Dicle Üniversitesi Sosyal Bilimler Enstitüsü Dergisi

DÜSBED

Cilt / Volume: Şubat 2022, Sayı / Issue: 29, Sayfalar / Pages:144-159

Araştırma Makalesi / Research Article

Received / Alınma: 29.11.2021 Accepted / Kabul: 12.02.2022

INVESTIGATION OF DAILY STEP COUNTS WITH PEDOMETER PROGRAMS INSTALLED ON THE SMART MOBILE PHONES OF HEALTHY YOUNG ADULTS*

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Abstract

It is aimed to determine the average daily step counts of young adults with the pedometer programs installed on the smart mobile phones and to investigate the relationship between the step counts and various variables. The data of a total of 182 the participants, 52 (28.6%) male and 130 (71.4%) female, were evaluated. Participants were provided to install SHealth, iPhone Health or Pedometer pedometer program on their phones. The data were collected in May 2018 with the data form prepared by the researcher. Since the data did not show a normal distribution, analysis was performed with the Mann-Whitney U test for comparisons between independent groups and the Chi-Square test for cross-table comparisons. As a result of the research; The mean daily step counts were recorded as 7598 (Sd:±3092) for all participants, 9445 (Sd:±2909) for men and 6860 (Sd:±2853) for women. Men's step counts was statistically higher than women's ($p<.001$). It was determined that 9.6% of male and 41.5% of female had an average daily step count below 6000. 38.5% of males and 13.1% of females had at least 10000 steps recommended by the World Health Organization. The most active period of the day was determined as 12.00-17.59 hours with 61.3% of the students. No relationship was found between the frequency of follow-up the pedometer program and the average daily step count ($p>.05$). Due to the widespread use of smart mobile phones, objective data about the physical activity levels of groups or individuals can be obtained by using the installed pedometer programs.

Keywords: Physical Activity, Smart Cell Phone, Step Count, Young Adult.

*This study is the extended version of the paper presented at the 17th International Sports Sciences Congress held in Antalya between 13-16 November 2019.

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SAĞLIKLI GENÇ YETİŞKİNLERİN AKILLI MOBİL TELEFONLARINDA YÜKLÜ ADIMSAYAR PROGRAMLARI İLE GÜNLÜK ADIM SAYILARININ İNCELENMESİ

Öz

Akıllı mobil telefonlarda yüklü adımsayar programları ile genç yetişkin ortalama günlük adım sayılarının belirlenmesi ve adım sayısının çeşitli değişkenlerle ilişkisinin araştırılması amaçlandı. Katılımcıların 52'si (%28.6) erkek ve 130'u (%71.4) kadın olmak üzere toplam 182 kişinin verisi değerlendirildi. Katılımcıların telefonlarına SHealth, IPhone Sağlık veya Pedometre adımsayar programı yüklemeleri sağlandı. Araştırmacılar tarafından hazırlanan veri formu ile veriler Mayıs 2018'de toplandı. Veriler normal dağılım göstermediğinden bağımsız gruplar arası karşılaştırmalarda Mann-Whitney U testi ve çapraz tablo karşılaştırmalarında Chi-Square testi ile analiz yapıldı. Araştırma sonucunda; ortalama günlük adım sayıları, tüm katılımcılarda 7598 (Sd:±3092), erkeklerde 9445 (Sd:±2909) ve kadınlarda 6860 (Sd:±2853) olarak kaydedildi. Erkeklerin adım sayısı istatistiksel olarak kadınlardan fazla bulundu ($p<.01$). Erkeklerin %9,6'sı ve kadınların %41,5'i ortalama günlük adım sayısı 6000'in altında olduğu tespit edildi. Erkeklerin %38,5'i ve kadınların %13,1' ise Dünya Sağlık Örgütünün önerdiği günlük en az 10000 adım sayısına sahip olduğu görüldü. Öğrencilerin en aktif oldukları gün içi saat periyodu %61,3 ile 12.00-17.59 saat aralığı olarak tespit edildi. Adımsayar programını takip sıklığı ile ortalama günlük adım sayısı arasında herhangi bir ilişki bulunamadı ($p>.05$). Yaygınlaşan akıllı mobil telefon kullanımı dolayısıyla yüklü adımsayar programları ile bireylerin veya grupların fiziksel aktivite düzeyleri hakkında objektif veriler elde edilebilir.

