Original Article

The purpose and the motivation for future practice of physical activity and related factors in Japanese university students

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ABSTRACT

Purpose: We investigated the purpose and the motivation for the future practice of physical activity and related factors in Japanese university students. Materials and Methods: The participants were 499 university students (407 men and 92 women). Participants were surveyed using an anonymous self-administered questionnaire. Questionnaire items were anthropometrics, current exercise habits, preference for exercise, existence of exercise partners, benefits of exercise, self-efficacy for exercise, and the purpose to be motivated to exercising in the future. Results: The exercise group had higher scores for preference for exercise, exercise partners, self-efficacy for exercise, and benefits of exercise than the non-exercise group. The exercise group also reported being more likely to be motivated to exercise in the future than the non-exercise group. In the exercise group, those who felt benefits of exercise were more likely to be motivated to exercise for enhancement of health, enjoyment, making friends, prevention of illness, and enhancement of

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competitiveness. In the non-exercise group, those who had a preference for exercise were more likely to be motivated to exercise in the future for enjoyment, prevention of illness, and enhancement of competitiveness. In both the exercise and non-exercise groups, women were markedly more likely to be motivated to exercise in the future for aesthetics. Conclusions: These results indicate that there is a difference in the purpose and the motivation for future practice of physical activity between the exercise group and the non-exercise group as well as between genders. **Keywords:** Exercise habits, Future, Gender differences, Purpose of exercise, University students.

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INTRODUCTION

A number of studies have reported that moderate physical activity is effective in the prevention of lifestyle-related diseases such as cancer and cardiovascular diseases (U.S. Department of Health and Human Services, 1996; Bassuk & Manson, 2005; Anzuini et al., 2011; Church, 2011; O'Gorman & Krook, 2011; Li & Siegrist, 2012; Pham et al., 2012). Physical activity is known to be a valid method for preventing age-related diseases and enhancing quality of life (Bize et al., 2007; Gillison et al., 2009; Krzepota et al., 2015). Therefore, moderate physical activity is universally recommended by physical activity guidelines. For example, the physical activity guidelines updated by the U.S. Department of Health and Human Services in 2008 recommend at least 150 minutes of moderate-intensity aerobic activity every week and weight training or muscle-strengthening activities that work all major muscle groups on 2 or more days a week (U.S. Department of Health and Human Services, 2008). However, globally, around 31% of adults aged 15 and over were insufficiently active in 2008 (World Health Organization, 2008). Similarly, in Japan, a lack of physical activity has also been observed; a 2015 report showed that only about 37.8% of men and 27.3% of women engaged in exercise for a minimum of 30 min at least twice a week. Among 20–29-year-old adult men and women, only 17.1% and 10.8% did so, respectively (Ministry of Health, Labour and Welfare, 2016). Therefore, a strategy to increase the exercise habits of young Japanese women, in particular, is needed.

Previous studies have investigated the factors related to physical activity. One such factor is preference for exercise. Increased preference for physical activity is associated with increased physical activity (Salmon et al., 2003; Wang et al., 2016), and negatively associated with sedentary behavior (Sallis et al., 1999; Salmon et al., 2003; Sherwood et al., 2003). Self-efficacy is an individual's belief in his or her ability to perform a specific action required to attain a desired outcome. Self-efficacy is also reported to relate with physical activity (Luszczynska and Haynes, 2009; Blake et al., 2017; Hamilton et al., 2017). In addition, social support is reported on the association with physical activity. That is, those who are more active had high levels of social support from family or friends (Sallis et al., 1987; Sharma et al., 2005; Bergh et al., 2012; Hamilton et al., 2017). Exercise partner, one of variable of social support, is also known to be associated with physical activity (Granner et al., 2007; Soto et al., 2018). Furthermore, women who perceived more benefits from exercise and fewer barriers to exercise were more active than those who reported high perceived barriers and low perceived benefits (Vaughn, 2009). However, many people are inactive despite the benefits of physical activity (U.S. Department of Health and Human Services, 1996; Kohl et al., 2000; Blake et al., 2017). These factors have been investigated with regard to whether they were related with currently doing physical activity. If these factors were also related to motivation for physical activity in the future, this could be helpful in promoting increased physical activity in inactive people. However, there is little evidence indicating whether these factors are related to the motivation for the future practice of physical activity. In addition, only a few studies have examined female university students' attitudes towards exercise (Gyurcsik et al., 2006). Therefore, in the present study, we investigated the purpose and the motivation for future practice of physical activity and related factors in Japanese university students.

