

## Assessing University Students' Physical Activity Levels in Terms of Different Variables

**Mehmet Bulent Asma**<sup>i</sup>  
Van Yüzüncü Yıl University

**Yıldırım Gökhan Gencer**<sup>ii</sup>  
Mersin University

### Abstract

This study aimed at assessing physical activity levels of university students who studied at Van Yüzüncü Yıl University in terms of different variables. 20 students who studied at School of Physical Education and Sports (SPES) (10 female students and 10 male students) and 20 students who studied at Education Faculty (EF) (10 female students and 10 male students) participated in the study voluntarily. The steps took during the day were measured by bio-electric impedance method and data about their nutrition, sleep, residence and internet use have been collected via information form and then this information was evaluated. Whether or not data followed a normal distribution was assessed and Non-Parametric Mann Whitney U Test was used for assessments. According to findings; average number of students' daily steps was  $11063 \pm 2198$  in male students while it was  $10308 \pm 1829$  in female students. There was no significant difference in terms of academic schools where the students attended ( $p > 0.05$ ) whereas there were significant differences in terms of sex variable among male students of SPES and EF as compared to female students in the parameters of BMI, body fat ratio and residence place ( $p < 0.05$ ). Besides, there were also significant differences in the number of weekly steps among students of both schools in terms of doing sports variable ( $p < 0.05$ ). However; no statistically significant differences were found in terms of students' internet use, daily sleep length, transportation to schools and number of weekly total steps ( $p < 0.05$ ). As a result, it was noted that physical activity levels of the female and male students were "active" according to literature criteria and average number of daily steps of those students who regularly did sports was high as expected.

**Key Words:** Physical activity, number of average steps, university students

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<sup>i</sup> **Mehmet Bulent Asma**, Instructor Dr., Van Yüzüncü Yıl University, Physical Education and Sport High School.

**Correspondence:** bulentasma30@hotmail.com

<sup>ii</sup> **Yıldırım Gökhan Gencer**, Instructor Dr., Mersin University, Physical Education and Sport High School.

## INTRODUCTION

Poor physical activity status forced by today's life conditions is also seen among university students, who make up the most dynamic population of society and is regarded as a public health concern across the world (Arabacı et al., 2012; Jackson and Howton, 2008; Yusoff et al., 2018; Yıldırım and Altunsöz, 2016; WHO, 2018; Savcı et al., 2006). The physical activity defined by the energy expenditure of the skeletal muscle contractions above the basal level also covers a wide area ranging from daily living activities such as housework, walking, exercise, sports, dance and leisure activities to various sports activities (Ardıç, 2014; Caspersen et al. 1994; Howley, 2001; Thompson et al. 2010).

World Health Organization (WHO) indicates that physical activity level is poor among more than 80% of world adolescent population (WHO, 2018); which is also true for adult population (Arabacı et al., 2012). It is stated that physical activity level of young people decreases considerably after they enter and graduate from university. Research shows that physical activity level is positively correlated with many physiological and psychological variables ranging from quality of life to motivation (Işık et al., 2014; Demirci et al., 2018; Koçak et al., 2017). However, it is emphasized that 50% of university students do not participate in physical activity at a recommended level (Yusoff et al., 2018; Yıldırım and Altunsöz, 2016, Güler and Türkmen, 2018). Physical inactivity is accepted as one of the most important reasons in the increasing number of obese people. Moreover, obesity and non-infectious diseases like cardiovascular disease, diabetes, some cancers and hypertension are closely correlated. Therefore, promoting active life style in all segments of society is important as a national and international public health recommendation (Physical Activity Guidelines for Turkey; WHO, 2018).

In a study in which 5189 students participated from 17 universities of 7 geographical regions of Türkiye; it was identified that 58.9% of female students and 48% of male students were inactive (WHO, 2017). In another study in which 1000 students participated from 4 universities of Ankara Province; it was found that 30.6% of female students and 31.2% of male students lived sedentarily (Vassigh, 2012). It is recommended that particularly adult individuals should perform moderate intensity physical activity 150 hours a week and do exercises targeting at all muscle groups at least twice or three times a week (Physical Activity Guidelines for Turkey; WHO, 2018).