Anahtar Kelime: Adım Sayısı, Akıllı Cep Telefonu, Fiziksel Aktivite, Genç Yetişkin.

INTRODUCTION

It is known that physical activity plays an important role in protecting against obesity, metabolic diseases and chronic diseases (Baker et al., 2015; Pruimboom et al., 2015). With this, physical inactivity is quite common and emerges as the fourth largest risk factor affecting 6% of the global death rate (Kirwan et al., 2012, p. 55). Accurate measurement of physical activity is important to identify and monitor physical activity recommendations and to implement public health interventions (Bort-Roig et al., 2014, p. 671). It is often difficult to collect epidemiological data with limited reliable means. Collecting data with smart mobile phones may be more useful than collecting data using pen and paper. With the development of technologies, the usage area of communication tools in daily life has expanded and usage practices have become widespread. One of them is smart mobile phones. Smartphones, which measure many features of people in daily life such as walking, stopping, running, climbing stairs, managed to enter our lives in a short time. With the rapid development of wearable or portable mobile technological devices such as smart phones and smart watches, it is possible to obtain many different data from the environment of the individual by making use of the

sensors integrated into these devices. In addition to the step count of the individual, the calories burned and the heart rate during exercise activities can also be recorded (Klasnja & Pratt, 2012, p. 184; Leong & Wong, 2017, p. 14). While taking advantage to measure and encourage physical activity from smart mobile phones, the existence of programs that show the number of steps on these devices shows that the concept of "step count" is popular. While walking is accepted can be an easily practiced as physical activity by everyone, the number of steps is also important in terms of showing the level of physical activity (Can, 2019, p. 71). Many of the popular health and pedometer apps have been developed for use by the general public and are aimed at promoting health and wellness as well as disease prevention (Fitzgerald & McClelland, 2017, p. 373). There are more than 250 pedometer applications for different platforms (Leong & Wong, 2017, p. 14). These apps can be downloaded for free or for a fee to measure steps, distance and track physical activity. Mobile phones with pedometer apps are useful as people often carry these devices with them throughout the day.

In many research studies, it has been reported that pedometers installed on smart mobile phones perform accurate step count at different walking speeds, different walking distances and different phone carrying methods (Funk et al., 2018, p. 22; Thomson et al., 2019, p. 372). Thomson et al. (2019) evaluated the validity of a smartphone for counting steps and estimating energy expenditure during physical activity in a study investigating the accuracy of a smartphone for measuring physical activity in the laboratory and in free daily life. The mobile phone estimated the number of manually counted 700 steps as 703 and only 3 steps were wrong. At the end of the study, they reported that the smartphone accurately measured the step count during a controlled laboratory walking trial. Yıldız & Kara (2020) investigated how close to the truth the user's step counts were estimated by the S Health pedometer program of widely used (personal) different brands of smart mobile phones, and whether these counts changed with three different transportation methods. They stated that the step count did not differ between smart mobile phones of different brands. They found the mean step count as 103.80±8.02 with the S Health pedometer program. They emphasized that this average value obtained is higher than the real number by 3.8%, and that this situation can provide us with an idea about the average daily step count of individuals and groups.

In this context, our aim is to determine the average daily step count of healthy young adult university students with the pedometer programs installed on smart mobile phones and to investigate the relationship between the step count and various variables. Despite the

widespread use of smart mobile phones and pedometer applications, few studies have been conducted on the step count and attitudes of the groups towards the use of pedometers. This study is also important in terms of obtaining the step count data of individuals and groups, providing the opportunity to compare with the worldwide step count data recorded in smartphone applications and similar researches to be made from now on.

