



Original Article

A survey of health awareness and physical activity among Japanese undergraduate rehabilitation students

AKIHIRO TAMURA, PT, PhD^{1)*}, KEITA SHIMURA, PT, PhD¹⁾, YURI INOUE, PT, PhD¹⁾

¹⁾ Department of Physical Therapy, School of Health Sciences at Narita, International University of Health and Welfare: 4-3 Kozunomori, Narita, Chiba 286-8686, Japan

Abstract. [Purpose] We aimed to investigate students' awareness of their general physical activity and current physical activity habits. [Participants and Methods] One hundred and eighteen undergraduate students in rehabilitation courses volunteered to participate in this survey. The participants were required to answer a questionnaire related to their health awareness and physical activity habits. A χ^2 test was used to demonstrate the relationships between each category of the selected items. [Results] Undergraduate rehabilitation students felt very or moderately healthy when asked to subjectively describe the current condition of their health. Most of them liked and had more interest in exercise or sports activities. However, more than 60% of them felt that their participation in physical activities had decreased since they entered college. [Conclusion] Undergraduate students in rehabilitation courses lacked motivation to exercise and participate in physical activities in college. Students who did not have a habit of exercising or participating in sports activities may have lacked motivation because they were busy with school; however, they had a high level of positivity towards exercise or sports activities. Therefore, it is important for them to actively participate in exercise and/or physical activity with a specific purpose in mind.

Key words: Life activity, Health education, Health promotion

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INTRODUCTION

The Japan Sports Agency of the Ministry of Education, Culture, Sports, Science, and Technology has been using a novel physical fitness test for children since 1999¹⁾. The test includes various basic physical fitness tests, such as 50-m sprint, grip strength, and softball throw²⁾. Current health policies present the current physical and athletic abilities of the people and provide guidance on physical education and sports activities. Physical fitness data have been widely used to improve children's physical fitness level. Recently, the results of many studies have indicated that physical fitness levels evaluated by grip strength, 50-m sprint, standing long jump, softball throw, and side steps have been gradually decreasing since 1999³⁾.

Lack of physical fitness has been considered an important cause of future lifestyle-related diseases including metabolic syndrome, diabetes, or hypertension. In previous studies, it has been reported that persons engaging in low levels of physical activity have increased body mass index, waist circumference, and fat mass, compared to those engaging in high levels of physical activity⁴⁾. Furthermore, Proudfoot et al. reported that children with higher levels of physical activity have better cardiovascular health indicators, with more intense physical activity attenuating the stiffening of arteries than those with lower levels of physical activity¹⁰⁾. Moreover, most previous studies have claimed that physical activity is associated with low morbidity and mortality from a number of chronic diseases, including cardiovascular diseases, diabetes, and obesity⁵⁻⁷⁾. These reports show that low physical fitness ability in children can be a cause of future lifestyle-related diseases^{8, 9)}. Therefore, regular physical activity should be encouraged among children with low levels of physical fitness. In addition, it is

*Corresponding author. Akihiro Tamura (E-mail: akihiro.tamura@iuhw.ac.jp)

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important for children to be conscious of their physical activity and physical fitness level and improve their daily lifestyle habits. These attempts can contribute to the prevention of future lifestyle-related diseases in their adulthood.

Poor lifestyle habits among Japanese college students is one of the factors that reduce their physical activity levels^{11, 12}. Previous studies have reported that most Japanese college students skip daily breakfast with low awareness of good dietary practices¹². In addition, they engage in low levels of physical activity as college students because physical education is not a compulsory program in most colleges in Japan.

In a recent systematic review, exercise was found to enhance sleep efficiency and duration, especially in populations suffering from diseases¹³. Similarly, research on the general public in Japan shows that lack of physical activity and irregular eating habits are associated with sleep loss¹⁴⁻¹⁶. Therefore, the poor lifestyle of Japanese college students involves three factors: diet, physical activity, and sleep habits. Thus, it is important to improve the awareness of diet, physical activity, and sleep habits for the maintenance of physical health.

