Survey on Body Stature and Body Habitus among University Students in Japan and Thailand

Kiyomi Sato[*1], Naohito Kawasaki[*1], Chaowalit Loetkham[*2], Siriporn Burapadeja[*3], Takeo Nakamura[*1], Kazuoki Matsumoto[*4] , and Seiki Tanada[*1]

*1：School of Pharmaceutical Sciences, Kinki University
*2：Faculty of Humanities, Chiang Mai University
*3：Faculty of Pharmacy, Chiang Mai University
*4：Faculty of Humanities, Seitoku University

Abstract

In recent years, the desire to be thin regarding body habitus has been spread among even young people: thus, surrounding of eating, such as dietary and caloric restriction, has been drastically changing. In addition, it is also suggested that a long-term attempt to lose body weight is associated with delinquency, including drug use. On the other hand, obesity is one of the risk factors for life-style related diseases: therefore, weight reduction is warranted. However, before reducing body weight, it is critical to diagnose obesity status and to correctly understand body habitus and body stature. In this study, we investigated the associations between current and ideal height, weight, body fat percentage, and body-mass index (BMI), and perception of body habitus and body stature of university students in Japan and Thailand.

As results, both male and female university students in Japan and Thailand desire "to be taller" in height. Male university students desire "to gain weight" and female university students desire "to lose weight." Based on current BMI, 98.1% male and 100% female university students in Japan were classified as either "underweight" or "normal." But, calculated ideal BMI showed that 9.3% male and 73.9% females university students in Japan desire to be in the BMI category of "under-weight," so particularly female university students were found to consider "underweight" rather "normal" as the ideal body habitus. Based on current BMI, 91.6% male and 94.4% female university students in Thailand were classified as either "underweight" or "normal." But, ideal BMI revealed that 16.9% male and 77.8% females university students in Thailand desire to be in the BMI category of: Added by the translator for clarity. "underweight," so particularly female university students consider "underweight" than "normal" as the ideal body habitus. If university students in Japan and Thailand continue to desire to be thinner, it will give an adverse impact on their health. Further-more, we observed the almost similar tendency about perception of body habitus and body stature in Japan and Thailand: there were significant associations between perception of body habitus and body weight, body fat percentage, and BMI, indicating that university students mainly concerned about body weight and BMI.

1. Introduction

Obesity is the status with the excess accumulation of body fat and has gotten attentions as it leads life-style diseases, such as diabetes and hyperlipidemia. In general, long-lasting unfavorable life-style, including significantly lower energy consumption than dietary energy intake, results in obesity. The contemporary society require much less walking distance on average compared to the past, so people tends to short in physical activity, to significantly decrease energy consumption, and to be obese[1].

In recent years, even younger female children widely desire to be thin and male children feel disgust against obesity, thus, surrounding of eating, such as dietary and caloric restriction, has been drastically changing[2]. Yakura, et al.[3] reported a survey about obesity among female elementary school children, showing that 39.9% of non-obese children concerned that they were obese, and 69.9% of those had attempted to lose weight. In addition, it is also showed that a long-term attempt to lose weight is associated with delinquency, including drug use[4]. Furthermore, before reducing body weight, it is critical to diagnose obesity status correctly since unnecessary weight reduction in youth causes endocrine abnormalities[5,6]. It is essential to have correct knowledge on body habitus and body stature, and appropriate body-weight management skills for maintaining health over life. Yamashita, et al.[7] shows that there is discrepancy between current and ideal body habitus, that ideal body habitus tends to be thinner than medically ideal body habitus, and that these tendencies begin when children are in elementary school. Moreover, it is reported that young female are motivated to lose weight by the idea that weight itself is the most important condition to be recognized by their surrounding people, so that female cannot stop losing weight unless their self-consciousness become satisfied, despite of surroundings' warning that unreasonable weight reduction would harm their health[8].

So far, a report on ideal body stature among university students in Spain and the United States has been published[9], yet, there is no report about the associations among university students in Japan and Thailand. For example, university students in Thailand, a developing country, might have different current and ideal body stature and body habitus, from university students in Japan, as their life-style and the climate have been significantly different. However, it is of interest to elucidate the difference in ideal body habitus and body stature among university students in Japan and Thailand since it is now the international, information society. In this study, we investigated the associations between current and ideal height, weight, body fat percentage, and body-mass index (BMI), and perception of body habitus and body stature of university students in Japan and Thailand.

2. Methods

2.1 Study subjects

A questionnaire form entitled "Questionnaire about Body Stature and Life-style of University Students" was distributed to and collected from 54 male and 69 female university students in Japan and 83 male and 72 female university students in Thailand during laboratory training or a break. The mean ages of male and female university students in Japan were 21.2 ± 1.2 and 20.8 ± 1.0 years: those of male and female university students in Thailand were 20.8 ± 1.3 and 20.8 ± 1.5 years, respectively. This study falls in the category of "an epidemiological study only using unlinkable, anonymized data" in "The Ethical Guideline for Epidemiological Research" implemented in July 2005[10]. Although this study is not subject to the Guideline, the study was conducted with the considerations about informed consent and protection of confidentiality described in the Guideline. The questionnaire was anonymous as to respect study subject's privacy in terms of ethical considerations.

