Turkish Journal of Sport and Exercise /Türk Spor ve Egzersiz Dergisi
http://dergipark.gov.tr/tsed
Year: 2021 - Volume: 23 - Issue:2 - Pages: 253-258
DOI: 10.15314/tsed.925410

Turkish Journal of Sport and Exercise
Türk Spor ve Egzersiz Dergisi
ISSN: 2147-5652
https://dergipark.org.tr/tr/pub/tsed

Evaluation on Karabük University Students' Physical Activity Levels

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(Received): 27/04/2021/ (Accepted): 30.08.2021

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Abstract

The sedentary lifestyle is one of the most important problems for today's societies. Health-related behaviors that an individual gain early in his life affect the individual's quality of life in adulthood. The purpose of this study was to examine the physical activity (PA) levels of students studying at Karabük University according to the variables of gender, the program attended and body mass index (BMI). A total of 1717 students, 843 males and 874 females, studying in different departments, participated in the study. International Physical Activity Questionnaire (IPAQ) short form was used to collect data in the study. Frequency, percentage, Mann Whitney U, Kruskal-Wallis and chi-square tests were used to analyze the data. As a result of the research, it was seen that 27.8% of the students were not physically active, 38.2% of them had moderate physical activity levels, and 34% had sufficient PA levels. While 45.9% of male students had sufficient PA level, this rate was 22.4% for female students. A significant difference was found in PA scores of the students in terms of gender. A significant difference was found in the scores of vigorous PA according to the BMI of the students. As a result, it was observed that the physical activity level of the students was low, the physical activity level changed according to gender, and male students were more active than females. It can be said that BMI is effective on the level of Vigorous Physical Activity.

Keywords: Physical activity, exercise, BMI, university students

Karabük Üniversitesi Öğrencilerinin Fiziksel Aktivite Düzeylerinin Belirlenmesi

Özet

Hareketsiz yaşam tarzı günümüz toplumları için en önemli problemlerden biridir. Bireyin yaşamında erken dönemde kazandığı sağlıkla ilişkili davranışlar, bireyin erişkin yıllardaki yaşam kalitesini etkilemektedir. Bu araştırma Karabük Üniversitesinde öğrenim gören öğrencilerin fiziksel aktivite (FA) düzeylerini cinsiyet, öğrenim görülen program ve beden kütle indeksi (BKİ) değişkenlerine göre incelemek amacıyla yapılmıştır. Araştırmaya farklı bölümlerde öğrenim gören 843 erkek, 874 kadın toplam 1717 öğrenci katılmıştır. Araştırmada veri toplama amacıyla Uluslararası Fiziksel Aktivite Anketi (UFAA) kısa formu kullanılmıştır. Verilerin analizinde frekans, yüzde, Mann Whitney U, Kruskal-Wallis ve ki kare testleri kullanılmıştır. Araştırma sonucunda öğrencilerin %27,8'inin fiziksel olarak aktif olmadığı, %38,2'sinin orta düzeyde fiziksel aktivite düzeyine sahip olduğu ve %34'ünün yeterli FA düzeyine sahip olduğu görülmüştür. Erkek öğrencilerin %45,9'u yeterli FA düzeyine sahipken, bu oran kız öğrenciler için %22,4'tür. Öğrencilerin FA puanlarında cinsiyete göre anlamlı farklılık bulunmuştur. Öğrencilerin BKİ'lerine göre şiddetli FA puanlarında anlamlı farklılık bulunmuştur. Sonuç olarak öğrencilerin fiziksel aktivite düzeylerinin düşük olduğu, fiziksel aktivite düzeyinin cinsiyete göre değiştiği, erkek öğrencilerin kadınlara göre daha aktif oldukları gözlenmiştir. VKİ'nin Şiddetli Fiziksel Aktivite düzeyi üzerinde etkili olduğu söylenebilir.