On the other hand, it is known that medical students, such as nursing or physical therapy students, have characteristic physical activities and daily lifestyle habits¹⁷⁻¹⁹. Dąbrowska-Galas et al. reported that physical therapy students demonstrated a high level of physical activity, and all physical therapy and nursing students mentioned that physical activity is an important part of daily life for them¹⁷. The medical staff should be physically active to be credible while promoting exercise among their patients. Especially, rehabilitation staff including physical therapists, occupational therapists, and speech-language therapists engage in providing physical education and promoting physical activity among their patients to help them perform functional activities in their daily living. Therefore, undergraduate students in rehabilitation studies need to have a high awareness of their physical activities, lifestyle, and health.

Undergraduate students in rehabilitation studies are expected to support their patients as rehabilitation experts once they graduate. Therefore, it is important for them to be aware of their physical activities and habits. However, studies on the awareness of Japanese undergraduate rehabilitation students of their physical activity are limited. The purpose of this study was to investigate the level of awareness regarding physical activity among undergraduate students in rehabilitation studies. The findings of this investigation may add to the knowledge of health promotion and physical activity among undergraduate students in rehabilitation studies.

PARTICIPANTS AND METHODS

In all, 118 undergraduate students from the physical therapy, occupational therapy, and speech-language therapy departments volunteered to participate in this research: 22 male and 33 female from physical therapy, 19 male from occupational therapy, and 40 male and 4 female from language and hearing therapy. All participants were first-year college students and provided informed consent for participation prior to this research. This study followed the Declaration of Helsinki and was approved by the Ethics Committee at the International University of Health and Welfare (10-Io-60).

All participants were required to answer a questionnaire (Table 1). The major topics covered in the questionnaire were (1) health condition, (2) current physical activity, and (3) opportunity for physical activity. The questionnaire was distributed using Google Form (Google, CA, USA). (1) Health condition; All participants were required to answer questions on their current subjective health condition using a five-point scale (very healthy, moderately healthy, neither, not very healthy, not at all healthy). In addition, they were asked about current concerns related to their health condition. They were also required to answer which area required maintenance or improvement: physical activity, eating habits, sleep habits, or others. (2) Current physical activity; All participants were required to answer questions on their motivation to exercise or engage in sports activities using a five-point scale (very much, moderately, neither, not very much, not at all). In addition, they were asked how often they engaged in exercise or sports activities. Those who would exercise more than once per week were asked the types of exercises or sports activities they engaged in and their purpose. Those who did not engage in any exercise were asked to list the reasons why they did/could not engage in exercise or sports activities. (3) Opportunity for engaging in physical activity; All participants were required to answer questions on their exercise or sports activities before they entered college using a five-point scale (much increased, moderately increased, constant, neither, moderately decreased, much decreased). Those who chose the options related to “decreased” were asked for the reasons. In addition, all participants were required to answer the kinds of club activities they were a part of when they were in high school or are currently a part of.

The results obtained from the questionnaires were analyzed. Cross tabulation was carried out to analyze and compare the results for the variables between the male and female. χ^2 tests were used to demonstrate the relationships in each category of the items. Statistical analyses were performed using SPSS statistics 25 for Windows (SPSS Inc., Chicago, IL, USA). The significance level was set at 5% in this study.

RESULTS

Table 2 shows the current subjective health condition of the participants. Most students selected “very healthy” and “moderately healthy”, while a few students selected “not very healthy”, and no student selected “not at all healthy” ($\chi^2(4)=57.42$, $p<0.001$). No significant difference was found in the categories of selection items between male and female ($\chi^2(4)=1.30$, $p=0.73$). In addition, 76 students (64%) were aware of their health condition, while 42 (37%) were not. Furthermore, 20