1. MATERİAL AND METHOD

1.1. Participants

Randomly selected volunteer participants who were studying at Batman University Health Services Vocational School in March 2018 and who had mobile phones of 2014 and later models were included in the study. Excluding the erroneous or incomplete data of 26 participants, a total of 182 participants, 52 (28.6%) men and 130 (71.4%) women. The total number of students studying at the Vocational School of Health Services in the 2017-2018 academic year is 1286, and the number of female students is higher than the number of male students. The number of volunteers included in the study corresponds to 14.2% of the total number of students who are the study universe. 4 weeks before data collection, participants were asked to install one of the following three pedometer software applications on their smart mobile phones and to keep the program active. One of these programs was already pre-installed on the smart mobile phones of 45 (24.7%) students. It was stated to the participants that they should carry their phones with them during their daily activities outside the home. Participants who forgot to take their phone with them while leaving the house and whose phones were turned off due to other reasons such as phone malfunction were excluded from the study. No suggestions were made to the participants about the pedometer program for 4 weeks. During the research process, research ethics approval was obtained with the decision of Batman University Ethics Committee numbered 2018/2-3.

1.2. Data Collecting

A personal information form and case report were created by the researcher and the collected data were processed into this form. The step count data of the participants were obtained from the pedometer programs installed on their smart mobile phones. Only the average daily step counts from 12 to 18 March 2018 were recorded for evaluation 4 weeks after the study. Readings for subjects' height were taken to the nearest 0.1 cm using a stadiometer and later converted to meter. Weight defined as the force the matter in the body exerts in a standard gravitational field was taken using weighing scales. The subjects were asked to stand on the

centre of the scale without support, with their arms loosely by their sides, head facing forward and with their weight distributed evenly on both feet and reading to the nearest 0.1 kg was recorded for each subject. Body mass index (BMI) is defined as a person's weight in kilograms divided by the square of the person's height in metres (kg/m^2). The following criteria was used for defining weight status using BMI: BMI <18.5 kg/m^2–Underweight, BMI 18.5- 24.9 kg/m^2 Normal weight, BMI 25.0-29.9 kg/m^2 Overweight and BMI ≥ 30 kg/m^2 Obese (WHO, 2004).

1.3. Pedometer Programs İnstalled on Participants' Mobile Phones

Participants were provided to install the updated iHealth program on their iPhone mobile phones (the updated version iOS 11.2.5, for iPhone 5s and later, Jan 23, 2018). Samsung and other mobile phone owners were provided to install the updated S Health program on their phones (the updated version is 5.16.0.043, Android Samsung Electronics Co., Ltd.). Participants who could not install S Health for various reasons were provided to install the 'Pedometer' program to their phones (the updated version is 1.0.49, Leap Fitness Group, Hong Kong.). It was detected that the pedometer programs installed on the phones were actively working. According to the brand distribution of the 2014 and above smart mobile phones owned by the students; Samsung 45.6% (n:83), Iphone 15.9% (n:29), LG 15.9% (n:29), HTC 11.5% (n:21), Huawei 2.7% (n:5) and other brands had 8.2% (n:15).

1.3.1. Samsung Health App (S Health)

S Health program by Samsung Electronics CO.LTD was launched in 2013 with the Samsung S4 model. However, S Health service can be used in all Galaxy models released after August 2016. Supported Galaxy and non-Galaxy devices require Android ™ 4.4 (KitKat) or higher. While running or walking, S Health automatically detects movements and follows them with devices (Samsung, 2021).

S Health app can be downloaded from the Galaxy Apps, Google Play or Apple Apps store. The number of downloads of S Health program on GooglePlay has exceeded 1 billion (Google Play, 2021; Apple Apps, 2021).

1.3.2. Apple Health App (Health)

There are four categories highlighted in apple Health app: Activity, Sleep, Awareness, and Nutrition. In addition to automatically counting your steps, the Health app also calculates the

walking and running distance you have covered. Health app available on iPhone 4s or later and iPod touch (Apple, 2021).

1.3.3. Pedometer App (Pedometer)

Launched by Leap Fitness Group (Hong Kong), this pedometer program uses the built-in sensor to count steps. It also monitors calories burned, walking distance and time, etc. (Leap, 2021).