However, national and international studies point out that with aging, individuals' activity levels decline. Particularly; intensity of daily activities of university students decrease gradually from the time they start university and till the time they graduate (Güngör et al., 2018). It is stated that increasing physical activity during university years will help continue physical activities after graduation and will make important contributions to prevent and to treat non-infectious diseases (Arabacı et al., 2012; Yıldırım and Altunsöz, 2016; Jackson and Howton, 2008).

University students are important, reachable and impressive portion of adult population in our country. Therefore, since their physical activity status should be watched with multidimensional and reliable methods, the current study focused on assessing physical activity levels of female and male university students who studied at SPES and EF in terms of some variables.

## METHOD

### Research Group:

The purposive sampling method was used. The sample of the study consisted of 10 female and 10 male volunteer students studying at Van Yuzuncu Yil University Faculty of Education and 10 female and 10 male volunteer students studying at the School of Physical Education and Sports. In the data collection forms, the variables of staying in dormitory and living in the city were taken into consideration.

**Data collection tools:**

The, Demographic Information Form, was used to figure out the variables such as age, class, gender, income level, place of residence of the research group. In addition to this, students were asked to fill in Information Request Forms in order to explore some of their daily living habits. Students' physical activity status was measured objectively using pedometer. To this end, participants' number of weekly steps was calculated by using YAMAX SW-401 pedometer –which was used in many studies and provided reliable and consistent results- (Schneider et al., 2004; Arabacı et al., 2012).

**Collection of data:**

Students were asked to position pedometer on waistband and waist belts by placing it upper part of their legs, to record number of steps before going to bed and to reset pedometer. Participants' height and weights were measured with SEKA height and weight measuring tool while their body compositions were taken with bio-electrical impedance methods by using Jawon Plus Avis 333 body composition analyzer.

**Analysis of data:**

For the data analyses, SPSS 18 package program was used, data were analyzed to explore whether or not they followed a normal distribution and non-parametric Mann Whitney U test and Spearman correlation test were used for calculations.

**FINDINGS**

Table 1 presented students' measurement results and data obtained from students' information request forms according to sex variable, Table 2 demonstrated results and data according to variable of academic schools and Table 3 demonstrated results and data according to variable of doing sports. Besides and Table 4 assessed correlation between students' data and number of daily steps.

**Table 1. Comparison according to sex variable**

Parameters	N	female X±Sd	N	male X±Sd	Z	P
Age	20	2220±128	20	2295±99	-2075	038*
Height (cm)	20	16020±544	20	17425±706	-4780	000**
Weight (kg)	20	5445±654	20	7074±940	-4748	000**
B.M.I	20	2127±269	20	2324±201	-2801	005**
Body fat ratio	20	2464±509	20	1909±407	-3341	001**
Average number of daily steps	20	1030810±182974	20	1106397±219847	-1014	310
Average number of daily meals	20	295±51	20	310±44	-983	326
Length of daily sleep	20	845±88	20	855±119	-043	966
Length of daily internet use	20	335±108	20	270±138	-1502	133

(\*p<0.05, \*\*p<0.01)

As seen in Table 1, there were statistical differences between participant female and male students in terms of age, height, weight, BMI and body fat ratio parameters (\*p<0.05, \*\*p<0.01). In terms of other variables, no difference was found (p>0.05).

**Table 2. Assessment in terms of academic schools**

Parameters	N	SPES X ±Sd	N	EF X ±Sd	Z	P
Age	20	2285±134	20	223±97	-1469	142
Height (cm)	20	16760±866	20	16685±10	-325	745
Weight (kg)	20	6141±858	20	6378±1393	-311	756
B.M.I	20	2185±238	20	2266±271	-880	379
Body fat ratio	20	2124±568	20	2248±506	-798	425
Average number of daily steps	20	1096925±256797	20	1040282±131095	-108	914
Average number of daily meals	20	295±51	20	31±44	-983	326
Length of daily sleep	20	84±82	20	86±123	-214	831
Length of daily internet use	20	305±99	20	3±152	-028	978

(\*p<0.05, \*\*p<0.01)

As seen in Table 2, when data concerning students were examined according to academic schools, no statistically significant differences were found (p>0.05).

