกิจกรรมที่คุณกระตือรือร้นมาก (ทำกิจกรรมที่ทำให้หายใจแรงและหัวใจเต้นเร็ว)
1.  ไม่มี
2.  หนึ่งครั้ง
3.  สอง-สาม ครั้ง
4.  สี่-ห้า ครั้ง
5.  หกครั้ง หรือ มากกว่า
8. ในข้อใดต่อไปนี้อธิบายการใช้เวลาว่างของคุณใน 7 วันที่ผ่านมาได้ดีที่สุด (กรุณาอ่านทุกตัวเลือกก่อนตัดสินใจว่าตัวเลือกไหนตรงกับตัวคุณที่สุด)
1.  ฉันใช้เวลาว่างเกือบทั้งหมดของฉันทำกิจกรรมที่มีการเคลื่อนไหวเล็กน้อย
2.  ฉันใช้เวลาว่างออกกำลังกาย/เล่นกีฬาในบางครั้ง (1-2 ครั้ง ในอาทิตย์ที่แล้ว)
3.  ฉันมักจะใช้เวลาว่างออกกำลังกาย/เล่นกีฬา (3-4 ครั้ง ในอาทิตย์ที่แล้ว)
4.  ฉันใช้เวลาว่างออกกำลังกาย/เล่นกีฬาก่อนข้างบ่อย (5-6 ครั้ง ในอาทิตย์ที่แล้ว)
5.  ฉันใช้เวลาว่างออกกำลังกาย/เล่นกีฬาเป็นประจำ (7 ครั้ง หรือมากกว่า ในอาทิตย์ที่แล้ว)

9. กรุณาทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับความถี่ของกิจกรรมทางกาย/ออกกำลังกาย ของคุณ ในแต่ละวัน ของอาทิตย์ที่ผ่านมาที่สุดเพียงหนึ่งช่อง

วัน	ไม่ได้ทำ	เล็กน้อย	ปานกลาง	บ่อย	เป็นประจำ
1. วันจันทร์					
2. วันอังคาร					
3. วันพุธ					
4. วันพฤหัสบดี					
5. วันศุกร์					
6. วันเสาร์					
7. วันอาทิตย์					

10. ในอาทิตย์ที่แล้วคุณป่วยหรือมีสิ่งใดที่ทำให้คุณไม่ได้ทำกิจกรรมทางกาย/ออกกำลังกายตามปกติหรือไม่

1.  ใช่, โปรดระบุสาเหตุ \_\_\_\_\_
2.  ไม่ใช่

**ตอนที่ 4 ข้อมูลเกี่ยวกับวิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง**

**คำชี้แจง** โปรดทำเครื่องหมาย ✓ ลงในช่อง  หน้าข้อความ หรือในช่องว่างที่ตรงกับคำตอบของท่าน

1. ในช่วง 12 เดือนที่ผ่านมา คุณได้พยายามลดน้ำหนัก หรือ ลดมวลไขมันหรือไม่

1.  ใช่
2.  ไม่ใช่

2. ในช่วง 12 เดือนที่ผ่านมา คุณได้พยายามเพิ่ม มวล/ขนาดของกล้ามเนื้อหรือไม่

1.  ใช่
2.  ไม่ใช่

3. ในช่วง 12 เดือนที่ผ่านมา คุณได้ใช้วิธีที่ระบุในตารางหรือไม่

ทำเครื่องหมาย ✓ ลงในช่องของกิจกรรมหรือวิธีที่ตรงกับวิธีที่คุณใช้ และจุดประสงค์ในการใช้วิธีนั้นๆ ในช่วง 12 เดือนที่ผ่านมา

หรือ

ถ้าไม่ได้ปฏิบัติกิจกรรม/วิธี ที่ระบุไว้ ให้ทำแล้วทำเครื่องหมาย ✓ ลงในช่อง “ไม่ได้ปฏิบัติ”

หรือ

ถ้ากิจกรรม/วิธี ที่คุณปฏิบัติไม่ได้ระบุในตาราง กรุณาระบุ “ชื่อ” ของกิจกรรมในช่อง “อื่นๆ” พร้อมกับเลือกจุดประสงค์ในการใช้วิธีนั้นๆ