Body fat percentage was measured with Body Composition Monitor HBF-300 (OMRON). Body Mass Index (BMI) was calculated as (body weight in kilogram) / (height in meter)^2.

Questionnaire, uniquely developed for this study,

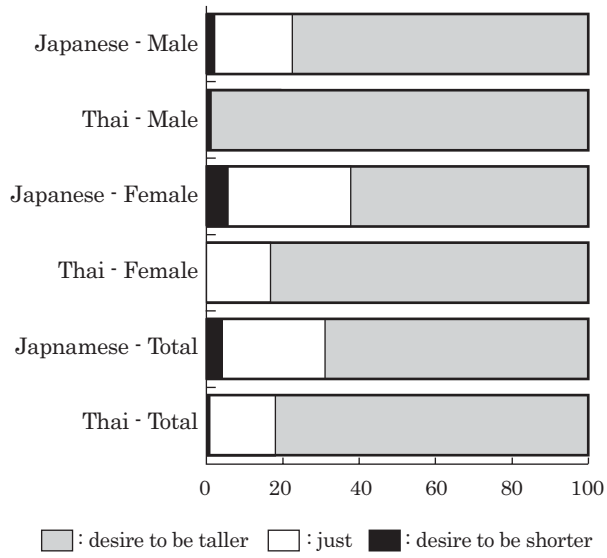

Fig. 1　Percentage of height for university students in Japan and Thailand

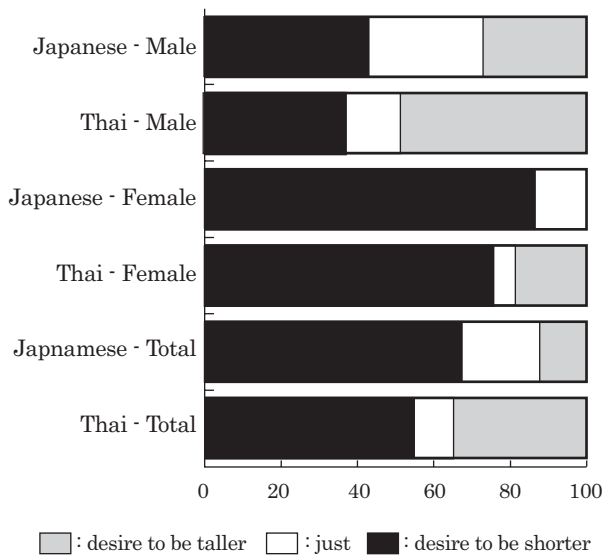

Fig. 2　Percentage of weight for university students in Japan and Thailand

was comprised of the following attribute items: gender; age; perception of body stature; perception of body habitus; current and ideal height, weight, and body fat percentage.

2.2 The association between current and ideal body stature and body habitus

We evaluated the association between current and ideal height, weight, body fat percentage, and BMI among the university students using the Pearson product-moment correlation coefficients. The association between current height, weight, body fat percentage, and BMI, and perception of body habitus and perception of body stature was calculated and evaluated using the Kendall rank correlation coefficients, non-parametric correlation coefficients. Moreover, we tested the statistical significance for the difference between perception of height and weight, and current height and weight, using the mean/ANOVA/t-test. Statistical analysis and test for significance in difference were performed with Windows JMP ver.5.0 (SAS Institute Inc.).

3. Results

3.1 Current and ideal height, weight, body fat percentage, and BMI among the university students in Japan and Thailand

The university students in Japan and Thailand were asked about their height with three levels of "1: desire to be taller" through "3 : desire to be shorter" using questionnaire and the proportion are calculated and shown in **Figure 1**. As a result, it is revealed that many of the male university students in Japan and Thailand desire "to be taller" in height. It is also revealed that the female university students in Japan are less likely to have a desire "to be taller" in height, compared to the female university students in Thailand. While, the university students in Japan and Thailand were asked about their weight with three levels of "1: desire to gain" through "3: desire to lose" using questionnaire and the proportion are calculated and shown in **Figure 2**. The result shows that many of the female university students in Japan and Thailand desire to lose weight. It also reveals that more of the female university students desire for weight reduction than the male university students.

To test the significance of the difference between the response to the questionnaire with respect to height and current height, we performed the one-way mean/ANOVA/t-test and show the result in **Figure 3**. The diamond-shaped marks in the figure represent sample means and their 95% confidence intervals. The result showed that the response to the questionnaire with respect to height among the male university students in Japan and the female university students in Thailand were significantly different. On the other