MATERIALS AND METHODS

Participants

The survey was conducted in an urban area of Western Japan that has generally mild weather in December 2010. An anonymous self-administered questionnaire was delivered to 650 students in university classes. The responses of the 151 students whose questionnaires were incomplete were excluded from the analysis. In total, the responses of 499 (407 men, 92 women) of 650 students were in our study. The respondents' ages were from 18 to 27 years. This study was approved by the institutional ethical committee.

Measures

The questionnaire asked about the subjects' age, gender, height, weight, exercise habits, preference for exercise, existence of exercise partner(s), benefits received from exercise, self-efficacy for exercise, and motivation for future practice of exercise. Body mass index (BMI) was calculated as weight in kilograms divided by the square of the height in meters.

The questionnaire was anonymous and had six parts. The subjects' current exercise habits were assessed as frequency per week of engaging in exercise of a duration of 30 min or more, and the response options were from 0 to 7 times/week. For analysis, according to the National Health and Nutrition Survey in Japan (2016), those who engaged in exercise 2 or more times per week were categorized into the exercise group, and those who engaged exercise less than 2 times per week were categorized into the non-exercise group. The respondents' preference for exercise was surveyed with a simple questionnaire using the following response options: "like exercise", "slightly like exercise", "slightly dislike exercise" and "dislike exercise." For the analysis, we combined "like exercise" and "slightly like exercise" into the "like exercise" classification, and "slightly dislike exercise" and "dislike exercise" into the "dislike exercise" classification. The existence of exercise partners was surveyed using the following response options: "many", "some", "few", and "none." We combined "many", "some", into the "existent" classification, and "few", and "none" into the "not existent" classification for the analysis.

The benefits received from exercise was measured using Decisional Balance Inventory for Physical Activity (Uechi et al., 2003). The validity and reliability of Decisional Balance Inventory for Physical Activity have been evaluated (Uechi et al., 2003). This scale included four items: "getting healthier," "feeling comfortable," "reducing stress," and "making friends." Each item was rated on a 4-point Likert-type response scale, 1 (strongly disagree), 2 (disagree), 3 (agree), and 4 (strongly agree). The sum score range was from 4 to 16 points. A higher score indicated greater benefits received from exercise. For logistic regression analysis, scores higher than the median were categorized into the higher benefit group, and scores below the median were categorized into the lower benefit group.

Self-efficacy for exercise was measured using Exercise Self-Efficacy Scale (Oka, 2003). The validity and reliability of Exercise Self-Efficacy Scale have been evaluated (Oka, 2003). This scale consists of 5-items, and 4 of 5 the items were adopted for the statistical analysis: "practice exercise despite bad weather," "practice exercise despite being busy," "practice exercise despite not being the mood," "practice exercise despite feeling tired," and "practice exercise despite feeling stressed." Each item was rated on a 4-point Likert-type response scale, 1 (not at all confident), 2 (slightly confident), 3 (moderately confident), and 4 (extremely confident). The range of summed scores was from 4 to 16 points. A higher score indicated high self-efficacy for exercise practice. For logistic regression analysis, self-efficacy scores higher than the median were categorized into the higher self-efficacy group, and scores below the median were categorized into the lower self-efficacy group.

Regarding the purpose to be motivated to exercise that they will take in the future, the questionnaires included six items: "enhancement of health," "enjoyment," "aesthetics," "making friends," "prevention of illness," and "enhancement of competitiveness." The respondents were asked to respond "yes" or "no" to each of these questions.