กิจกรรม/วิธี	ใช้ใน 12 เดือนที่ผ่านมา		ไม่ได้ใช้
	เพื่อลดน้ำหนัก หรือ ลดมวลไขมัน	เพื่อเพิ่ม ขนาด/มวล กล้ามเนื้อ	
1. รับประทานอาหารในปริมาณที่น้อยลง			
2. เปลี่ยนไปกินอาหารที่มีจำนวนแคลอรีต่ำ/น้อย			
3. รับประทานไขมันน้อยลง			
4. รับประทานอาหารจำพวกแป้ง, คาร์โบไฮเดรต น้อยลง			
5. รับประทานโปรตีนมากขึ้น (รวมไปถึงเนื้อสัตว์, ไข่โปรตีน, โปรตีนเชค, โปรตีนบาร์ เป็นต้น)			
6. ออกกำลังกาย			
7. อดอาหาร หรือ งดมื้ออาหาร			
8. บริโภคผลิตภัณฑ์ในรูปแบบของเหลวเพื่อทดแทนมื้ออาหารหลัก เช่น เฮอร์บูล, โปรตีนเชค			
9. เข้าร่วมโปรแกรมลดน้ำหนักจากศูนย์บริการ หรือ สถาบันลดน้ำหนัก เช่น บอดีเชพ (Body Shape), สลิมอัพ เซนเตอร์ (Slim Up Center), คริสตีฟรองซ์ (Kristie France)			
10. ใช้สูตรอาหารลดน้ำหนัก เช่น สูตรลดน้ำหนัก ของสมเด็จพระเทพฯ, สูตรลดน้ำหนักใน 3 วัน, สูตรลดน้ำหนัก 7 วัน			
11. ใช้จ่ายที่จ่ายโดยแพทย์			
12. ใช้จ่าย, อาหารเสริม, หรือ สมุนไพร ที่สามารถหาซื้อได้ทั่วไป โดยที่ไม่ต้องใช้ใบสั่งยาจากแพทย์			
13. สูบหรี่			
14. ใช้จ่ายระบาย ยาถ่าย			
15. ล้วงคอให้อาเจียน			
16. คัดน้ำมาก ๆ			
17. รับประทานผัก ผลไม้เพิ่มขึ้น			
18. รับประทานน้ำตาล ขนม น้อยลง			
19. เปลี่ยนพฤติกรรมกรบริโภคอาหาร เช่น ไม่รับประทานอาหารตอนกลางคืน, รับประทานอาหารมื้อเล็กลงแต่บ่อยขึ้น			
20. รับประทานอาหารจำพวกอาหารขยะน้อยลง เช่น แมคโดนัลด์, เฟรนช์ฟรายส์			
21. อื่นๆ โปรดระบุ _____			
22. อื่นๆ โปรดระบุ _____			
23. อื่นๆ โปรดระบุ _____			
24. อื่นๆ โปรดระบุ _____			

**ตอนที่ 5 ข้อมูลเกี่ยวกับผลกระทบของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกาย**

**5.1 ชนิดของข้อเสนอแนะ หรือ ความคิดเห็น จากผู้ปกครอง/ผู้ดูแลหลัก**

**คำชี้แจง** โปรดเติมข้อความให้สมบูรณ์ หรือ ทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับคำตอบของท่าน

หมายเหตุ แง่บวกอย่างมาก หมายถึง ข้อเสนอแนะ/ความคิดเห็น “ที่ดี” และ แง่ลบอย่างมาก หมายถึง ข้อเสนอแนะ/ความคิดเห็น “ไม่ดี”

1. ใครคือผู้ปกครองหรือผู้ดูแลหลักของคุณ (เช่น พ่อ, แม่, ป้า, ลุง, ยาย, พี่เลี้ยง, เป็นต้น) โปรดระบุ 1 คน

	แง่บวก อย่างมาก	แง่บวก	เป็นกลาง	แง่ลบ	แง่ลบ อย่างมาก
2. ข้อเสนอแนะแบบไหนที่คุณได้รับจากผู้ปกครองเกี่ยวกับขนาดของร่างกายหรือรูปร่างของคุณ					
3. ข้อเสนอแนะแบบไหนที่คุณได้รับจากผู้ปกครองเกี่ยวกับพฤติกรรมมารับประทานอาหารเพื่อเปลี่ยนขนาดของร่างกายหรือรูปร่างของคุณ					
4. ข้อเสนอแนะแบบไหนที่คุณได้รับจากผู้ปกครองเกี่ยวกับระดับการออกกำลังกายเพื่อเปลี่ยนขนาดของร่างกายหรือรูปร่างของคุณ					

	ตลอดเวลา	เกือบ ตลอดเวลา	บ่อยๆ	บางครั้ง	ไม่เคย
5. ผู้ปกครองของคุณแนะนำให้คุณลดน้ำหนัก					
6. ผู้ปกครองของคุณแนะนำให้คุณเพิ่มน้ำหนัก					
7. ผู้ปกครองของคุณแนะนำให้คุณมีหุ่นที่ต่ำกว่านี้					
8. ผู้ปกครองของคุณควบคุมอาหารเพื่อลดน้ำหนัก					
9. ผู้ปกครองของคุณพยายามจะเพิ่มน้ำหนัก					
10. ผู้ปกครองของคุณพยายามจะมีหุ่นที่ต่ำกว่านี้					
11. ผู้ปกครองของคุณหยอกล้อคุณเพราะคุณผอมเกินไป					
12. ผู้ปกครองของคุณหยอกล้อคุณเพราะคุณควรจะกินน้อยกว่านี้					
13. ผู้ปกครองของคุณหยอกล้อคุณเพราะเขาคิดว่าคุณมีหุ่นที่ต่ำไม่พอ					

14. ความคิดของผู้ปกครองเกี่ยวกับรูปร่างของคุณมีความสำคัญกับคุณแค่ไหน

1.  สำคัญเป็นอย่างมาก
2.  สำคัญพอสมควร
3.  กลางๆ/ เฉยๆ
4.  ค่อนข้างไม่สำคัญ
5.  ไม่สำคัญเลย

5.2 ชนิดของข้อเสนอแนะ หรือ ความคิดเห็น จากเพื่อนสนิท

คำชี้แจง โปรดเติมข้อความให้สมบูรณ์ หรือ ทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับคำตอบของท่าน

หมายเหตุ แง่บวกอย่างมาก หมายถึง ข้อเสนอแนะ/ความคิดเห็น “ที่ดี” และ แง่ลบอย่างมาก หมายถึง ข้อเสนอแนะ/ความคิดเห็น “ไม่ดี”