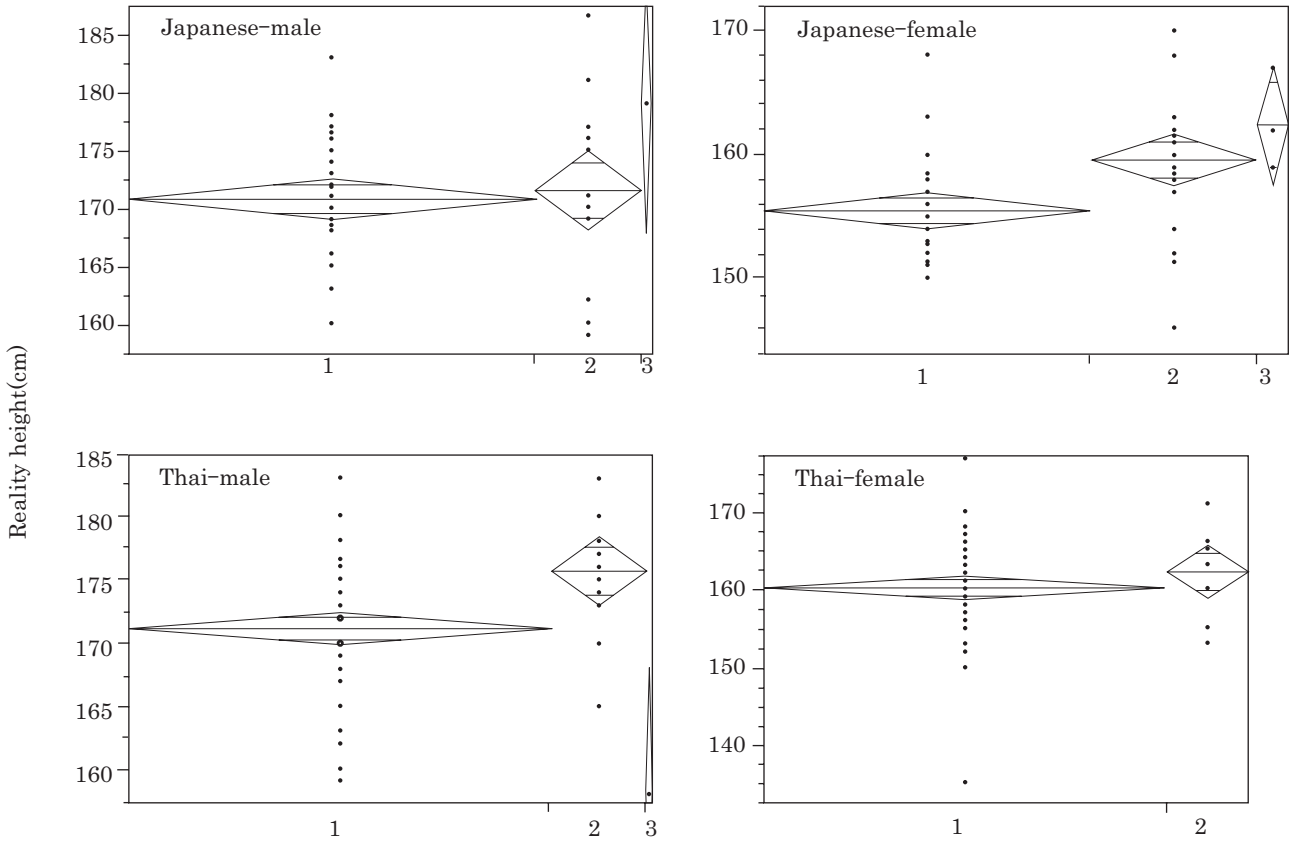

Fig. 3　One-way ANOVA of reality height by height of questionnaire

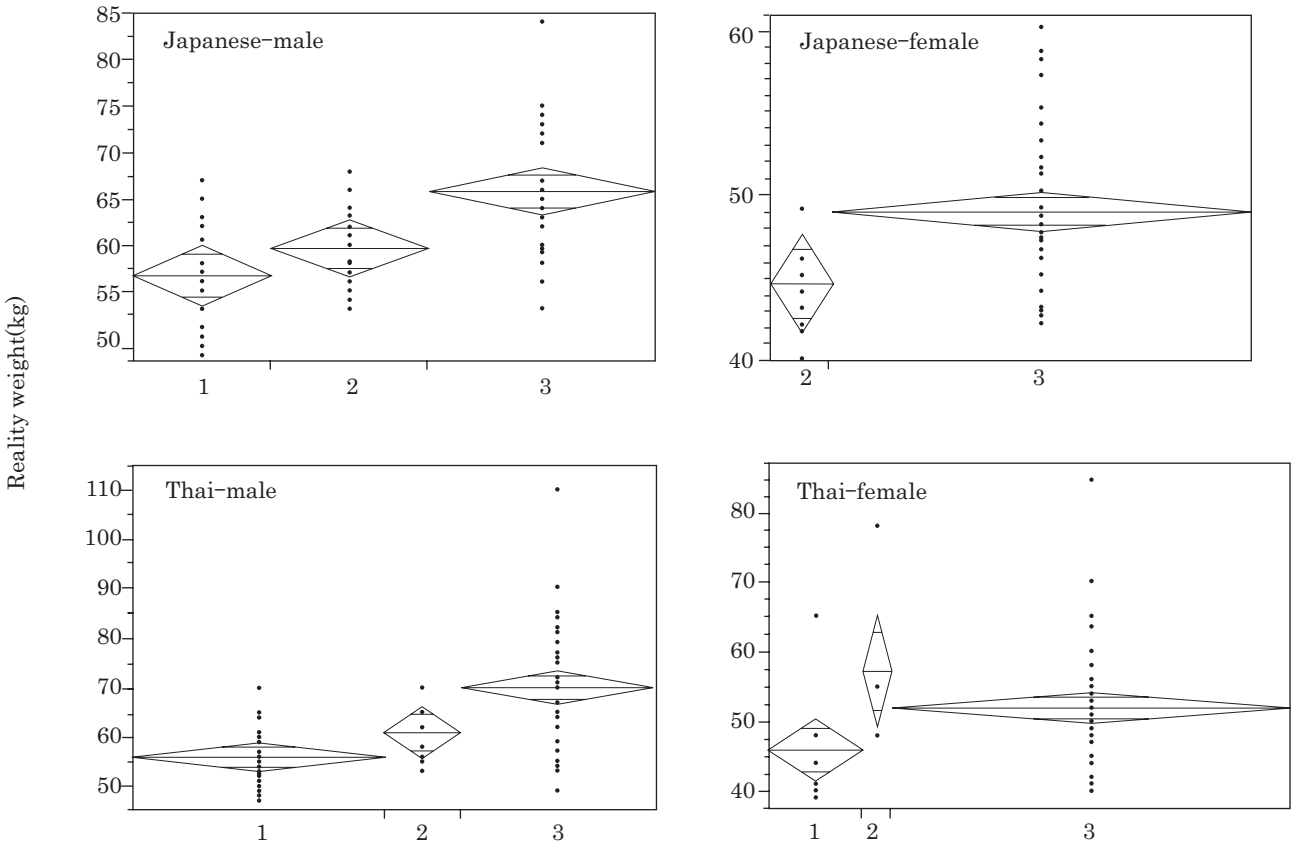

Fig. 4　One-way ANOVA of reality weight by weight of questionnaire

Table 1　Mean of height, weight, and BMI of university students in Japan

	Reality		Ideal	
	Male n = 54	Female n = 69	Male n = 54	Female n = 69
Height (cm)	171.1 ± 5.7	157.2 ± 5.3	176.3 ± 5.5	160.9 ± 3.8
Weight (kg)	61.5 ± 7.3	48.3 ± 4.7	63.4 ± 6.7	46.0 ± 3.9
BFP (%)	16.1 ± 4.0	23.0 ± 3.8	12.4 ± 4.4	20.1 ± 2.3
BMI (kg/m^2)	21.0 ± 2.0	19.5 ± 1.5	20.4 ± 1.8	17.8 ± 1.4

Mean ± S.D.

hand, the response to the questionnaire with respect to height among the female university students in Japan and the male university students in Thailand were significantly different ($p<0.01$).

To test the significance of the difference between the response to the questionnaire with respect to weight and current weight, we performed the one-way mean/ANOVA/t-test and show the result in **Figure 4**. The diamond-shaped marks in the figure represent sample means and their 95% confidence intervals. The result showed that the response to the questionnaire with respect to weight among the university students in Japan and Thailand, regardless of their genders, were significantly different ($p<0.01$).

The means and the standard deviations of current and ideal height, weight, body fat percentage, and BMI among the male and female university students in Japan are shown in **Table 1**. Furthermore, to elucidate the association between current and ideal values in height, weight, body fat percentage, and BMI, the Pearson product-moment correlation coefficients are calculated and presented in **Table 