Statistical analysis

To assess the differences among the responses to the factor, Student's t test and a chi-square test (or Fisher's exact test when appropriate) were performed. Logistic regression analysis was used to evaluate the

association of preference for exercise, benefits received from exercise, self-efficacy for exercise, and existence of exercise partners, with current exercise habits, as well as with motivation for exercising in the future. Odds ratios (ORs) and 95% confidence intervals (95% CIs) were calculated. Differences with p-values <0.05 were considered significant. Statistical analysis was performed with SPSS® 21.0 J for Windows (IBM Inc., Tokyo, Japan).

RESULTS

The physical characteristics of the subjects are shown in Table 1. In men (n = 407), there was no significant difference between the exercise and non-exercise groups. In women (n = 92), the weight and BMI values of the exercise group were significantly higher than those of the non-exercise group (p = 0.001 for weight and p = 0.013 for BMI) (Table 1). There was no significant difference in other values.

Table 1. Physical characteristics of the respondents to the questionnaire

	Men (n = 407)			Women (n = 92)		
	Non-exercise group (n = 191)	Exercise group (n = 216)	p-value	Non-exercise group (n = 59)	Exercise group (n = 33)	p-value
Age (years)	19.1 ± 1.1	19.0 ± 1.0	0.716	18.8 ± 0.7	18.9 ± 0.6	0.657
Height (cm)	171.3 ± 5.6	172.1 ± 6.0	0.151	158.3 ± 5.4	160.5 ± 5.4	0.064
Weight (kg)	64.1 ± 13.4	64.7 ± 9.3	0.649	48.6 ± 5.4	52.5 ± 5.4	0.001
BMI (kg/m^2)	21.8 ± 4.1	21.8 ± 2.9	0.998	19.4 ± 1.8	20.4 ± 1.8	0.013

BMI: body mass index.
Values are means ± standard deviations.
p values are determined by Student's t test; significantly different (p<0.05) between exercise group and non-exercise group.

Preference for exercise, existence of partners for exercise, benefits received from exercise, and self-efficacy for exercise are shown in Table 2. In both men and women, preference for exercise was significantly higher in the exercise group than in the non-exercise group (men, p < 0.001; women, p = 0.001). Preference for exercise was significantly higher in the non-exercise group in men than in the non-exercise group in women (p = 0.003). In addition, those in the exercise group had more exercise partners than those in the non-exercise group for both men and women (men, p < 0.001; women, p = 0.001). Self-efficacy was also significantly higher in those in the exercise group than those in in the non-exercise group in men and women (men, p < 0.001; women, p < 0.001). The benefits received from exercise were significantly greater in those in the exercise group than that in those in the non-exercise group in men (men, p < 0.001).

Table 2. Comparative analysis between exercise group and the non-exercise group

	Men (n = 407)			Women (n = 92)		
	Non-exercise group (n = 191)	Exercise group (n = 216)	p-value between groups	Non-exercise group (n = 59)	Exercise group (n = 33)	p-value between groups
Preference for exercise [a]						
Dislike to exercise	49 (25.7)*	17 (7.9)	<0.001	27 (45.8)	4 (12.1)	0.001
Like to exercise	142 (74.3)	199 (92.1)		32 (54.2)	29 (87.9)	
Partners for exercise [a]						
Not existent	118 (61.8)	66 (30.6)	<0.001	42 (71.2)	12 (36.4)	0.001
Existent	73 (38.2)	150 (69.4)		17 (28.8)	21 (63.6)	

Benefits of exercise [b]	13.0 ± 2.1	13.9 ± 1.8	<0.001	13.4 ± 1.7	13.9 ± 1.4	0.100
Self-efficacy of exercise [b]	7.3 ± 2.7	10.1 ± 3.1	<0.001	7.0 ± 2.4	9.9 ± 2.8	<0.001

[a] The chi-square test was used to test the response rate in cross-tabulation. Values are numbers of people, with percentages in parentheses.

[b] Student's t test was used to test the difference between groups or between genders. Values are means ± standard deviations.