**Table 3. Comparison according to variable of participating in sports**

Parameters	Status	Activity	N	X±Sd	Z	P
Age		Doing sports	20	22.6±1.5	-0.058	.954
		Not doing sports	20	22.55±.82		
Height (cm)		Doing sports	20	168.3±9.01	-0.745	.456
		Not doing sports	20	166.15±9.98		
Weight (kg)		Doing sports	20	63.4±11.48	-0.460	.646
		Not doing sports	20	61.79±11.72		
B.M.I		Doing sports	20	22.24±2.55	-0.014	.989
		Not doing sports	20	22.27±2.61		
Body fat ratio		Doing sports	20	21.15±5.09	-0.771	.441
		Not doing sports	20	22.57±5.63		
Average number of daily steps		Doing sports	20	11486.96±2348.56	-2.218	.027*
		Not doing sports	20	9885.11±1271.11		
Average number of daily meals		Doing sports	20	3.15±.48	-1.651	.099
		Not doing sports	20	2.9±.44		
Length of daily sleep		Doing sports	20	8.3±.97	-0.969	.332
		Not doing sports	20	8.7±1.08		
Length of daily internet use		Doing sports	20	2.7±1.26	-1.864	.062
		Not doing sports	20	3.35±1.22		

(\*p<0.05)

In Table 3, data concerning the students were analyzed according to variable of doing sports and difference in average group scores was important in terms of daily average steps (p<0.05).

**Table 4. Correlation values according to number of daily steps**

Parameters	N	r	P
B.M.I	40	.144	.375
Academic School	40	-.017	.915
Body fat ratio	40	-.041	.801
Transportation Choice at the campus	40	-.085	.602
Average number of daily meals	40	.121	.456
Length of daily sleep	40	-.110	.497
Length of daily internet use	40	-.039	.814
Status of doing sports	40	-.355	.025*
Residence place	40	-.115	.481

(\* p< 0.05)

As seen in Table 4, no significant correlation was found in any of the parameters -except average number of daily steps- according to variable of doing sports  $r=-.355$  ( $p>0.05$ ).

In this study, female and male students' average numbers of daily steps were  $10308 \pm 1829$  step/day and  $11063 \pm 2198.47$  step/day; respectively. It was identified that difference between groups was statistically not significant in terms of number of daily steps ( $p>0.05$ ). Similarly; when data concerning the students were analyzed according to variable of academic schools, it was found that SPES students' average number of daily steps was  $10969.25 \pm 2567.97$  step/day while EF students' average number of daily steps was  $10402 \pm 1310.95$  step/day and it was identified that the difference between SPES students and EF students was statistically not important ( $p>0.05$ ). On the other hand; when the students who did sports and those who did not do sports were compared in terms of daily steps; students' average numbers of daily steps were  $11486.95 \pm 2348.56$  step/day and  $9885.11 \pm 1271.11$  step/day; respectively and the difference was significant on behalf of those who did sports in terms of average number of daily steps ( $p<0.05$ ). When BMI averages were compared in terms of sex variable; female students' average BMI was  $21.27 \pm 2.69$  kg/m<sup>2</sup> while male students' average BMI was  $23.24 \pm 2.01$  kg/m<sup>2</sup> and the difference between female and male students was important ( $p<0.05$ ). Accordingly; it may be argued that female students' average BMI was very close to the ideal value (21 kg/ m<sup>2</sup>) while male students' average BMI was a bit above the ideal value (22 kg/ m<sup>2</sup>) but within normal limits. Body fat ratio was  $24.64\% \pm 5.09$  for female students and  $19.09\% \pm 4.07$  for male students; the difference was significant ( $p<0.05$ ). However, female students' body fat ratio was slightly above the "normal" value. Meanwhile, the difference between the students who did sports and those who did not do sports was found to be insignificant in terms of length of daily internet use ( $p>0.05$ ).