2**. It shows that the male and female university students wish to be 5.2 cm and 3.7 cm taller, respectively, than their current height. We calculated the Pearson product-moment correlation coefficients to examine the association between current and ideal values and found that the both male and female university students desire "to be taller" in height and the tendency is more pronounced in male students. As for weight, it was revealed that the male university students wish to gain 1.9 kg, while the female university students wish to lose 2.3 kg, so the male university students desire "to gain" their weight, but the female university students desire "to lose" their

Table 2　The Pearson correlation coefficient between reality and ideal for average of height, weight, baby, fat percentage (BFP) and BMI of university students in Japan

	Male		Female	
Height (cm)	0.724	***	0.600	***
Weight (kg)	0.587	***	0.633	***
BFP (%)	0.665	***	0.578	***
BMI (kg/m^2)	0.520	***	0.577	***

***$p<0.001$

weight in contrast. Furthermore, 3.7% and 2.9% of male and female university student, respectively, desire to reduce body fat percentage, so it was shown that the university students desire "to reduce" regardless of genders. Regarding BMI, it was revealed that the male and female university students wish to decrease by 0.6 and by 1.7, respectively, so the university students desire "to reduce" their BMI, regardless of genders. The Pearson product-moment correlation coefficient between current and ideal BMI became higher in the female university students compared to the male university students so the result represented that the female university students have stronger desire "to reduce" BMI.