** p < 0.05 (chi-square test between men and women both in the non-exercise group).*

The results of a comparative analysis of the purpose to be motivated to exercise in the future are shown in Table 3. More than 70% of the participants reported having motivation for future practice of exercise for enhancement of health, enjoyment, and prevention of illness both in the exercise and non-exercise groups and in both genders. In men, those in the exercise group were more likely to be motivated to exercise in the future for enhancement of health, enjoyment, making friends, or to enhance competitiveness than those in the non-exercise group (enhancement of health, $p = 0.024$; enjoyment, $p < 0.001$; making friends, $p < 0.001$; enhancement of competitiveness, $p < 0.001$). In women, those in the exercise group were more likely to be motivated to exercise in the future to enhance competitiveness than those in the non-exercise group ($p = 0.002$). In a comparison between men and women, women were more likely to be motivated to exercise in the future for aesthetics than men in both the non-exercise group and exercise group (non-exercise group, $p < 0.001$; exercise group, $p < 0.001$).

Table 3. Comparative analysis of the purpose to be motivated to exercise in the future between the exercise group and the non-exercise group and between genders

	Men (n = 407)			Women (n = 92)		
	Non-exercise group (n = 191)	Exercise group (n = 216)	p-value between groups	Non-exercise group (n = 59)	Exercise group (n = 33)	p-value between groups
Enhancement of health						
Not motivated	20 (10.5)*	10 (4.6)	0.024	1 (1.7)	1 (3.0)	1.000
Motivated	171 (89.5)	206 (95.4)		58 (98.3)	32 (97.0)	
Treatment of illness						
Not motivated	81 (42.4)	84 (38.9)	0.470	21 (35.6)	10 (30.3)	0.607
Motivated	110 (57.5)	132 (61.1)		38 (64.4)	23 (69.7)	
Enjoyment						
Not motivated	44 (23.0)	19 (8.8)	<0.001	16 (27.1)	5 (15.2)	0.300
Motivated	147 (77.0)	197 (91.2)		43 (72.9)	28 (84.8)	
Aesthetics						
Not motivated	130 (68.1)*	132 (61.1)†	0.144	6 (10.2)	4 (12.1)	0.742
Motivated	61 (31.9)	84 (38.9)		53 (89.8)	29 (87.9)	
Making friends						
Not motivated	90 (47.1)	63 (29.2)	<0.001	26 (44.1)	13 (39.4)	0.663
Motivated	101 (52.9)	153 (70.8)		33 (55.9)	20 (60.6)	
Prevention of illness						
Not motivated	44 (23.0)	48 (22.2)	0.845	10 (16.9)	8 (24.2)	0.398
Motivated	147 (77.0)	168 (77.8)		49 (83.1)	25 (75.8)	

Enhancement of competitiveness						
Not motivated	100 (52.4)	59 (27.3)	<0.001	36 (61.0)	9 (27.3)	0.002
Motivated	91 (47.6)	157 (72.7)		23 (39.0)	24 (72.7)	

Chi-square test was used to test response rate in cross-tabulation.
Values are numbers of people, with percentages in parentheses.
**p < 0.05 (chi-square test between men and women both in the non-exercise group).*
†p < 0.05 (chi-square test between men and women both in the exercise group)

The associations between the purpose to be motivated to exercise in the future and the preference for exercise, benefits of exercise, self-efficacy for exercise, exercise partners and sex are shown in Table 4. In the exercise group, those who felt they received benefits from exercise were more likely to be motivated to exercise for enhancement of health, OR = 5.46, p = 0.018; enjoyment, OR = 4.38, p = 0.004; making friends, OR = 2.83, p = 0.001; prevention of illness, OR = 3.88, p < 0.001; enhancement of competitiveness, OR = 3.83, p = 0.041. Those who had a preference for exercise were more likely to be motivated to exercise for enhancement of competitiveness in the future (OR = 1.88, p = 0.014). Women were more likely to be motivated to exercise for aesthetics in the future (OR = 10.37, p < 0.001). In the non-exercise group, those who had a preference for exercise were more likely to be motivated to exercise for enjoyment and making friends in the future (enjoyment, OR = 4.01, p < 0.001; making friends, OR = 3.80, p < 0.001). Those who felt they received benefits from exercise were more likely to be motivated to exercise for enjoyment, prevention of illness, and enhancement of competitiveness in the future (enjoyment, OR = 4.83, p < 0.001; prevention of illness, OR = 3.43, p = 0.004; enhancement of competitiveness, OR = 1.85, p < 0.001). Women were more likely to be motivated to exercise for aesthetics in the future (OR = 24.17, p < 0.001).