Table 1. Questionnaire about students' health condition, current physical activity, and opportunity for physical activity

| No. | Questions |
|--------------------------------------|--|
| 1. Health condition | |
| Q.1-1 | Please answer how you are currently feeling about your health condition a) very healthy b) moderately healthy c) neither d) not very healthy e) not at all healthy |
| Q.1-2 | Do you have any current concerns about your health condition? a) Yes b) No |
| Q.1-3 | If you have any, which of the following best describes your concerns? a) Maintenance or improvement of a physical activity habit b) Maintenance or improvement of eating habits and sleep c) Maintenance or improvement of a sleep habit d) Others |
| 2. Current physical activity | |
| Q.2-1 | Do you like doing exercise or sports activities? a) very much b) moderately c) neither d) not very much e) not at all |
| Q.2-2 | Do you feel the need to exercise or participate in sports activities? a) very much b) moderately c) neither d) not very much e) not at all |
| Q.2-3 | How often do you exercise or participate in sports activities each week? a) everyday b) 5–6 times per week c) 3–4 times per week d) 2 times per week e) 1 time per week f) 2–3 times per month g) 1 time per month h) none |
| Q.2-4 | If you participate in exercise or a sports activity more than 1 time per week, what type of activity is it? a) walking b) jogging c) stretching d) strength training e) competitive sports f) yoga g) aerobics h) others |
| Q.2-5 | If you participate in exercise or a sports activity more than 1 time per week, what is its purpose? a) club activities b) maintenance or improvement of health c) improvement of inactivity d) rehabilitation e) diet f) making friends g) improvement of performance in sports h) others |
| Q.2-6 | If you do not participate in exercise or a sports activity during the week, why not? a) troublesome b) weakness to continue c) busy part-time job d) busy school e) no confidence in physical strength f) no friends doing it together g) financial scarcity h) no suitable environment i) poor health condition (including injuries) j) do not feel the need |
| 3. Opportunity for physical activity | |
| Q.3-1 | Do you have increased opportunity for exercise or sports activities compared to before you entered your rehabilitation courses? a) much increased b) moderately increased c) constant d) moderately decreased e) much decreased |
| Q.3-2 | If you have decreased opportunity for exercise or sports activities after you entered your rehabilitation courses, why do think it decreased? |
| Q.3-3 | What kinds of club activities did you belong to when you were a high school student? |
| Q.3-4 | What kinds of club activities do you currently belong to? |

Table 2. Subjective health condition of the participants (data in %)

| | Very healthy | Moderately healthy | Neither | Not very healthy | Not at all healthy |
|---------------|--------------|--------------------|---------|------------------|--------------------|
| Male (n=26) | | | | | |
| Number | 6 | 7 | 10 | 6 | 0 |
| (Rate, %) | (23.1) | (25.9) | (38.5) | (11.5) | (0) |
| Female (n=92) | | | | | |
| Number | 20 | 35 | 30 | 7 | 0 |
| (Rate, %) | (21.7) | (38.0) | (32.6) | (7.6) | (0) |
| Total (n=118) | | | | | |
| Number | 26 | 42 | 40 | 13 | 0 |
| (Rate, %) | (22.0) | (35.6) | (33.9) | (11.0) | (0) |

(26%), 36 (47%), and 19 students (21%) of the 76 students were careful to maintain or improve their physical activity, eating habits, and sleep, respectively.

Table 3 shows the results for the motivation to exercise or engage in sports activities. Most students selected “very much” and “moderately”, while a few students selected “not very much” and “not at all” ($\chi^2 (4)=73.70, p<0.001$). No significant difference was found in the categories of selection items between male and female ($\chi^2 (4)=4.64, p=0.33$). In addition, most of the students selected “very feel” and “moderately” in the feeling of need to exercise or sports, while a few students selected “not very feel” and “not at all” ($\chi^2 (4)=216.24, p<0.001$). No significant difference found in the categories of selection items between males and females ($\chi^2 (4)=4.78, p=0.31$). Table 4 shows the frequency of the students’ engagement in exercise or sports activities and students’ concerns about their health condition. The ones who had some concerns about their health condition engaged in exercise or sports activities more than 2 times per week; some never engaged in exercise or did so once per week ($\chi^2 (7)=16.87, p<0.05$). Of the 53 students who engaged in exercise or sports activities more than once per a week, 25 underwent strength training as a form of physical activity, 15 participated in competitive sports, and 14 would perform stretching. The purpose of physical activity was maintenance and improvement of health for 20, improvement in exercise habits for 20, club activities for 19, and beauty and weight loss for 17 students. Of the 54 students who did not engage in exercise or sports activities, 20 said they were busy with school, 14 had no confidence in their physical strength, 14 found it troublesome, 13 felt too weak to continue, and 12 students found no suitable environment.