	แง่บวก อย่างมาก	แง่บวก	เป็นกลาง	แง่ลบ	แง่ลบ อย่างมาก
1. ข้อเสนอแนะแบบไหนที่คุณได้รับจากเพื่อนสนิทเกี่ยวกับขนาดของร่างกายหรือรูปร่างของคุณ					
2. ข้อเสนอแนะแบบไหนที่คุณได้รับจากเพื่อนสนิทเกี่ยวกับพฤติกรรมมารับประทานอาหารเพื่อเปลี่ยนขนาดของร่างกายหรือรูปร่างของคุณ					
3. ข้อเสนอแนะแบบไหนที่คุณได้รับจากเพื่อนสนิทเกี่ยวกับระดับการออกกำลังกายเพื่อเปลี่ยนขนาดของร่างกายหรือรูปร่างของคุณ					

	ตลอดเวลา	เกือบ ตลอดเวลา	บ่อยๆ	บางครั้ง	ไม่เคย
4. เพื่อนสนิทของคุณแนะนำให้คุณลดน้ำหนัก					
5. เพื่อนสนิทของคุณแนะนำให้คุณเพิ่มน้ำหนัก					
6. เพื่อนสนิทของคุณแนะนำให้คุณมีหุ่นที่ต่ำกว่านี้					
7. เพื่อนสนิทของคุณควบคุมอาหารเพื่อลดน้ำหนัก					
8. เพื่อนสนิทของคุณพยายามจะเพิ่มน้ำหนัก					
9. เพื่อนสนิทของคุณพยายามจะมีหุ่นที่ต่ำกว่านี้					
10. เพื่อนสนิทของคุณหยอกล้อคุณเพราะคุณผอมเกินไป					
11. เพื่อนสนิทของคุณหยอกล้อคุณเพราะคุณควรจะกินน้อยกว่านี้					
12. เพื่อนสนิทของคุณหยอกล้อคุณเพราะเขาคิดว่าคุณมีหุ่นที่ต่ำไม่พอ					

13. ความคิดของเพื่อนสนิทเกี่ยวกับรูปร่างของคุณมีความสำคัญกับคุณแค่ไหน

1.  สำคัญเป็นอย่างมาก
2.  สำคัญพอสมควร
3.  กลางๆ/ เฉยๆ
4.  ค่อนข้างไม่สำคัญ
5.  ไม่สำคัญเลย



5.3 อิทธิพลของสื่อ (เช่น นิตยสาร, ภาพยนตร์, หนังสือพิมพ์, รายการโทรทัศน์)

คำชี้แจง โปรดเติมข้อความให้สมบูรณ์ หรือ ทำเครื่องหมาย ✓ ลงในช่องว่างที่ตรงกับคำตอบของท่าน

	เห็นด้วย อย่างยิ่ง	เห็นด้วย	ไม่แน่ใจ	ไม่เห็นด้วย	ไม่เห็นด้วย อย่างยิ่ง
1. สื่อทำให้คุณรู้สึกว่าคุณควรจะมีขนาดตัวที่เล็กลง					
2. สื่อทำให้คุณรู้สึกว่าคุณควรจะกินให้น้อยลงเพื่อที่จะลดน้ำหนัก					
3. สื่อทำให้คุณรู้สึกว่าคุณควรจะออกกำลังกายมากขึ้นเพื่อที่จะลดน้ำหนัก					
4. สื่อทำให้คุณรู้สึกว่าคุณควรจะมีน้ำหนัก					
5. สื่อทำให้คุณรู้สึกว่าคุณควรจะออกกำลังกายมากขึ้นเพื่อที่จะเพิ่มน้ำหนัก					
6. สื่อทำให้คุณรู้สึกว่าคุณควรจะกินให้มากขึ้นเพื่อที่จะเพิ่มน้ำหนัก					
7. สื่อทำให้คุณรู้สึกว่าคุณควรมีร่างกายที่ล่ำมากกว่านี้					
8. สื่อทำให้คุณรู้สึกว่าคุณควรจะออกกำลังกายมากขึ้นเพื่อที่จะมีร่างกายที่ล่ำมากกว่านี้					
9. สื่อทำให้คุณรู้สึกว่าคุณควรจะกินให้น้อยลงมากขึ้นเพื่อที่จะมีร่างกายที่ล่ำมากกว่านี้					
10. สื่อทำให้คุณรู้สึกว่าคุณควรจะกินให้มากขึ้นเพื่อที่จะมีร่างกายที่ล่ำมากกว่านี้					

ตอนที่ 6 ข้อมูลเกี่ยวกับสถานภาพทั่วไป

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงในช่อง  หน้าข้อความที่ตรงกับคำตอบของท่าน หรือเติมข้อความให้สมบูรณ์

2. เพศ

1.  หญิง      2.  ชาย    3.  เพศที่สาม/อื่นๆ

2. อายุ

1.  15 ปี 2.  16 ปี 3.  17 ปี 4.  18 ปี หรือมากกว่า

3. ชั้นปีการศึกษา

1.  มัธยมศึกษาปีที่ 4      2.  มัธยมศึกษาปีที่ 5      3.  มัธยมศึกษาปีที่ 6

4. ประเภทของโรงเรียน

1.  หญิงล้วน
2.  ชายล้วน
3.  สหฯ

5. สาขาการเรียน

1.  วิทยาศาสตร์ - คณิต
2.  ศิลปะ - คำนวณ
3.  ศิลปะ - ภาษา
4.  อื่นๆ (โปรดระบุ \_\_\_\_\_)

5. ระดับการศึกษาของบิดา

1.  ประถมศึกษาปีที่ 6 หรือต่ำกว่า
2.  มัธยมศึกษาปีที่ 6
3.  วิทยาลัย หรือ อนุปริญญา
4. ปริญญาตรี
4. ปริญญาโท หรือ สูงกว่า