The means and the standard deviations of current and ideal height, weight, body fat percentage, and BMI in the male and female university students in Thailand are shown in **Table 3**. Furthermore, to elucidate the association between current and ideal values in height, weight, body fat percentage, and BMI, The Pearson product-moment correlation coefficients are calculated and presented in **Table 4**. It shows that the male and female university students wish to be 4.1 cm and 4.4 cm taller, respectively, than current height. We calculated the Pearson product-moment correlation coefficients to examine the

Table 3　Mean of height, weight, body fat percentage(BFP) and BMI of university students in Thailand

	Reality		Ideal	
	Male	Female	Male	Female
	n = 83	n = 72	n = 83	n = 72
Height (cm)	171.9 ± 5.6	160.5 ± 5.8	176.0 ± 5.5	164.9 ± 4.9
Weight (kg)	62.0 ± 11.3	51.2 ± 8.4	63.3 ± 7.8	47.7 ± 5.2
BFP (%)	17.6 ± 5.7	24.0 ± 5.3	16.4 ± 5.3	18.6 ± 4.8
BMI (kg/m^2)	21.0 ± 3.4	19.9 ± 3.3	20.4 ± 2.1	17.5 ± 1.7

Mean ± S.D.

association between current and ideal values and found that both the male and female university students desire "to be taller" in height and the tendency was not different in male students. As for weight, it was revealed that the male university students wish to gain 1.3 kg, while the female university students wish to lose 3.5 kg. Furthermore, 1.3% and 5.4% of male and female university student, respectively, desire to reduce body fat percentage, so it was shown that the both male and female university students desire "to reduce." Regarding BMI, it was revealed that the male and female university students wish to decrease by 0.6 and by 2.4, respectively, so the both male and female university students desire "to reduce" their BMI, regardless of genders. The Pearson product-moment correlation coefficient between current and ideal BMI became higher among the female university students compared to the male university students so the result represented that the female university students have stronger desire "to reduce" BMI.

3.2 Association between current and ideal height, weight, body fat percentage, and BMI among the university students in Japan and Thailand

In comparison between the university students in Japan and Thailand, similar tendencies were observed for the associations between current and ideal height, weight, body fat percentage, and BMI. The Pearson product-moment correlation coefficients for height, weight, and BMI were higher among the university students in Thailand than those in Japan, meaning the stronger desire for ideal height and weight among the university students in Thailand. Contrary, the

Table 4　The Pearson correlation coefficient between reality and ideal for average of height, weight, body fat percentage (BFP) and BMI of university students in Thailand

	Male	Female
Height (cm)	0.783 ***	0.790 ***
Weight (kg)	0.728 ***	0.688 ***
BFP (%)	0.473 *	0.377 *
BMI (kg/m^2)	0.652 ***	0.687 ***

*p<0.05, ***p<0.001

Pearson product-moment correlation coefficient for body fat percentage was higher among the university students in Japan than those in Thailand, indicating the stronger desire for ideal body fat percentage among the university students in Japan.

Defining BMI<18.5 as "underweight," 18.5 ≦ BMI< 25.0 as "normal," 25.0 ≦ BMI<30.0 as "overweight," and 30.0 ≦ BMI as "obese," [11] we present the proportion and the number under each category for the current BMI values in **Table 5**. Furthermore, the study subjects were classified based on the ideal BMI in a same manner and the result is shown in **Table 6**. Based on the BMI calculated from the current height and weight, the "underweight" or "normal" male and female university students in Japan are 92.6% and 100%, respectively, and male and female university students in Thailand are 91.6% and 94.4%, respectively. However, based on the ideal BMI calculated from ideal height and weight, the male and female university students in Japan who desire to be "underweight" are 9.3% and 73.9%, respectively, and the male and female university students in Thailand are 16.9% and 77.8%, respectively. On the other hand, the male and female university students in Japan who desire to be "normal" are 87.0% and 26.1%, respectively, and the male and

Table 5　Number of university students in Japan and Thailand for reality BMI groups

	number (%)			
	Japan		Thailand	
Reality BMI	Male	Female	Male	Female
BMI < 18.5	6 (11.1)	19 (27.5)	17 (20.5)	25 (34.7)
18.5 ≦ BMI < 25.0	47 (87.0)	50 (72.5)	59 (71.1)	43 (59.7)
25.0 ≦ BMI < 30.0	1 (1.9)	0 (0.0)	5 (6.0)	2 (2.8)
30.0 ≦ BMI	0 (0.0)	0 (0.0)	2 (2.4)	2 (2.8)

Table 6　Number of university students in Japan and Thailand for ideal BMI groups

	number (%)			
	Japan		Thailand	
Ideal BMI	Male	Female	Male	Female
BMI < 18.5	5 (9.3)	51 (73.9)	14 (16.9)	56 (77.8)
18.5 ≦ BMI < 25.0	47 (87.0)	18 (26.1)	69 (83.1)	16 (22.2)
25.0 ≦ BMI < 30.0	2 (3.7)	0 (0.0)	0 (0.0)	0 (0.0)
30.0 ≦ BMI	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

female university students in Thailand who desire to be "normal" are 83.1% and 22.2%, respectively. From these results, we found that while about 80% of the male university students in Japan and Thailand desire to be "normal," about 75% of the female university students in Japan and Thailand desire to be "underweight."

