Assessment of daily step differences between youth and elders

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Abstract　[Purpose] The main objective of this study was to assess daily steps differences between youth and elders. [Method] Thirty-five youth and fifteen elders participated in this study. The following variables were assessed: age, body mass index, frequency of exercise, and pedometer data. The participants were asked to wear pedometer (Tanita PD-646) for their waist for 7 days and recorded daily steps. We assessed of daily steps differences between youth and elders. [Results] The daily steps average of youth was 5,267 steps, and that of elders was 6,711 steps. The result showed significantly fewer daily steps in youth than elders. There was no significant correlation between the weekly steps and age, BMI, frequency of moderate exercise in both youth and elders.

Keywords：Pedometer, Youth, Elder

Introduction

Physical activity is cited as a lifestyle-related factor that has the strongest effect on the length of healthy life expectancy of elders and shorten the period of care required before death [1]. The active walking exercise in daily life is recommended for elders as an initial preventive activity, and the guidelines recommended that 7,000 steps per day for male elders and 6,000 steps for female elders to maintain their health [2]. On the other hand, the previous survey conducted in 1994 suggested the participation rate in club activities has been steadily declining, and in particular, the number of people who have left the athletic club has continued to decline [3]. As a recent feature, more students seems like to be thinking as self-centered way. They think that might be restraint if they join club activities. Most of the reasons are that it is difficult to practice without time. Athletic club activities in college life play an important role for not only improving competitive physical strength and physical strength, but also in enhancing the ability to adapt to group life, sociality and humanity, and enriching human relationships [4]. Although the tendency of university students with lack of exercise has been becoming serious,, the actual number of students' daily steps and the factors which affect daily steps were not well known yet.

In the present study, we compared predictors for daily steps between youth and elders.

Materials Methods

Participants

Thirty-five youth (13 males, 22 females; 20.1±0.3 years old) and fifteen elders (5 males, 10 females; 734± 5.0 years old) participated in this study. Collected data included the following characteristics: gender, age, body mass index (BMI) (Table 1). BMI was calculated by dividing the weight in kilogram by height in meter squared.

Table 1 Demographic characteristics of participants

Characteristics	Youth (n=35)	Elder (n=15)
Gender		
Male	13 (37)	5 (33)
Female	22 (63)	10 (67)
Age (year)	20.1±0.3	734±5.0
BMI (kg/m^2)	221±30	224±29

Variables are presented as the mean ± standard deviation (SD) and categorical data are presented as numbers (percentages).

Methods

The youth data was collected from student belonged Nishikyushu University, Japan. All participants were explained and signed informed consent forms. Of the eligible 41 youth students (35 youth 85%) agreed to participate in this study. The elder data was collected from students joined Nishikyushu Elder University, Japan. Of the eligible 21 elder students (15 elders 71%) agreed to participate in this study.

Participants were shown how to wear a pedometer as the instruction. The participants were instructed to clip the pedometer to their waistline above their right knee each morning, and to wear the pedometer all day while doing usual activities, then record the daily steps in the night before going to bed. The Tanita pedometer PD-646 (Tanita Corporation, Japan) was usedin the present study.and recorded the number of steps taken each day for 7 days. Additionally, the participants were asked if they exercised twice a week.

.*Statistical analysis*.

The paired analyses were carried out using unpaired Student's t-tests. Correlations were analyzed by Pearson's correlation coefficient for continuous variables. The statistical software, IBM SPSS Statistics version 26.0 (SPSS Inc., Chicago, IL, USA) was used for statistical analysis. The level of significance was set as P< 0.05*.

Results

Table 1 provides an overview of the participants

The daily steps average of youth was 5,267 steps, and that of elders was 6,711 steps. The result showed significantly fewer daily steps in youth than elders (P <0.05). However, there was no significant correlation between the weekly steps and age, BMI, frequency of moderate exercise in both youth and elders (Table 2).

Discussion

Pedometer are considered analogous to computer hardware; without the matching software (e.g. expected values, etc.) they are of limited utility [5]. Ex-

Table 2 Comparsion of Pedometer Data for between Youth and Elder

Pedometer Data	Youth (n = 35)	Elder (n = 15)	p Value
Weekday Mean Steps	4724. 8 ± 24730	6827. 1 ± 4100. 7	0. 02
Weekend Mean Steps	62318 ± 51538	64227 ± 51328	0. 90

Variables are presented as the mean ± standard deviation (SD).P<0.05* were statistically significant.

Table 3 Correlation coefficients between Pedometer Data and variables for Youth and Elder

	7 day Mean Steps			
	Youth		Elder	
variables		p Value		p Value
Age (year)	0.28	0.13	−0.10	0.73
BMI (kg/m^2)	−0.12	0.53	−0.11	0.70
Frequency moderate Exercise	0.19	0.31	0.36	0.20

pected values are normative or benchmark values necessary for interpreting change and comparison purposes [6]. Tudor et al. compiled expected values of free-living pedometer-determined physical activity in adults [7]. Several studies reported that healthy elder accumulated 6,000-8,500 daily steps. Since then, pedometer has burgeoned as scholarly and applied practice and the related scientific literature is again ripe for a comparative examination [8]. The average of daily steps in youth and elders in this study was generally consistent with previous studies of pedometer use [9] [10].

The average of weekly steps of youth was fewer than 5,000 which was similar to other findings [9]. A previous study suggested that activity levels can be assumed by daily steps; Fewer than 5,000 daily stepsindicating"sedentary lifestyle," 5,000 to 7,499 daily steps indicating "low active," 7,500 to 9,999 daily steps indicating "somewhat active," 10,000-11499 daily stepsindicating "active" [11]. Based on these categorizations, youth in the present study fell into the range of sedentary lefestyle.

Although pedometer totals were self-reported, the consistency of the results was reported by previous studies, as users generally wear the devices as directed and report steps accurately [11].

The average of daily steps in youth and elder was consistent as previous studies [2] [9]. Based on these studies, pedometers can be used as an easy-to-use and cost-effective objective measure of physical activity in both youth and elders.

Future research is needed to investigate reactivity of pedometers more fully, and to examine differences in variance in step counts especially in youth, and study prospective predictors of step counts in different populations.

Acknowledgments

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

Author Contributions

HM conceptualized the study design and protocol, collected the data, carried out the analysis, interpretation of data, and drafted the manuscript. MU, YK, YY, SN, SS collected the data. YK carried out the analysis and interpretation of data.MM and HS drafted the manuscript. All authors have critically reviewed, revised and approved the manuscript.

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