1.4. Data analysis

All data analysis was done using the IBM SPSS® V24.0 software for windows (IBM Corporation, Armonk, New York, United States). The data did not show normal distribution. (Kolmogorov-Simirnov Statistic: .074 df: 182 Sig.: .000). Comparisons of the median values of the independent groups were made with the Mann-Whitney U test. Analysis was performed with the Chi-Square test in cross tables. Spearman's correlation coefficient was used to determine the relationship between continuous variables. Statistical significance level was accepted as $p<.05$ in the analyzes made in the study.

2. FINDINGS

The data of a total of 182 students, 52 (28.6%) male and 130 (71.4%) female, were evaluated.

According to age groups; 93.4% of the students are 18-24 years old and 6.6% of them are 25-30 years old.

Table 1. Averages of Students' Height, Body Weight and Average Daily Step Count by Gender

Groups	Male Mean± Sd	Female Mean ± Sd	Total Mean ± Sd
N	52	130	182
Length (m)	1.75±.0	1.61±.1	1.65±.1
Body weight (kg)	71.2±11.0	56.6±8.1	60.8±11.1
BMI (kg/m2)	23.3±3.1	21.9±2.9	22.3±3.0
Average step count per day	9445±2909	6860±2853	7598±3092

As shown in Table 1, the mean daily step counts of male students was recorded as 9445±2909 and 6860±2853 for females.

Table 2. Comparison of the Daily Average Step Counts of the Students According to Their Gender

Groups	N	Mean Rank	Sum of Ranks	U	Z	p

Male	52	125.47	6524.50			
Female	130	77.91	10128.50	1613.500	-5,502	.000
Total	182					

According to Table 2, the fact that the average daily step counts for males was higher than the step counts for females was founded to be statistically significant in the Mann-Whitney U test analysis (p<.001).

Table 3. Comparison of the Students by Gender and Phone Carrying Method

Groups		In trouser pocket	In shoulder bag	In hand	In jacket pocket etc.	Total
Male	N	50	0	1	1	52
	%	96.2%	0.0%	1.9%	1.9%	100%
Female	N	30	44	54	2	130
	%	23.1%	33.8%	41.5%	1.5%	100%
Total	N	80	44	55	3	182
	%	44.0%	24.2%	30.2%	1.6%	100%

Chi-Square test was not applied.

Table 3 shows the distribution of the students according to the way they carry their smart mobile phone devices. Accordingly; 44.0% is in trouser pocket, 30.2% is in hand, 24.2% is in shoulder bag and 1.6% is jacket pocket and other carrying methods.

Table 4. Distribution of Students According to Gender and BMI

Groups		Underweight	Normal	Overweight	Obese	Total
Male	N	2	33	16	1	52
	%	3.8%	63.5%	30.8%	1.9%	100%
Female	n	6	107	16	1	130
	%	4.6%	82.3%	12.3%	0.8%	100%
Total	n	8	140	32	2	182
	%	4.4%	76.9%	17.6%	1.1%	100%

When the variables are combined as underweight + normal and overweight + obese; Pearson Chi-Square Value: 8.161 df: 1 Asymptotic Significance (2-sided): .004

When the BMI distributions of the students according to their genders are analyzed in Table 4, there is a statistical difference between the genders. Accordingly, while the ratio of underweight or normal males was 67.3%, this ratio was higher in females as 86.9% (p<.05). In addition, while the rate of overweight or obesity in males was 32.7%, this rate was lower in fameles as 13.1% (p<.05).

Table 5. Comparison of Students According to BMI Groups and Average Daily Step Groups

Groups		<6000 steps	6000-9999 steps	10000 or more steps	Total
Underweight + Normal	N	54	69	25	148
	%	36.5%	46.6%	16.9%	100%

Overweight + Obese	N	5	17	12	34
	%	14.7%	50.0%	35.3%	100%
Total	N	59	86	37	182
	%	32.4%	47.3%	20.3%	100%

Pearson Chi-Square Value: 8.718 df: 2 Asymptotic Significance (2-sided): .013

When Table 5 is examined, It is seen that overweight or obese students (35.3%) are more in the group of 10000 or more daily steps than underweight or normal weight students (16.9%). It is seen that underweight or normal weight students (36.5%) are more in the group with less than 6000 daily steps than overweight or obese students (14.7%) ($p<.05$). Contrary to expectations, it can be stated that the daily average number of steps of 10000 and above does not decrease the BMI value.