3.3 Perception of body stature and body habitus among the university students in Japan and Thailand

The association between current height, weight, body fat percentage, and BMI, and perception of body habitus among the university students both in Japan and Thailand by gender was calculated as a non-parametric correlation coefficient, the Kendall rank correlation coefficient, and presented in **Table 7**. As a result, we did no find any association between perception of body habitus and current height, weight, body fat percentage, and BMI among the male university students in Japan and Thailand. On the other hand, we found the associations between perception of body habitus and current weight or BMI among the female university students in Japan and between perception of body habitus and current body weight and body fat percentage among the female university students in Thailand. Furthermore, perception of body habitus by gender among the university students in both countries was associated with BMI among the male university students and with weight or BMI among the female university students.

The association between current height, weight, body fat percentage, and BMI, and perception of body stature among the university students in Japan and Thailand and by gender in both countries is calculated as a non-parametric correlation coefficient, The Kendall rank correlation coefficient, and presented in **Table 8**. As a result, there are associations between perception of body stature and current weight, body fat percentage, and BMI among the male university students in Japan and Thailand and the associations were particularly strong among the male university students in Thailand. On the other hand, among the female university students in Japan, we observed associations between body stature perception and current weight, body fat percentage, and BMI. Furthermore, as for perception of body habitus by gender among the university students in both countries, for the both male and female university students, we observed associations between current weight, body fat percentage, and BMI.

4. Discussion

The university students in Japan and Thailand

Table 7　The Kendall correlation coefficient between reality height, weight, body fat percentage (BMI) or BMI and build image of university students in Japan and Thailand

	Japan		Thailand		Both	
	Male	Female	Male	Female	Male	Female
Height (cm)	0.006	0.057	0.014	0.073	0.013	0.067
Weight (kg)	0.083	0.237 *	0.067	0.295 *	0.094	0.193 **
BFP (%)	0.195	0.165	0.11	0.171 *	0.124	0.138
BMI (kg/m^2)	0.134	0.305 **	0.115	0.237	0.150 *	0.261 **

* $p<0.05$　** $p<0.01$

Table 8　The Kendall correlation coefficient between reality height, weight, body fat percentage (BFP) or BMI and figure image of university students in Japan and Thailand

	Japan		Thailand		Both	
	Male	Female	Male	Female	Male	Female
Height (cm)	0.014	0.077	0.038	0.027	0.035	0.105
Weight (kg)	0.350 **	0.307 **	0.428 **	0.395 **	0.399 **	0.282 **
BFP (%)	0.380 **	0.233 *	0.408 **	0.372 **	0.369 **	0.268 **
BMI (kg/m^2)	0.473 **	0.409 **	0.537 **	0.443 *	0.514 **	0.400 **

* $p<0.05$　** $p<0.01$

have a desire "to be taller" in height, regardless of their gender, implying that the female university students in Japan seems to desire an appropriate height and to have a consciousness of being not too tall. On the other hand, the female university students in Thailand desire to become "tall" most strongly. It is of interest that their desire is stronger than the male university students in Thailand. On the other hand, regarding weight, the male university students in Japan responded to "just right" most frequently, while the male university students in Thailand responded to "want to gain" most frequently. We particularly found that the female university students in Japan desire to "lose" weight most strongly and there are more of the female university students who desire to "lose" weight, compared to the male university students.

Based on the one-way mean/ANOVA/t-test to examine a significant difference between the height from the response to the questionnaire and the current height, there was no significant difference between the height from the response to the questionnaire and the current height among the male university students in Japan and the female university students in Thailand, but there were significant differences between the height from the response to the questionnaire and the current height among the female university students in Japan and the male university students in Thailand ($p<0.01$). In general, the university students whose current height is short answer as having "desire to be taller" but the university students whose are tall do not answer as having "desire to be shorter": thus, the response did not depend on the current height. Furthermore, since we found a significant difference between the height from the response to the questionnaire and the current height among the female university students in Japan, that is, the female university students whose current height is short responded to have a desire "to be taller" and whose current height is tall responded to have a desire "to be shorter" in Japan, they seem to consider the average height as the ideal.

Based on the one-way mean/ANOVA/t-test to examine a significant difference between the weight from the response to the questionnaire and the current weight, there was a significant difference, regardless of gender, between the weight from the response to the questionnaire and the current weight among the university students in Japan and Thailand. From this result about weight, unlike in the case of height, the university students whose current weight is "heavy" or "light" responded to have a desire "to lose weight" or "to gain weight," respectively, so they seem

to consider the average weight as the ideal.