Table 4. Association between the purpose to be motivated to exercise in the future and preference for exercise, receiving benefits from exercise, self-efficacy for exercise and social support for exercise

	Exercise group (n = 249)			Non-exercise group (n = 250)		
	OR	95% CI	p-value	OR	95% CI	p-value
Enhancement of health						
Preference for EX	0.48	(0.51 - 4.44)	0.514	1.22	(0.42 - 3.52)	0.719
Benefits of EX	5.46	(1.34 - 22.26)	0.018	2.03	(0.66 - 6.23)	0.218
Self-efficacy for EX	0.82	(0.22 - 3.01)	0.762	0.65	(0.21 - 2.03)	0.461
Partners for EX	1.97	(0.57 - 6.73)	0.282	1.39	(0.50 - 3.90)	0.529
Sex (ref: male)	1.84	(0.22 - 15.16)	0.572	7.03	(0.90 - 54.63)	0.062
Treatment of illness						
Preference for EX	0.78	(0.28 - 2.15)	0.629	1.05	(0.57 - 1.94)	0.875
Benefits of EX	1.44	(0.81 - 2.53)	0.212	1.10	(0.61 - 1.96)	0.753
Self-efficacy for EX	1.02	(0.57 - 1.85)	0.941	1.12	(0.59 - 2.11)	0.728
Partners for EX	1.30	(0.73 - 2.33)	0.376	1.60	(0.92 - 2.81)	0.098
Sex (ref: male)	1.50	(0.68 - 3.33)	0.318	1.40	(0.75 - 2.63)	0.291
Exercise for enjoyment						
Preference for EX	1.48	(0.43 - 5.10)	0.538	4.01	(1.98 - 8.14)	<0.001

Benefits of EX	4.38	(1.58 - 12.12)	0.004	4.83	(2.00 - 11.64)	<0.001
Self-efficacy for EX	1.75	(0.67 - 4.58)	0.252	1.56	(0.57 - 4.29)	0.386
Partners for EX	1.31	(0.51 - 3.34)	0.574	0.84	(0.40 - 1.76)	0.644
Sex (ref: male)	0.53	(0.17 - 1.61)	0.259	0.93	(0.42 - 2.01)	0.844
Exercise for aesthetics						
Preference for EX	1.05	(0.36 - 3.04)	0.362	1.42	(0.67 - 2.99)	0.362
Benefits of EX	1.88	(1.03 - 3.44)	0.767	1.11	(0.57 - 2.15)	0.767
Self-efficacy for EX	0.73	(0.40 - 1.36)	0.243	1.52	(0.75 - 3.09)	0.243
Partners for EX	1.29	(0.70 - 2.36)	0.745	0.90	(0.48 - 1.70)	0.745
Sex (ref: male)	10.37	(3.82 - 28.19)	<0.001	24.17	(8.86 - 65.92)	<0.001
Making friends						
Preference for EX	1.27	(0.48 - 3.36)	0.635	3.80	(1.97 - 7.31)	<0.001
Benefits of EX	2.83	(1.56 - 5.12)	0.001	1.82	(1.00 - 3.32)	0.052
Self-efficacy for EX	0.83	(0.44 - 1.58)	0.571	0.86	(0.45 - 1.67)	0.663
Partners for EX	1.79	(0.98 - 3.27)	0.057	1.10	(0.62 - 1.98)	0.741
Sex (ref: male)	0.73	(0.34 - 1.59)	0.429	1.38	(0.71 - 2.68)	0.347
Prevention of illness						
Preference for EX	0.44	(0.14 - 1.40)	0.164	1.63	(0.80 - 3.30)	0.177
Benefits of EX	3.88	(2.01 - 7.52)	<0.001	3.43	(1.49 - 7.88)	0.004
Self-efficacy for EX	1.35	(0.69 - 2.67)	0.384	1.95	(0.73 - 5.22)	0.183
Partners for EX	1.28	(0.65 - 2.52)	0.469	1.05	(0.51 - 2.16)	0.893
Sex (ref: male)	1.19	(0.47 - 3.01)	0.716	1.30	(0.59 - 2.91)	0.517
Enhancement of competitiveness						
Preference for EX	1.88	(0.68 - 5.18)	0.014	2.26	(1.18 - 4.34)	0.222
Benefits of EX	3.83	(2.07 - 7.09)	0.041	1.85	(1.03 - 3.34)	<0.001
Self-efficacy for EX	1.33	(069 - 2.54)	0.242	1.47	(0.77- 2.80)	0.395
Partners for EX	2.06	(1.10 - 3.86)	0.368	1.30	(0.73 - 2.31)	0.024
Sex (ref: male)	1.10	(0.47 - 2.58)	0.320	0.72	(0.37- 1.38)	0.822