Table 6. Comparison of Students by Gender and Frequency of Follow-Up the Pedometer Program

Groups		Everyday	A few times per week	A few times per month or never	Total
Male	n	30	13	9	52
	%	57.7%	25.0%	17.3%	100%
Female	n	88	25	17	130
	%	67.7%	19.2%	13.1%	100%
Total	n	118	38	26	182
	%	64.8%	20.9%	14.3%	100%

Pearson Chi-Square Value: 1.630 df: 2 Asymptotic Significance (2-sided): .443

As shown in Table 6, 64.8% of the students followed the pedometer program daily, 20.9% followed a few times per week, and 14.3% followed a few times per month or never or never. The frequency of following the pedometer program was not statistically different between male and female students ($p>.05$).

Table 7. Comparison of the Students by Their Gender and the Average Daily Step Counts on Weekdays.

Groups		<6000 steps	6000-9999 steps	10000 or more steps	Total
Male	N	3	28	21	52
	%	5.8%	53.8%	40.4%	100%
Female	N	41	67	22	130
	%	31.5%	51.5%	16.9%	100%
Total	N	44	95	43	182
	%	24.2%	52.2%	23.6%	100%

Pearson Chi-Square Value: 18.894 df:2 Asymptotic Significance (2-sided): .000

As shown in Table 7, the rate of males (40.4%) with an average daily step count of 10000 and above on weekdays was found to be higher than the rate of females (16.9%) ($p<.001$). A significant portion of women (31.5%) have an average of less than 6000 steps per day.

Table 8. Comparison of Students According to Their Gender and Average Daily Steps at the Weekend

Groups		<6000 steps	6000-9999 steps	10000 or more steps	Total
Male	N	15	21	16	52
	%	28.8%	40.4%	30.8%	100%
Female	N	83	33	14	130
	%	63.8%	25.4%	10.8%	100%
Total	N	98	54	30	182
	%	53.8%	29.7%	16.5%	100%

Pearson Chi-Square Value: 20.280 df: 2 Asymptotic Significance (2-sided): .000

As shown in Table 8, the rate of males (30.8%) with an average daily step count of 10000 or more on the weekend was found to be higher than the rate of females (10.8%) ($p<.001$). A significant portion of females (63.8%) have an average of less than 6000 steps per day. When Tables 6 and 7 are examined together, the rate of students with an average daily step count of 10000 and above is 16.5% on weekends, while this rate increases to 23.6% during the week.

Table 9. Comparison of the Students According to Their Gender and the Average Daily Step Counts Per Week

Groups		<6000 steps	6000-9999 steps	10000 or more steps	Total
Male	N	5	27	20	52
	%	9.6%	51.9%	38.5%	100%
Female	N	54	59	17	130
	%	41.5%	45.4%	13.1%	100%
Total	N	59	86	37	182
	%	32.4%	47.3%	20.3%	100%

Pearson Chi-Square Value: 23.785 df: 2 Asymptotic Significance (2-sided): .000

As shown in Table 9, the rate of men (38.5%) with an average daily step count of 10000 and above per week was found to be higher than the rate of women (3.1%) ($p<.001$). A significant portion of women (41.5%) have an average of less than 6000 steps per day.

Table 10. Comparison of the Students According to Their Gender and the Time of Day They Take the Most Steps

Groups		$00.^{00}$-$05.^{59}$	$06.^{00}$-$11.^{59}$	$12.^{00}$-$17.^{59}$	18.00-$^{23}.^{59}$	Total
Male	N	5	40	217	102	364
	%	1.4%	11.0%	59.6%	28.0%	100%
Female	N	20	118	564	208	910
	%	2.2%	13.0%	62.0%	22.9%	100%
Total	N	25	158	781	310	1274*
	%	2.0%	12.4%	61.3%	24.3%	100%

*: The total number of preferences for the time period with the most steps taken on each day of the the week (182x7). Pearson Chi-Square Value: 5.137 df: 3 Asymptotic Significance (2-sided): .162

When Table 10 is examined, it was seen that there was no significant difference between the genders according to the time period of the day in which the students took the most steps (p>.05). The time period in which both men and women take the most steps is $12.^{00}$-$17.^{59}$. Evening hours ($18.^{00}$-$23.^{59}$) as the most active time period were not different between males and females (p>.05). It can be said that female students also actively participate in life outside the home, just like men, during night hours.