6. ระดับการศึกษาของมารดา

1.  ประถมศึกษาปีที่ 6 หรือต่ำกว่า
2.  มัธยมศึกษาปีที่ 6
3.  วิทยาลัย หรือ อนุปริญญา
4. ปริญญาตรี
5. ปริญญาโท หรือ สูงกว่า

7. รายได้ของของครัวเรือน (ทั้งครอบครัว) ต่อเดือน

1.  น้อยกว่า 10,000 บาท
2.  10,001 – 30,000 บาท
3.  30,001 – 50,000 บาท
4.  50,001 บาท หรือ มากกว่า

## APPENDIX E: PRINCIPAL CONSENT FORM IN ENGLISH

### **Principal Consent Form**

**Project Title:** The Influence of Body Image Perception on Weight Management Practices, Physical Activity Levels and Food Choice Behaviors among Thai Adolescents

**Investigator:** Pitipa Chongwatpol, M.S., Doctoral candidate in Nutritional Sciences

This study tries to assess current body image perception, weight management practices, food choice behaviors, physical activity levels, and the role of sociocultural factors on body image perception of Thai adolescents aged between 16 and 20 from both single-gender and mixed-gender schools in Bangkok, Thailand.

Students in your school will be asked to fill out a questionnaire and should take less than 30 minutes. The questionnaire includes demographic information, height, weight, and assessments of body image dissatisfaction (if your child thinks he/she should lose weight or gain muscle), eating patterns, physical activity level, weight management practices, and the influence of primary caregiver, best friends and media on body image dissatisfaction.

There are no known risks associated with this project which are greater than those ordinarily encountered in daily life. However, the questionnaire includes questions pertaining to body image and for some participants, the questions may be personal or sensitive and may cause stress.

This study will assess information that is still lacking such as current body image perception and document weight management practices used by Thai adolescents aged between 16 and 18. Moreover, the current research will compare the influences of single-gender to mixed-gender schools on body image perception, weight management practices, food choice behaviors and physical activity levels. This study will also help identify the role of sociocultural factors on body image perception of Thai adolescents. The results from this study can be used as fundamental information to develop programs that promote healthy eating, physical activity, and healthy weight loss. Additionally, this study will provide information to help design prevention or treatment programs related to body dissatisfaction and unhealthy weight management practices among Thai students.

The participants' responses will remain anonymous and the name will not be recorded. The information that can use to identify the respondents will not be asked or collected. The physical questionnaires will be stored securely and only researchers will have access to the questionnaires.

Students in your schools who participate on the study will not be paid for participation and the questionnaire will be provided free of any cost to you.

In order to participate in the study, other than your permission, both parent(s) and child have to agree. If the parents do not want their child to participate in this research, they will tell their children leave the questionnaire blank. We will not ask your students to sign the questionnaire or collect the assent form because the documentation of assent will be the only record linking your students with the research. Your students' participation is voluntary, that is, they can choose to not answer part or all of the questions on the questionnaire. There is no risk if your students are not willing to participate in the study, its okay and nothing changes.

If you have questions about the research, you may contact:

Pitipa Chongwatpol, phone (US): +1 405-564-4917 , phone (Thai): \_\_\_\_\_ or e-mail: [pitipa@okstate.edu](mailto:pitipa@okstate.edu)

Dr. Gail E. Gates, phone: +1 405-744-3845 or email: [gail.gates@okstate.edu](mailto:gail.gates@okstate.edu)

And if you have questions about your rights as a research volunteer, you may contact:

Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, +1 405-744-3377 or [irb@okstate.edu](mailto:irb@okstate.edu)

By signing below, you give the researcher permission to ask students in your schools to participate in this study. Participation is voluntary, and you may withdraw at any point if you would no longer like to participate.

_____	_____
Name (Printed)	Date
_____	
Signature	
_____	
School	

## APPENDIX F: PRINCIPAL CONSENT FORM IN THAI

### หนังสือแสดงเจตนายินยอมเข้าร่วมการวิจัยของผู้อำนวยการโรงเรียน

**ชื่อโครงการ** อิทธิพลของการรับรู้ภาพลักษณ์ร่างกายของตนเองและวิธีการที่ใช้จัดการกับน้ำหนักและรูปร่างต่อกิจกรรมทางกาย และพฤติกรรมการบริโภคอาหารในหมู่วัยรุ่นไทย

**ชื่อผู้วิจัย** นางสาว ปิติกา จงวัฒน์ผล (วท.ม.), นักศึกษาปริญญาเอก, Oklahoma State University, USA

โครงการวิจัยนี้ทำขึ้นเพื่อประเมินการรับรู้ภาพลักษณ์ร่างกาย, วิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง, พฤติกรรมการบริโภคอาหาร, ระดับของกิจกรรมทางกาย, และอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกายของวัยรุ่นไทย อายุระหว่าง 16-20 ปีที่กำลังศึกษาอยู่ในโรงเรียนสห, หญิงล้วน, และชายล้วน

นักเรียนในโรงเรียนของท่านจะถูกขอให้กรอกแบบสอบถามที่จะใช้เวลาไม่เกิน 30 นาทีโดยแบบสอบถามจะประกอบไปด้วยคำถามที่ถามเกี่ยวกับสถานภาพทั่วไป, ข้อมูลเกี่ยวกับการประเมินรูปร่างและน้ำหนักของตนเอง, พฤติกรรมการบริโภคอาหาร ภายใน 7 วันที่ผ่านมา, กิจกรรมทางกายในเวลากลางวัน 7 วันที่ผ่านมา, วิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง, และข้อมูลเกี่ยวกับอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกาย โดยจะมีผู้เข้าร่วมการวิจัยอย่างน้อย 500 คน