Table 3. Positivity towards exercise and feeling a need to exercise or participate in sports (data in %)

| | Positivity | | | | |
|---------------|-----------------|------------|---------|---------------|------------|
| | Very much | Moderately | Neither | Not very much | Not at all |
| Male (n=26) | | | | | |
| Number | 15 | 8 | 3 | 0 | 0 |
| (Rate, %) | (57.7) | (30.8) | (11.5) | (2.5) | (0) |
| Female (n=92) | | | | | |
| Number | 36 | 31 | 16 | 4 | 5 |
| (Rate, %) | (39.1) | (33.7) | (17.4) | (4.3) | (5.4) |
| Total (n=118) | | | | | |
| Number | 51 | 39 | 19 | 4 | 5 |
| (Rate, %) | (43.2) | (33.1) | (16.1) | (3.4) | (4.2) |
| | Feeling of need | | | | |
| | Very | Moderately | Neither | Not very | Not at all |
| Male (n=26) | | | | | |
| Number | 23 | 2 | 1 | 0 | 0 |
| (Rate, %) | (88.5) | (7.7) | (3.8) | (0.0) | (0.0) |
| Female (n=92) | | | | | |
| Number | 62 | 23 | 5 | 1 | 1 |
| (Rate, %) | (67.4) | (25.0) | (85.4) | (81.1) | (81.1) |
| Total (n=118) | | | | | |
| Number | 85 | 25 | 6 | 1 | 1 |
| (Rate, %) | (72.0) | (21.2) | (5.1) | (0.8) | (0.8) |

Table 4. Frequency of exercise or sports activities and whether or not subjects had any concerns about their health condition (data are shown in %)

| | Do you have any current concerns about your health condition? | | |
|--|---|-----------|---------------|
| | Yes (n=76) | No (n=42) | Total (n=118) |
| Frequency of exercise or sports activities | | | |
| Everyday | 5 (6.6) | 0 (0.0) | 5 (4.2) |
| 5–6 times per week | 1 (1.3) | 1 (0.8) | 2 (1.7) |
| 3–4 times per week | 8 (10.5) | 0 (0.0) | 8 (6.8) |
| 2 times per week | 15 (19.7) | 2 (4.8) | 17 (14.4) |
| 1 time per week | 13 (17.1) | 8 (19.0) | 21 (17.8) |
| 2–3 times per month | 2 (2.6) | 1 (2.4) | 3 (2.5) |
| 1 time per month | 3 (3.9) | 5 (11.9) | 8 (6.8) |
| None | 29 (38.2) | 25 (59.5) | 54 (45.8) |

The results of current opportunities for engaging in exercise or sports activities and opportunities before entering college were “much increased” in 2 participants (1.7%), “moderately increased” in 8 participants (6.8%), “constant” in 34 participants (28.8%), “moderately decreased” in 14 participants (11.9%), and “much decreased” in 60 participants (50.8%) ($\chi^2(4)=94.71, p<0.001$). Of the 74 students who reported a decrease in their physical activity after entering college, 27 said they were “retired from club activities in high-school”, 15 had “no physical education in university”, and 9 were “busy studying”. Also, of the 62 students who engaged in sports club activities in high school, 57 were members of the college sports clubs.