The dependent variable was the purpose to be motivated to exercise in the future. The independent variables were preference for exercise ("like" or "dislike"), benefits of exercise, self-efficacy for exercise, and existence of exercise partner. OR: odds ratio; CI: confidence interval. EX: exercise. Gender was an adjustment factor.

DISCUSSION

This study aimed to verify the purpose and the motivation for future practice of physical activity and related factors in Japanese university students.

In the present results, those in the exercise group had higher scores for preference for exercise, existence of exercise partners, and self-efficacy than in the non-exercise group in both men and women, and men in the exercise group felt higher benefits of exercise than those in the non-exercise group. These results indicate that exercise habit has a relation with preference for exercise, existence of exercise partner, benefits of exercise, and self-efficacy. Previous studies have reported that a preference for exercise was positively associated with the level of physical activity (Salmon et al., 2003), that those who had social support for exercising from their family or friends were physically more active compared with those who had no support (Leslie et al., 1999; Trost et al., 2003; Dowda et al., 2007; Bauer et al., 2008), and that self-efficacy for exercise was an important determinant of physical activity (Trost et al., 2003; Patterson et al., 2006; Dowda et al., 2007; Pauline, 2013). In this context, the results of the present study are considered consistent with the results of these previous studies.

In the exercise group, men were more likely to be motivated to exercise in the future for enhancement of heath, enjoyment, and for making friends, and both men and women were more likely to be motivated to exercise for enhancement of competitiveness. These results indicate the possibility that those who have the habit of exercising will do more exercise with various purposes in the future. Some studies have been conducted about the effects of physical activity at different life stages. Dennisson et al. (1988) reported that physical activity in childhood was related to that in adulthood. Molina-Garcia et al. (2009) reported a positive relationship between physical activity during adolescence and early adulthood, and between physical activity in early adulthood and the future intention to practice physical activity. Tammelin et al. (2003) reported that participating in sports during adolescence tended to reduce inactivity in adulthood and would continue to bring health benefits in the long term. Physical inactivity and low social status in adolescence also have been reported as predictors of physical inactivity in adulthood (Belanger et al., 2015). These reports indicate positive relationships among physical activity at different life stages, which is consistent with the present results. In addition, the present study showed that those in the exercise group who felt the benefit of exercise were likely to exercise in the future for a variety of purposes. In previous studies, it has been well established that physical activity provides various health benefits such as cardiovascular fitness and decrease of body fat (Gutin et al., 2005), prevention of hypertension (Carnethon et al., 2003; Parker et al., 2007), decrease of causes and mortality due to cardiovascular diseases in middle-aged men and women (Paffenbarger et al., 1986; Crespo et al., 2002; Barengo et al., 2004; Hu et al., 2005), and increase of bone mass density (Langsetmo et al., 2012). Physical activity also prevents weight gain (Van Dyck et al., 2015), and decreases the risk of mental health problems (Wu et al., 2015). These results support the present results showing that those who felt benefits from physical activity were more likely to be motivated to exercise for various purposes in the future. However, there have been few studies focusing specifically on the motivation to exercise in the future comparing those who have exercise habits with those who do not have exercise habit in each gender.