ในปัจจุบันยังไม่พบว่ามีความเสี่ยงที่เกิดจากการเกี่ยวข้องกับโครงการนี้ที่สูงกว่าสิ่งที่เป็นตามปกติในชีวิตประจำวันแต่ถึงอย่างไรก็ตามแบบสอบถามนี้มีคำถามที่เกี่ยวข้องกับภาพลักษณ์ร่างกายซึ่งอาจจะเป็นข้อมูลที่ละเอียดอ่อนและอาจจะทำให้เกิดความเครียดได้

ซึ่งผลการวิจัยจะเป็นประโยชน์ต่อส่วนรวมเนื่องจากประเทศไทยยังคงขาดแคลนข้อมูลที่เกี่ยวข้องกับการรับรู้ภาพลักษณ์ร่างกายของตนเอง, วิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง, กิจกรรมทางกายและพฤติกรรมการบริโภคอาหารในหมู่วัยรุ่นไทย รวมไปถึงอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกาย อีกทั้งโครงการวิจัยนี้ยังสามารถใช้เป็นข้อมูลพื้นฐานในการพัฒนาโครงการต่างๆ ที่เกี่ยวกับการลดน้ำหนักอย่างถูกวิธีการรับประทานอาหารเพื่อสุขภาพ และการออกกำลังกายได้อีกด้วย

ข้อมูลส่วนตัวของนักเรียนในโรงเรียนของท่านจะถูกเก็บรักษาไว้ไม่เปิดเผยต่อสาธารณะเป็นรายบุคคลนักเรียนในโรงเรียนของท่านจะไม่ถูกบันทึกไว้แบบสอบถามและฐานข้อมูลและจะไม่สามารถสืบค้นกลับไปถึงผู้ตอบแบบสอบถามได้แบบสอบถามจะถูกเก็บไว้ในที่ที่ปลอดภัยและมีแค่ผู้วิจัยเท่านั้นที่สามารถเข้าถึงข้อมูลและแบบสอบถามนี้ได้

การเข้าร่วมการวิจัยครั้งนี้ ท่านและเด็กในปกครองของท่านจะไม่ได้รับค่าตอบแทน และไม่เสียค่าใช้จ่ายใดๆ

การเข้าร่วมโครงการวิจัยครั้งนี้ ผู้วิจัยจะต้องได้รับความยินยอมจากท่านผู้อำนวยการของโรงเรียน และได้รับความยินยอมจากผู้ปกครองและนักเรียนในโรงเรียนของท่านก่อนที่เด็กในปกครองของท่านจะเข้าร่วมงานวิจัยในครั้งนี้ ถ้าผู้ปกครอง ของนักเรียนในโรงเรียนของท่านไม่ต้องการให้เด็กในปกครองของพวกเขาเข้าร่วมโครงการวิจัย ผู้ปกครองจะเป็นผู้ที่บอกให้เด็กในปกครองของพวกเขาทราบผู้วิจัยจะไม่เก็บหนังสือแสดงความยินยอม เข้าร่วมโครงการวิจัย เพราะเอกสารยินยอมจะเป็นเพียงสิ่งเดียวที่เชื่อมโยงผู้ตอบแบบสอบถามกับโครงการวิจัยครั้งนี้ การเข้าร่วมโครงการวิจัยนี้เป็นความสมัครใจของนักเรียนในโรงเรียนของท่านนักเรียนในโรงเรียนของท่านสามารถที่จะ ไม่ตอบคำถามบางส่วน หรือทั้งหมดของคำถามในแบบสอบถามหรือนักเรียนในโรงเรียนของท่านมีสิทธิ์ ถอนตัวออกจากโครงการวิจัยเมื่อใดก็ได้ โดยไม่ต้องแจ้งให้ทราบล่วงหน้า และการไม่เข้าร่วมการวิจัยหรือถอนตัวออกจากโครงการ วิจัยนี้จะไม่ผลกระทบต่อนักเรียนในโรงเรียนของท่านแต่ประการใด

หากท่านและเด็กในปกครองของท่านมีข้อข้องใจ สงสัยที่จะสอบถามเกี่ยวกับการวิจัยนี้ ท่านสามารถติดต่อ

ปีติภา จงวัฒน์ผล, โทร. (อเมริกา) +1 405-564-4917, โทร. (ประเทศไทย) \_\_\_\_\_ หรือ

อีเมล [pitipa@okstate.edu](mailto:pitipa@okstate.edu)

หรือ อีเมล [pitipa@okstate.edu](mailto:pitipa@okstate.edu)

ดร. เกล เกตส์ (Dr. Gail E. Gates), โทร. +1 405-744-3845 หรือ อีเมล [gail.gates@okstate.edu](mailto:gail.gates@okstate.edu)

**หรือหากท่านและเด็กในปกครองของท่านมีข้อสงสัยเกี่ยวกับสิทธิของอาสาสมัครที่เข้าร่วมการวิจัย ท่านสามารถติดต่อ**

ดร. ชีเลีย เคนนิสัน (Dr. Shelia Kennison), ประธานคณะกรรมการจริยธรรมการวิจัยในคน, ที่อยู่ 219 Cordell North, Stillwater, OK 74078, โทร +1 405-744-3377 หรือ อีเมล [irb@okstate.edu](mailto:irb@okstate.edu)