Based on the results from the means, the standard deviations, and the Pearson product moment correlation coefficients for current and ideal height, weight, body fat percentage, and BMI among the male and female university students in Japan, the university students desire "to be taller" in height, regardless of gender and country. In addition, there is a significant difference between the current and ideal height, implying that both male and the female university students have a desire "to be taller" in height and the trend is stronger among the male university students. As for weight, it was revealed that the male university students desire "to gain weight" but female students, in contrast, desire "to lose weight." The Pearson product moment correlation coefficient between current and ideal weight is higher among the male university students than the female university students: the desire "to lose weight" among the female university students is stronger the desire "to gain weight" among the male university students, and this can be because the female university students are more conscious about weight than the male university students. From these results, we concluded that the male university students pay attention to height rather than weight, and female students pay attention to weight rather than height. Moreover, our results showed that the university students desire "to reduce" body fat percentage regardless of gender. The Pearson product moment correlation coefficient between current and ideal body fat percentage is higher among the female university students than the male university students so that we understand that the male university students have a stronger desire "to reduce" body fat percentage and are very conscious about body fat percentage. Regarding BMI, the results showed that the university students desire "to reduce," regardless of gender, so that the female university students are considered to have a stronger desire "to reduce" BMI than the male university students. We think that these are because the female university students are more aware of weight reduction.

Based on the results of the means, the standard deviations, and the Pearson product moment correlation coefficients, current and ideal height, weight, body fat percentage, and BMI among the male and female university students in Thailand, we revealed that students desire to be taller in height, regardless of gender, and its tendency were not so different by gender. Regarding weight, the male university students have an ideal "to desire to gain weight," while the female university students have an ideal "to lose weight." We found that the desire "to gain weight" among the male university students was stronger than the desire "to lose weight" among the female university students and this point was different from the university students in Japan. From these findings, the male university students are aware of gaining weight and have an ideal to have a heavily-built body stature. In addition, it was revealed that the university students desire "to reduce" body fat percentage, regardless of gender, so the male university students are strongly aware of body fat percentage on a par with the male university students in Japan. As for BMI, we observed the similar trends as the university students in Japan: the university students desire "to lower," regardless of gender, and the female university students have a stronger desire "to reduce" BMI than the male university students. This is probably because the female university students are more strongly conscious about weight reduction. Sharps et al. [12] also reported that the young female preferred a significantly more slender body image than did the young male in United States and Thailand.

Defining BMI<18.5 as "underweight," 18.5≦BMI<25.0 as "normal," 25.0≦BMI<30.0 as "overweight," and 30.0≦BMI as "obese," we categorize the current BMI and presented the proportion and the number under each category. The proportion of the male and female university students whose BMI falls into the category for "underweight" or "normal" was 98.1% and 100%, respectively, in Japan, and 91.6% and 94.4%, respectively, in Thailand. From these results, we do not believe that the university students mostly do not need to lose weight. However, based on the result from ideal BMI, we found that while about 80% of the male

university students in Japan and Thailand desire to be "normal," that approximately 75% of the female university students in Japan and Thailand desire to be "underweight." In other words, it is possible to harm health if the current tendency to desire to be thin among the female university students.

We did not observe any association between perception of body habitus and current height, weight, body fat percentage, and BMI among the male university students in Japan and Thailand, but on the other hand, we found associations between perception of body habitus and current weight or BMI among the female university students in Japan and between perception of body habitus and current weight or body fat percentage among the female university students in Thailand. Furthermore, perception of body habitus was associated with BMI among the male university students and with weight or BMI among the female university students. From these findings, "body weight" is considered to be most emphasized for body habitus among the university students in Japan and Thailand.

Osaka et al. [13] reported that about half of the nursing students at the College of Nursing located in northeast Thailand practiced healthy dietary habits in terms of avoiding eating fat/cholesterol, enriched fiber foods, while one-fourth practiced daily fruit consumption. This result indicated that the mostly Thai university students have been on a diet. We observed the association between perception of body stature and current weight, body fat percentage, and BMI among the male university students in Japan and Thailand and the tendency was particularly strong among the male university students in Thailand. In other words, this is thought to be because the male university students in Thailand have the ideal to be heavily-built than the current body stature. Moreover, based on the result from perception of body habitus by gender, there were associations with current weight, body fat percentage, and BMI among the male and female university students, so the university students in Japan and Thailand take body weight and BMI as body stature most seriously and this is consistent with the result about perception of body stature.

5. Conclusion

As for height, in Japan, more of the male university students have a desire "to be taller" than the female university students, but in Thailand, the university students have a desire "to be taller," regardless of gender. The ideal weight among the male university students in Japan and Thailand were polarized as either "to gain weight" or "to lose weight." On the contrary, the female university students have a strong desire to lose weight, particularly among the female university students in Japan. From the results for BMI, we found that more than 90% of the male and female university students in Japan and in Thailand was "underweight" or "normal." However, by calculating ideal BMI, the male and female university students who desire to be "underweight" are 9.3% and 73.9%, respectively, in Japan, and 16.9% and 77.8%,respectively, in Thailand. On the other hand, the female university students who desire to be "normal" are 26.1% in Japan and 22.2% in Thailand, and the way of thinking needs to be changed in the future as health would be affected if the current tendency to desire to be thin further continues. Furthermore, perception of body habitus and body stature tended to be similar between the university students in Japan and Thailand and weight and BMI were suggested to be mainly considered.