Table 11. The Relationship Between the Frequency of Students' Pedometer Follow-Up and the Average Daily Step Counts.

Continuous Variables		Frequency of follow-up the pedometer
Average daily step count	rho	-.049
	p	.510
	N	182

According to Table 11, the relationship between the frequency of pedometer follow-up and the average daily step count in students was not found statistically significant (p>.05).

DISCUSSIONS

It is known that the use of pedometer programs in smart mobile phones, which have become widespread with the development of technology, has increased. These widely used applications provide invaluable data such as measuring the step count, physical activity time during stepping, circulation distance (Leong & Wong, 2017, p. 14; Samsung, 2021). According to the statistical data included in the S Health program, the average daily step count of all men using SHealth worldwide was 5423 from 12 to 18 March 2018, and the average daily step count of all women was 4763.

In this study, some statistical analyzes were made by sharing the female and male pedometer data separately. According to these results, the mean daily step count was found to be 9445 (Sd: ±2909) for men and 6860 (Sd: ±2853) for women. It can be said that both male and female students have higher step counts than the overall average of people using S Health worldwide.

Inoue et al. (2011) found that men are more active than women in all age groups in their study comparing the daily step counts in men and women according to age groups. In addition, they stated that the 20-29 age group reached the highest daily step count, while the 60-69 age group reached the minimum step count. In a study conducted with 193 teachers, examining the pedometer program data of 2019 on their smart mobile phones, the average daily step

counts in a year was 16% higher for male teachers ($6728\pm2408_{steps/day}$) than female teachers ($5793\pm2435_{steps/day}$) (Savdi & Yıldız, 2020, p. 45).

In this study, the mean daily step count of men ($9445\pm2909_{steps/day}$) was found to be higher than that of women ($6860\pm2853_{steps/day}$), which is consistent with the literature. This difference (37%) may be due to the greater involvement of men in active social areas and business life.

As walking was seen as the most easily applicable physical activity, step counts of the people and the adequacy of the step counts have been a matter of curiosity. Studies show that most adults take 4000-6000 steps in their regular daily activities, and the number of additional steps to be gained from other moderate-vigorous activities should be between 3000-6000. This means about 10000 steps in total (Choi et al., 2007, p. 141). Some studies have also suggested that the step counts per day for healthy adults ranges from 6000 to 7000 steps. However, this falls short of the recommended 10,000-day step guideline (Tudor-Locke et al., 2001, p. 91). According to Statista (2017) data, Hong Kong ranks first with 6880 steps in average daily steps, while China ranks second with 6189 steps and Russia ranks third with 5969 steps. Turkey took place above Australia and the United States with 5057 steps.

In this study, although the mean daily step count of men was 9445 (Sd: ±2909) and close to 10000 steps, the proportion of men with an average daily step count of 10000 and above was 38.5% and the rate of women was only 13.1%. A significant portion of women (41.5%) take less than 6000 steps per day on average.

Smith et al. (2015) found in their study on office workers that the average number of steps people take on weekdays is higher than the number of steps taken on weekends. They claimed that the reason for this was that they walked to and from their workplaces on weekdays. Because the hours with the highest number of steps coincided with commuting hours.

According to the findings of this study, male students had more steps than female students during the week and at the weekend. It has been noted that university students are more active on weekdays than on weekends. This may be because of the lack of active participation in the university or the social life of the city at the weekend. Solution proposals can be developed by relevant institutions and organizations to ensure that students are more physically active on the weekend.