## RESULT

The study of Tudor-Locke et al. (2008) quoted classification used in the study of Tudor-Locke and Basset (2004) and an independent classification made by Hatano. According to this classification; our participant students were "somewhat active" and "active". In the study of Arabacı et al. (2012) in which 1113 male and female university students' physical activity levels were determined using pedometer; average numbers of daily steps of male and female students were  $8652 \pm 3258$  and  $8020 \pm 3117$  step/day; respectively and the difference between the groups was insignificant ( $p<0.05$ ) and male students walked 600 steps more per day. Besides, according to classification of Tudor-Locke and Basset (2004); it was noted that students' physical activity level was poor. Bahrens and Dinger (2005) found that university students' average number of daily steps was  $11473 \pm 2978$  step/day for a week. In a pre-study done by the same researchers in 2003; it was identified that university students' average number of daily steps was  $9932 \pm 2680$  step/day and they were physically active and it was found that there was no difference between female and male students in terms of number of steps for a seven day period. In the study of Yusoff et al. (2018), Malaysian university students' physical activity levels were measured using pedometer and it was identified that average numbers of weekly steps were  $6030 \pm 2993$  in male students and  $3755 \pm 1432$  step/day in female students and male students

walked considerably more steps each day than female students. 66.4% of the participants were classified as sedentary, BMI difference between sexes was not significant but the difference between sexes was important in terms of body fat ratio. It was identified that students were more active at the weekends and there was no difference between sexes in terms of average number of daily steps. 19298 university students from 23 countries participated in the study of Haase et al. and it was found that female students (38%) led a more sedentary life than male students (27%).

The study of Yusoff et al. (2018), in which Malaysian university students' physical activity levels were measured using pedometer, reported that the difference between weight, height and body fat ratio of female and male students was important but the difference between BMI averages was not important. Also, in this study no significant correlation between number of steps and BMI was found. According to Tudor-Locke classification, they found 37% of the students as sedentary (<5000 step/day) and 48% of them as low active (5000-7499 step/day) in terms of physical activity.

In the study of Jackson et al. (2008), it was reported that students averagely walked 7013.11 step/day at week 1, 29% of them walked less than 5000 step/day, 36% of them walked 5000-7499 step/day and 65% of the students were sedentary or low active. In a study done in Turkiye using Physical Activity Survey; it was found that 58.9% of females and 48% of males were inactive (Kafsad, 2014). In the study of Yıldırım et al. (2015) 906 university students were found moderately active. Besides, another study undertaken by Savcı et al. (2006) with 1097 university students through survey method pointed out that only 18% of the students participated in sufficient level of physical activity and male students were more active than female students but there was no significant difference between BMI and physical activity level.

In the study of Haase et al. (2004) physical activity habits of university students (n=19298) from 23 countries were investigated using survey forms and it was found that recommended activity levels of male students from north west Europe and America, central and east Europe and Mediterranean and developing countries were found to be 30%, 32%, 30% and 23%; respectively while recommended activity levels of female students were 22%, 19%, 22% and 13%; respectively.

In light of these studies and according to data obtained in the current study; average number of daily steps of the participant students was "somewhat active" according to classification published by Tudor-Locke and Basset and "active" according to standard published by Hatano (1993) (Tudor-Locke et al., 2008). Being different from studies that were done in our country and abroad using different methods and that found university students' activity level insufficient (Arabacı et al., 2012; Gumus and Isık, 2018; Yusoff et al., 2018; Keating et al., 2005; Kızar et al., 2016) the current study found physical activity level as active. This may have resulted from the fact that half of the participants were SPES students and walking distances between student dormitories, dining halls, classrooms and social activity centers at the campus were long. As a result; it was noted that physical activity levels of the participant female and male students were "active" according to literature classification and average number of daily steps of those students who regularly did sports was high as expected. Creating awareness in order to offer university students physically active life habits, increasing their motivation to this end, using campus facilities efficiently and providing them with sustainable life skills will help them lead an active life after graduation.

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