DISCUSSION

Regarding current subjective health condition, most of the undergraduate rehabilitation students felt very or moderately healthy. A previous questionnaire survey involving Japanese college students revealed that 74.2% of college students in humanities courses and 82.5% in medical courses felt subjectively healthy²⁰. These results indicate that college students in medical courses feel subjectively healthier than their peers in other courses because they know more about health. In addition, Nakasone²⁰ reported that Japanese medical college students invested more in their health than non-medical college students. Similarly, in this study, most of the students in undergraduate rehabilitation courses had a high level of subjective health. Rehabilitation students, including physical therapy, occupational therapy, and speech-language therapy students, mainly learn treatment techniques and medical knowledge to improve the physical dysfunction and disability of patients. Usually, most of them tend to be interested in physical health even before entering college. However, this finding may be influenced by the fact that all undergraduate rehabilitation students in this study were first-year college students.

Of those who were aware of their health condition, most were concerned about their eating habits while a few were concerned about their physical activities. Previous surveys in South India and New Zealand showed that medical students were physically active and had a good understanding of the link between physical activity and health^{18, 21}.

It is considered that Japanese undergraduate rehabilitation students tend to lack the motivation for physical activities. On the other hand, most of the undergraduate rehabilitation students selected “very much” and “moderately much” options for the motivation to exercise. Moreover, they felt it was important to exercise. Some students who did not exercise were busy with school, although they had a high level of motivation to engage in and ascribed much importance to exercises or sports activities.

Physical education is a compulsory subject in elementary, junior high, and high school; however, most colleges in Japan do not have it as a compulsory subject. The results of the questionnaire in this research showed that more than 60% of all students currently felt a reduction in their physical activities compared to the level of activity before they entered college. In this research, 15 students stated “no physical education in university” as the reason, indicating that most of the students did not engage in physical activity because the opportunities for engaging in exercise had reduced after they entered college. Furthermore, 27 students in this research cited the option of “retired from club activities in high school” as the reason for no physical activity. In addition, half of all participants currently do not belong to any sports club. Regarding the reduction in physical activity habit among undergraduate rehabilitation students, the reasons may be that they are reluctant to actively be in an optimal environment that supports physical activities, despite having a high level of motivation. The change in the purpose of physical activity between high school and college may be one of the reasons for the reduction in physical activity. The main purpose of physical activity in high school is to get a credit for physical education as a compulsory subject, while in college, the purpose is mainly related to beauty and weight. The purpose of engaging in physical activities in college depends on a student’s motivation, as compared to in high school, where exercise is more of a school requirement. Therefore, the undergraduate rehabilitation students who are currently not engaging in physical activities must be encouraged to participate actively in exercises or sports activities for a specific purpose such as health improvement.

A recent national survey of the Japan Sports Agency of the Ministry of Education, Culture, Sports, Science, and Technology reported that the rate of engagement in sports activities at least once per week was 50.1% in 20–29 year-olds²². In this study, only 44.9% engaged in physical activity at least once per week. Furthermore, 12.7% engaged in physical activity at least three times per week. The Second Sport Basic Plan, which was formulated in 2017 by the Japan Sports Agency of the Ministry of Education, Culture, Sports, Science, and Technology, is aiming to achieve a rate of engagement in sports activities of 65% and 30% for once and thrice per week, respectively, among Japanese adults²³. Some of the objectives of encouraging regular exercise are to extend the healthy life expectancy, prevent lifestyle-related diseases, and reduce the burden on healthcare caused by such diseases²³.

The undergraduate rehabilitation students had poor physical activity levels and they should be advised to review their current physical activities. Awareness of the health benefits of physical activity will not only help students prevent lifestyle-related diseases but also help them educate and instruct their patients. The results of this research should be used to improve the health awareness and physical activity habits among rehabilitation students. It is important to investigate the changes in health awareness and exercise habits during and after college life in future research.

Conflict of interest

The authors declare that there is no conflict of interests regarding the publication of this article.

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