References

1) Borg P., Kukkonen-Harjula K., Fogelholm M., Pasanen M.: Effect of walking or resistance training on loss maintenance in obese, middle-aged men: a randomized trial. Int J Obesity and Related Metabolic Disorders, 26, 676-683 (2002)
2) Ohtahara H., Ohzeki T., Hanaki K., Motozumi H., Shiraki K.: Abnormal perception of body weight is not solely observed in pubertal girls: incorrect body image in children and its relationship to body weight. Acta Psychiatr Scand, 87, 218-222 (1993)
3) Yakura N., Hiroe K., Kasaoki T.: Study on desire to be thin in children - Relationship between body-image and BMI or attempting to lose weight. J

Child Health, 52, 521-524 (1993)

4) Killen J.D., Taylor C.B., Telch M.J., Robinson T.N., Maron D.J., Saylor K.E.: Depressive symptoms and substance use among adolescent binge eaters and purgers: a defined population study. Am J Public Health, 77, 1539-1541 (1987)

5) Pirke K.M., Schweiger U., Strowitzki T., Tuschl R.J., Laessle R.G., Broocks A., Huber B., Middendorf R.: Dieting causes menstrual irregularities in normal weight young women through impairment of episodic lutenizing hormone secretion. Fertil Steril, 51, 263-268 (1989)

6) Genazzani A.D., Petraglia F., Fabbri G., Monzani A., Montanini V., Genazzani A.R., Evidence of luteinizing hormone secretion in hypothalamic amenorrhea associated with weight loss. Fertil Steril, 54, 222-226 (1990)

7) Yamashita C., Kashima H.: Phychology of desire to lose. Sci Body, 207, 74-78 (1999)

8) Wakamizu J.: Philosophical consideration of motivation for diet in young female. The annual report of Centre for sports and health sciences Gakushuin university, 7, 27-38 (1999)

9) Carlson E.A., McAndrew F.T.: Body shape ideals and perceptions of body shape in Spanish and American college students. Perceptual Motor Skills, 99, 1071-1074 (2004)

10) The Ministry of Health, Labor and Welfare, The Ministry of Education, Culture, Sports, Science and Technology, "The Ethical Guideline for Epidemiological Research" (2005)

11) Japan Society for the Study of Obesity, Therapy Manual for Obesity, Ishiyaku Publishers, Inc., Tokyo, Chap. 13. (1996)

12) Sharps M.J., Price-Sharps J.L., Hanson J.: Body image preference in the United States and rural Thailand: an exploratory study. J Psychology, 135, 518-526 (2001)

13) Osaka R., Nanakorn S., Sanseeha L., Nagahiro C., Kodama N.: Healthy dietary habits, body mass index, and predictors among nursing students, northeast Thailand. Southeast Asian J Tropical Med Public Heath, 30, 115-121 (1999)

日本およびタイの大学生の体格・体型に関する調査

佐藤紀代美 [*1], 川崎直人 [*1],　Chaowalit Loetkham[*2], Siriporn Burapadeja[*3],
中村武夫 [*1], 松本和興 [*4], 棚田成紀 [*1]

近年, 体型として低年齢からやせ願望が広がり, 食事制限, カロリー制限など食事環境が大きく変わりつつある。また, 慢性的な減量行為は薬物使用などの問題行動と関連性があるともいわれている。一方, 肥満は生活習慣病の一要因となるため, 減量することが望ましい。しかし, 減量を行う前には, 肥満であるかどうかを正しく判定し, 体型や体格に関する正しい認識を持つことが重要である。今回, 日本の大学生およびタイの大学生の現在ならびに理想とする身長, 体重, 体脂肪率, BMI と体型認識または体格認識との関連性について検討した。その結果, 身長は, 日本とタイの男子および女子大学生ともに「高くなりたい」との理想を持つことがわかった。体重は, 男子大学生は「増量したい」との理想を持ち, 一方, 女子大学生は「減量したい」との意識が強いことがわかった。また, 現在の BMI の結果より, 「やせ」もしくは「標準」であるといえる日本の男子大学生は 98.1%, 女子大学生は 100% であった。しかし, 理想の BMI を算出した結果, 日本の男子大学生の 9.3%, 女子大学生の 73.9% は「やせ」を望み, 特に女子大学生は「標準」より「やせ」を理想の体型としていることがわかった。現在の BMI の結果より, 「やせ」または「標準」であるといえるタイの男子大学生は 91.6%, 女子大学生は 94.4% であった。しかし, 理想の BMI の結果から, タイの男子大学生の 16.9%, 女子大学生の 77.8% は「やせ」を望み, 特に女子大学生は「標準」より「やせ」を理想の体型としていることがわかった。日本およびタイの大学生において, やせ願望が今後も続いた場合, 健康に悪影響がでてくるものと予測できる。さらに, 日本とタイの大学生の体型認識, 体格認識はほぼ同様の傾向が認められ, 体型認識と体重, 体脂肪率, BMI との間に有意差が認められ, 主として体重, BMI を意識していることが示唆された。

[*1]：　近畿大学薬学部
[*2]：　チェンマイ大学人文学部
[*3]：　チェンマイ大学薬学部
[*4]：　聖徳大学人文学部