While being physically active is important in preventing weight gain, it is an important paradox that physical activity alone does not cause weight loss. Physical activity is just one

factor in the complicated picture of weight management. Diet, genetics, and behavioral factors all have an impact on body composition. But even without a reduction in weight, physical activity provides metabolic adaptations that benefit health (US Health, 2008). Previous studies have shown that overweight and obese people are less physically active than their normal-weight peers (Bar-Or, 2000, p. 51). Savdi & Yıldız (2020) noted in their study on teachers that there is no relationship between the average daily step counts per year and BMI values.

In this study, it was found that overweight/obese students had a higher step counts than normal/underweight students. It is thought that the reason for this is that overweight people try to be more active than others in order to achieve weight loss. One week of step count data may not be sufficient to show a weight loss relationship. In addition, the fact that most of the students had normal BMI values may have caused these students not to need more walking action.

Brooke et al. (2014) examined time-specific differences in objectively measured physical activity in children aged 4-18 years and compared the difference between time periods of total physical activity and moderate and vigorous exercise. Ultimately, there were significant differences in both total physical activity and moderate-to-vigorous exercise of the children throughout the school day. In conclusion, there were significant differences in both total physical activity and moderate-to-vigorous exercise of children throughout school.

In this study, it was concluded that most of the university students were more active during school hours. In addition, there was no difference between males and females according to the preference rate of the hour period in which they were most active during the day. The time period in which males and females take the most steps is 12:00-17.59. There was no difference between males and females according to the rate of being most active in the evening (18.00-23.59). It can be said that female students participate actively in social life outside the home, just like men, at night.

The sharpest decline in Physical Activity occurs during adolescence and early adulthood (Wallace et al., 2000, p. 494). The World Health Organization (WHO) guidelines suggests that inactive adults will gain additional health benefits with only minor behavioral changes, such as a transition from lack of activity to some activity level. In a 5-week follow-up study conducted in young adults, it was emphasized that simply using the pedometer application or participating in the study may be sufficient to increase the number of steps or affect motivation (Walsh et al., 2016, p. 109). However, an 8-week study found that the control

group showed an initial increase in step count and then decreased back to baseline (Glynn et al., 2014).

Normand et al. (2008) stated that the attraction of pedometers to monitor physical activity objectively stems from their ability to make an easily understood measurement during walking and running. They reported that Pedometers provide behavioral feedback and are an important tool for motivation. In the study conducted by Savdi & Yıldız (2020) with 193 teachers, they examined the data of one-year pedometer program on teachers' smartphones and found a moderately positive relationship between the frequency of pedometer follow-up pedometer program.

In this study, among young adult students, 64.8% followed the pedometer program daily, 20.9% followed it a few times per week, and 14.3% followed it a few times per month or never. The frequency of following the pedometer program by male and female students was not statistically different. No relationship was found between the frequency of following the pedometer program by young adult students and the average daily step counts. In this study, the relationship between the use of a pedometer (self-monitoring) and the step counts in a natural process was a matter of curiosity, as motivation processes such as suggestion, advice, and suggestion were not used. However, it is thought that the one-week step count data of the students is insufficient to show this relationship.

CONCLUSION

All men worldwide using S Health had an average daily step count of 5423 and an average daily step count of all women from 12 to 18 March 2018 was 4763.

In this study, the average daily step count was found to be 9445 in young adult males and 6860 in females.

The proportion of male students with an average daily step count of 10000 or more was 38.5%, and the ratio of female students was only 13.1%.

No correlation was found between mean daily steps and BMI values in young adults.

Considering the school education during the weekdays, it can be said that the students lead a more passive life physically on the weekends.

The time period in which males and females take the most steps is $12.^{00}$-$17.^{59}$.

No correlation was found between the frequency of follow-up the pedometer program and the average number of daily steps.

The determination of the step counts provides valuable data for the physical activity levels of individuals and groups.

SUGGESTIONS

Average daily step count data in studies should include wider date ranges.

Physical activity recommendations and opportunities should be developed for females whose average step counts is lower than that of young adult males.

Solution suggestions should be developed for students in order to enable them to be more physically active at the weekend.

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