ข้าพเจ้าได้อ่านรายละเอียดในเอกสารนี้ครบถ้วนแล้ว โดยการลงนามด้านล่างนี้หมายถึงท่านอนุญาตให้ผู้วิจัยติดต่อขอความร่วมมือจากนักเรียนในโรงเรียนของท่านในการเข้าร่วมงานวิจัยครั้งนี้ การอนุญาตให้เข้าร่วมงานวิจัยครั้งนี้เป็น ความสมัครใจของท่าน และท่านสามารถปฏิเสธการอนุญาตให้เข้าร่วมงานวิจัยครั้งนี้ได้ทุกเมื่อ

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ชื่อ

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วันที่

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ลายเซ็น

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โรงเรียน

## APPENDIX G: INFORMATION SHEET IN ENGLISH

### Information Sheet

**Project Title:** The Influence of Body Image Perception on Weight Management Practices, Physical Activity Levels and Food Choice Behaviors among Thai Adolescents

**Investigator:** Pitipa Chongwatpol, M.S., Doctoral candidate in Nutritional Sciences

This study tries to assess current body image perception, weight management practices, food choice behaviors, physical activity levels, and the role of sociocultural factors on body image perception of Thai adolescents aged between 16 and 20 from both single-gender and mixed-gender schools in Bangkok, Thailand.

Your child will be asked to fill out a questionnaire and should take less than 30 minutes. The questionnaire includes demographic information, height, weight, and assessments of body image dissatisfaction (if your child thinks he/she should lose weight or gain muscle), eating patterns, physical activity level, weight management practices, and the influence of primary caregiver, best friends and media on body image dissatisfaction.

There are no known risks associated with this project which are greater than those ordinarily encountered in daily life. However, the questionnaire includes questions pertaining to body image and for some participants, the questions may be personal or sensitive and may cause stress.

This study will assess information that is still lacking such as current body image perception and document weight management practices used by Thai adolescents aged between 16 and 18. Moreover, the current research will compare the influences of single-gender to mixed-gender schools on body image perception, weight management practices, food choice behaviors and physical activity levels. This study will also help identify the role of sociocultural factors on body image perception of Thai adolescents. The results from this study can be used as fundamental information to develop programs that promote healthy eating, physical activity, and healthy weight loss. Additionally, this study will provide information to help design prevention or treatment programs related to body dissatisfaction and unhealthy weight management practices among Thai students.

The participants' responses will remain anonymous and the name will not be recorded. The information that can use to identify the respondents will not be asked or collected. The physical questionnaires will be stored securely and only researchers will have access to the questionnaires.

You and your child will not be paid for participation and the questionnaire will be provided free of any cost to you.

In order to participate in the study, both parent(s) and child have to agree. If you do not want your child to participate in this research, please tell him/her to leave the

questionnaire blank. We will not ask your child to sign the questionnaire or collect the assent form because the documentation of assent will be the only record linking your child with the research. Your child's participation is voluntary, that is, they can choose to not answer part or all of the questions on the questionnaire. There is no risk if your child is not willing to participate in the study, its okay and nothing changes.

If you have questions about the research, you may contact:

Pitipa Chongwatpol, phone (US): +1 405-564-4917, phone (Thai): \_\_\_\_\_  
or e-mail: [pitipa@okstate.edu](mailto:pitipa@okstate.edu)

Dr. Gail E. Gates, phone: +1 405-744-3845 or email: [gail.gates@okstate.edu](mailto:gail.gates@okstate.edu)

And If you have questions about your rights as a research volunteer, you may contact:

Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, +1  
405-744-3377 or [irb@okstate.edu](mailto:irb@okstate.edu)



## APPENDIX H: INFORMATION SHEET IN THAI

### เอกสารชี้แจงผู้เข้าร่วมการวิจัย

**ชื่อโครงการ** อิทธิพลของการรับรู้ภาพลักษณ์ร่างกายของตนเองและวิธีการที่ใช้จัดการกับน้ำหนักและรูปร่างต่อกิจกรรมทางกาย และพฤติกรรมกรรมการบริโภคอาหารในหมู่วัยรุ่นไทย

**ชื่อผู้วิจัย** นางสาว ปิณฑา จงวัฒน์ผล (วท.ม.), นักศึกษาปริญญาเอก, Oklahoma State University, USA

โครงการวิจัยนี้ทำขึ้นเพื่อประเมินการรับรู้ภาพลักษณ์ร่างกาย, วิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง, พฤติกรรมการบริโภคอาหาร, ระดับของกิจกรรมทางกาย, และอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกายของวัยรุ่นไทย อายุระหว่าง 16-20 ปี ที่กำลังศึกษาอยู่ในโรงเรียนสห, หญิงล้วน, และชายล้วน

เด็กในปกครองของท่านจะถูกขอให้กรอกแบบสอบถามที่จะใช้เวลาไม่เกิน 30 นาทีโดยแบบสอบถามจะประกอบไปด้วยคำถามที่ถามเกี่ยวกับสถานภาพทั่วไป, ข้อมูลเกี่ยวกับการประเมิน

รูปร่างและน้ำหนักของตนเอง, พฤติกรรมการบริโภคอาหารภายใน 7 วันที่ผ่านมา, กิจกรรมทางกายในเวลาว่างภายใน 7 วันที่ผ่านมา, วิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง, และข้อมูลเกี่ยวกับอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกาย โดยจะมีผู้เข้าร่วมการวิจัยนี้อย่างน้อย 500 คน

ในปัจจุบันยังไม่พบว่ามีความเสี่ยงที่เกิดจากการเกี่ยวข้องกับโครงการนี้ที่สูงกว่าสิ่งที่พบตามปกติในชีวิตประจำวันแต่ถึงอย่างไรก็ตามแบบสอบถามนี้มีคำถามที่เกี่ยวข้องกับภาพลักษณ์ร่างกายซึ่งอาจจะเป็นข้อมูลที่ละเอียดอ่อนและอาจจะทำให้เกิดความเครียดได้