In the non-exercise group as well, the benefit of physical activity and preference for physical activity were more strongly associated with motivation for future practice of exercise than with other factors. It is reported that physical activity increases when subjects take more pleasure in exercise (Salmon et al., 2003; Wang et al., 2016). In the non-exercise group in the present study, over 70% and 50% had preference for physical activity in men and women respectively. Lovell et al. (2010) also reported that non-exercising female university students felt strong benefits from exercising accompanied by only relatively few perceived barriers. The high prevalence of preference for physical activity in the non-exercise group may lead to future motivation for physical activity although they do not appear to have led to current exercise habits. On the other hand, those who did not report a preference for exercise still have barriers to practicing exercise. Most of these participants reported having motivation for future exercise for enhancement of health. Thus, in a future study, it is key to investigate the factors that promote the motivation for future practice of exercise to enhance health.

In addition, compared with men, more women responded that they intend to exercise in the future for aesthetics in both the exercise and non-exercise groups. These results indicate that there is a gender difference in the intent to engage in future physical activity. Furthermore, in multiple regression analysis, sex is a strong factor for future exercise for aesthetics. According to Egli et al. (2011), men were motivated by intrinsic factors such as strength, competition, and challenges while women were motivated by extrinsic factors such as weight control or appearance. In a similar sense, it has been reported that internal or external motivation is related to exercise as a primary factor (Allison et al., 1999; Leslie et al., 1999; Salmon et al., 2003; Patterson et al., 2006; Reichert et al., 2007; Bauer et al., 2008; Pauline, 2013). According to previous studies on the motivation for current exercise habits (Patterson et al., 2006; Dowda et al., 2007) maintaining a good appearance worked as a strong motivation factor for exercise in women. Therefore, with regard to exercising in the future, a strong intrinsic motivation based on aesthetics was also assumed to apply to women. Pauline et al. (2013) reported that women's motivations were weight control, maintaining a good appearance, and health and stress management, whereas men's motivations were physical performance and ego-oriented factors, such as challenge, strength and endurance, competition, affiliation and social recognition. These gender difference results are consistent with those of this study and confirm that men and women had different motivations for exercise.

LIMITATIONS AND STRENGTHS

The limitations of this study should be noted. First, this study employed a cross-sectional design, from which conclusions about cause-effect relationships cannot be drawn. Second, the samples were collected from a limited area in Japan, and sample sizes were different between genders. Future studies should collect samples from a wider area, with a gender-balanced sample, and employing a longitudinal design to estimate cause-effect relationships. Third, this study may not cover all possible factors that motivate people to exercise in the future. Fourth, in the present study, the athletes who regularly and eagerly engage in exercise for competitiveness rather than health promotion were not distinguished from the non-athlete students. Fifth, the present study is lack of Participation Motivation Questionnaire which enables psychological analysis about the motivation for future physical activity. Therefore, future studies should focus on athletes who do not engage in exercise for competitiveness and investigate the motivation for exercise for health promotion and from the psychological point of view. A strength of this study is that motivations for exercising in the future were revealed, and these findings can be useful in promoting exercise activities, especially for women.

CONCLUSIONS

In the present study, both men and women in the exercise group had higher scores for preference for exercise, exercise partners, and self-efficacy for exercise than those in the non-exercise group, and men in the exercise group had higher scores for benefits of exercise than that in the non-exercise group. Men in the exercise group were also more likely to be motivated to exercise in the future for enhancement of health, enjoyment and for making friends, and both men and women were also more likely to be motivated to exercise in the future for enhancement of competitiveness. In addition, among men in the exercise group, those who felt the benefits of exercise were more likely to be motivated to exercise for enhancement of health, enjoyment, making friends, prevention of illness, and enhancement of competitiveness. However, in the non-exercise group, those who had a preference for exercise were more likely to be motivated to exercise in the future for enjoyment and making friends. In both the exercise and non-exercise groups, women were remarkably more likely to be motivated to exercise in the future for aesthetics. These results indicated that there is a difference in the purpose and the motivation for future practice between the exercise group and the non-exercise group as well as between genders.

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