ซึ่งผลการวิจัยจะเป็นประโยชน์ต่อส่วนรวมเนื่องจากประเทศไทยยังคงขาดแคลนข้อมูลที่เกี่ยวข้องกับการรับรู้ภาพลักษณ์ร่างกายของตนเอง, วิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง, กิจกรรมทางกายและพฤติกรรมการบริโภคอาหารในหมู่วัยรุ่นไทย รวมไปถึงอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกาย อีกทั้งโครงการวิจัยนี้ยังสามารถใช้เป็นข้อมูลพื้นฐานในการพัฒนาโครงการต่างๆที่เกี่ยวกับการลดน้ำหนักอย่างถูกวิธี การรับประทานอาหารเพื่อสุขภาพ และการออกกำลังกายได้อีกด้วย

ข้อมูลส่วนตัวของเด็กในปกครองของท่านจะถูกเก็บรักษาไว้ ไม่เปิดเผยต่อสาธารณะเป็นรายบุคคล ชื่อของเด็กในปกครองของท่านจะไม่ถูกบันทึกไว้บนแบบสอบถามและฐานข้อมูลและจะไม่สามารถสืบค้นกลับไปถึงผู้ตอบแบบสอบถามได้ แบบสอบถามจะถูกเก็บไว้ในที่ที่ปลอดภัยและมีแต่ผู้วิจัยเท่านั้นที่สามารถเข้าถึงข้อมูลและแบบสอบถามนี้ได้

การเข้าร่วมการวิจัยครั้งนี้ ท่านและเด็กในปกครองของท่านจะไม่ได้รับค่าตอบแทน และไม่เสียค่าใช้จ่ายใดๆ

ผู้วิจัยจะต้องได้รับความยินยอมจากผู้ปกครองและเด็กในปกครองของท่านก่อนที่เด็กในปกครองของท่านจะเข้าร่วม งานวิจัย ในครั้งนี้ถ้าท่านไม่ต้องการให้เด็กในปกครองของท่านเข้าร่วมโครงการวิจัยกรุณาบอกให้เด็กในปกครองของท่านทราบ ผู้วิจัยจะไม่เก็บหนังสือแสดงความยินยอมเข้าร่วมโครงการวิจัยเพราะเอกสารยินยอมจะเป็นเพียงสิ่งเดียว ที่เชื่อมโยงผู้ตอบแบบสอบถามกับโครงการวิจัยครั้งนี้การเข้าร่วมโครงการวิจัยนี้เป็นความสมัครใจของท่านและเด็กในปกครองของท่าน เด็กในปกครองของท่านสามารถที่จะไม่ตอบคำถามบางส่วนหรือทั้งหมดของคำถามในแบบสอบถาม หรือท่านและเด็กในปกครองของท่านมีสิทธิถอนตัวออกจากโครงการวิจัยเมื่อใดก็ได้ โดยไม่ต้องแจ้งให้ทราบล่วงหน้า และการไม่เข้าร่วมการวิจัยหรือถอนตัวออกจากโครงการวิจัยนี้จะไม่มีผลกระทบใดๆต่อเด็กในปกครองของท่านแต่ประการใด

**หากท่านและเด็กในปกครองของท่านมีข้อข้องใจ สงสัยที่จะสอบถามเกี่ยวกับการวิจัยนี้ ท่านสามารถติดต่อ**

ปีติภา จงวัฒน์ผล, โทร. (อเมริกา) +1 405-564-4917, โทร. (ประเทศไทย) \_\_\_\_\_ หรือ

อีเมล pitipa@okstate.edu

ดร. เกล เกตส์ (Dr. Gail E. Gates), โทร. +1 405-744-3845 หรือ อีเมล gail.gates@okstate.edu

**หรือหากท่านและเด็กในปกครองของท่านมีข้อสงสัยเกี่ยวกับสิทธิของอาสาสมัครที่เข้าร่วมการวิจัย ท่านสามารถติดต่อ**

ดร. เชเลีย เคนนีสัน (Dr. Shelia Kennison), ประธานคณะกรรมการจริยธรรมการวิจัยในคน, ที่อยู่ 219 Cordell North, Stillwater, OK 74078, โทร +1 405-744-3377 หรือ อีเมล irb@okstate.edu

## APPENDIX I: ANNOUNCEMENT SCRIPT IN ENGLISH

### **Announcement Script Prior Questionnaire Distribution in Class**

Good morning/afternoon everybody. My name is Pitipa Chongwatpol, a Ph.D. student in Nutritional Sciences from Oklahoma State University, USA. As I announced to all of you before that I will come to distribute a questionnaire to you today. First, let me briefly discuss about what we will do and why we will do it. I believed all of you have read the information sheet that I provided to you last time we meet and asked you to take this to your parents. I will ask you to fill out the questionnaire and this should take less than 30 minutes. The purpose of this study is to assess current body image perception, weight management practices, food choice behaviors, physical activity levels, and the role of sociocultural factors on body image perception of Thai adolescents aged between 16 and 20 from both single-gender and mixed-gender school in Bangkok, Thailand.

There are no known risks associated with this project which are greater than those ordinarily encountered in daily life. However, the questionnaire includes questions pertaining to body image and for some participants, the questions may be personal or sensitive and may cause stress. Your name will not be recorded and your responses will remain anonymous. However, if your parents told you not to participate in this study, please do not fill out the questionnaire and leave it blank. Your participation is voluntary that you can choose not to answer part or all of the questions on the questionnaire. There is no risk if you do not participate in the study, its okay and nothing changes.

Please remember that this is not a test, there is no right or wrong answer, and please answer the questions as honestly and accurately as you can. Please feel free to ask any questions regarding this study or questionnaire.

## APPENDIX J: ANNOUNCEMENT SCRIPT IN THAI

### บทพูดนำก่อนการเริ่มแจกแบบสอบถาม

สวัสดีน้องๆทุกคนค่ะ. พี่ชื่อ ปิติภา จงวัฒน์ผล หรือ เรียกพี่เป็ก็ได้ค่ะ พี่เป็นนักศึกษาปริญญาเอก จาก Oklahoma State University, สหรัฐอเมริกา ตามที่พี่ได้แจ้งไว้คราวที่แล้วที่เราได้เจอกันว่าวันนี้ พี่จะนำแบบสอบถามมาให้น้องๆช่วยกรอก พี่หวังว่าน้องๆจะได้อ่านเอกสารที่พี่แจกให้คราวที่แล้ว แล้วนำเอกสารนั้นไปให้ผู้ปกครองอ่านด้วย วันนี้พี่อยากจะขอความร่วมมือจากน้องๆช่วยตอบแบบสอบถามที่ จะใช้ทำวิทยานิพนธ์ของพี่ ซึ่งน่าจะใช้เวลาไม่เกิน 30 นาที โครงการวิจัยนี้ทำขึ้นเพื่อประเมินการรับรู้ภาพลักษณ์ร่างกาย, วิธีการที่ใช้จัดการกับน้ำหนักและรูปร่าง, พฤติกรรมการบริโภคอาหาร, ระดับของกิจกรรมทางกาย, และอิทธิพลของปัจจัยทางด้านสังคมและวัฒนธรรมต่อการรับรู้ภาพลักษณ์ร่างกายของวัยรุ่นไทย อายุระหว่าง 16-20 ปีที่กำลังศึกษาอยู่ในโรงเรียนสห, หญิงล้วน, และชายล้วน

ในปัจจุบันยังไม่พบว่ามีความเสี่ยงที่เกิดจากการเกี่ยวข้องกับโครงการนี้ที่สูงกว่าสิ่งที่เป็นไปตามปกติในชีวิตประจำวัน แต่ถึงอย่างไรก็ตามแบบสอบถามนี้มีคำถามที่เกี่ยวข้องกับภาพลักษณ์ร่างกายซึ่งอาจจะเป็นข้อมูลที่ละเอียดอ่อนและอาจจะทำให้เกิดความเครียดได้ ชื่อของน้องจะไม่ถูกบันทึกไว้ทั้งบนแบบสอบถามและฐานข้อมูล และจะไม่สามารถสืบค้นกลับไปถึงผู้ตอบ แบบสอบถามได้ ถ้าผู้ปกครองของน้องบอกว่าไม่ให้เข้าร่วมโครงการวิจัยนี้ พี่ขอให้น้องไม่ต้องตอบแบบสอบถาม การเข้าร่วมโครงการวิจัยนี้เป็นความสมัครใจของน้อง เพราะฉะนั้นน้องสามารถที่จะไม่ตอบคำถามบางส่วนหรือทั้งหมดของคำถามในแบบสอบถามถ้าน้องไม่ต้องการที่จะตอบและการไม่เข้าร่วมการวิจัยหรือถอนตัวออกจากโครงการวิจัยนี้จะไม่ส่งผลกระทบต่อตัวน้องเลย

สุดท้ายนี้ แบบสอบถามนี้ไม่ใช่ข้อสอบ ไม่มีคำตอบที่ถูกหรือผิด แต่ขอให้น้องตอบคำถามให้ตรงกับความเป็นจริงมากที่สุด เพราะคำตอบที่เป็นจริงและสมบูรณ์เท่านั้น จะช่วยให้การวิจัยในครั้งนี้เกิดประโยชน์มากที่สุด

## APPENDIX K: IRB approval

### Oklahoma State University Institutional Review Board

Date: Thursday, May 08, 2014  
IRB Application No HE1439  
Proposal Title: The Influence of Body Image Perception on Weight Management Practices, Physical Activity Levels, and Food Choice Behaviors among Thai Adolescents  
Reviewed and Processed as: Expedited

**Status Recommended by Reviewer(s): Approved Protocol Expires: 5/7/2015**

Principal Investigator(s):  
Pitipa Chongwatpol Gail Gates  
301 HS 301 HES  
Stillwater, OK 74078 Stillwater, OK 74078

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The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Cordell North (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,

  
Sheila Kennison, Chair  
Institutional Review Board

VITA

Pitipa Chongwatpol

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE INFLUENCE OF BODY IMAGE PERCEPTION ON WEIGHT MANAGEMENT PRACTICES, PHYSICAL ACTIVITY LEVELS AND FOOD CHOICE BEHAVIORS AMONG THAI ADOLESCENTS

Major Field: Human Sciences with an option in Nutritional Sciences

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Human Sciences with an option in Nutritional Sciences at Oklahoma State University, Stillwater, Oklahoma in July, 2015.

Completed the requirements for the Master of Science in Nutritional Sciences at Oklahoma State University, Stillwater, Oklahoma in May, 2012.

Completed the requirements for the Bachelor of Applied Thai Traditional Medicine at Mahidol University, Bangkok, Thailand in 2009.

Experience:

Graduate teaching associate, 08/2012-05/2015

Graduate research associate, 08/2010-05/2013

Applied Thai Traditional medicine practitioner

Professional Memberships:

American Society of Nutrition

Professional Licensure:

Certified Applied Thai Traditional Medicine Practitioner