Anahtar Kelimeler: Fiziksel aktivite, egzersiz, BKİ, üniversite öğrencileri

INTRODUCTION

The sedentary lifestyle is one of the most important problems for today's societies. Our lifestyle is changing with the rapid development of technology and industrialization. The development of technology that facilitates our daily life has led to a shortening of the time allocated for physical activity (PA). With the change of our lifestyle, sedentary lifestyle emerges as a very common situation, it has been revealed by numerous studies that this situation causes health problems such as cardiovascular diseases and musculoskeletal problems, and it has been stated that there is an increase in the mortality rates associated with these health problems (10, 11, 32, 36). It is stated by the World Health Organization (WHO) that if the necessary measures are not taken, these diseases will constitute 80% of the global disease burden in the following years and that these diseases will be responsible for seven out of every 10 deaths in developing countries (17).

Today, living by increasing the quality of life has become an important issue. Regular physical activity and nutrition are important elements in preventing chronic diseases, healthy aging and minimizing the health risks that may occur due to age. Physical activity should be added to daily life in order to eliminate sedentary life. Physical activity can be defined as all bodily movements performed with skeletal muscles and consuming more energy than at rest (6). In its simplest definition, it is the movement of the body to spend energy (18). American College of Sports Medicine (ACSM) and the American Heart Association (AHA) recommend to participate in moderate intensity aerobic physical activity for a minimum of 30 min on five days per week or vigorous intensity aerobic activity for a minimum of 20 min on three days per week. (21).

Physical activity is beneficial for health at all ages. Health benefits of regular physical activity for adults have been identified (28). The rate of attaining recommended physical activity declines rapidly from year to year among young people aged 18-24 (14). For example, in the UK, 73% of male students and 79% of women do not reach the recommended levels of physical activity (16), while in the United States almost half of college students do not reach the recommended physical activity levels (35). Haase et al. conducted a cross-sectional study with 19,928 university students from 23 countries with different cultural and economic development (16). As a result of the research, the frequency of inactivity was found to be 23% in Northwest Europe and the United States, 30% in Central and Eastern Europe, 39% in Mediterranean countries, 42% in Asia-Pacific countries, and 44% in developing countries and it was stated that these results varied depending on the cultural and economic development factors. As a result of a study conducted with adults in Brazil, it was stated that 41% of 3,182 people between the ages of 20-70 had physical inactivity; this rate was found to be 38% among people in the 20-29 age group (20).

Due to the fact that physical activity cannot be performed regularly and sufficiently, various suggestions are made by countries to increase the active lifestyle. Health-related behaviors that individual gains early in his life affect the individual's quality of life in adulthood. That is why it is important to investigate the health-related behaviors of young people (30). Strategies to improve physical activity in preventing chronic diseases have become an important public health approach (5). Determining the physical activity habits of the individuals and trying to correct the negative ones are important in terms of preventing the health problems of the individual in adulthood. University education is the most important process in which behavioral patterns are formed that will continue for years. Every positive behavior to be achieved in this process will take the individual one step further in bringing happiness. In this context, it is essential to determine the physical activity levels of university youth. The purpose of this research is to examine the physical activity level of the students studying at Karabük University according to the variables of gender and body mass index (BMI).

MATERIAL AND METHOD

The survey model was used in this study aiming to evaluate the physical activity levels of students studying at Karabük University in terms of various variables. 1,772 students studying at Karabük University in the 2020-2021 academic year participated in the study voluntarily. While faculty of engineering, business, letters and vocational school etc., students participated in the research, Physical Education and Sports School students were not included in the study. As a result of the examination, 55 students were excluded from the evaluation due to incomplete or incorrect data, and

the study was continued with 1,717 people. Data were collected via online survey tool. Ethics Committee permission was obtained from Karabuk University (Document Date: 10.04.2021 - E.24650)

Data Collection

To determine the physical activity levels of students in the study, a short form of "International Physical Activity Questionnaire - IPAQ" developed by Craig et al. was used (8). There are 8 versions of the questionnaire, it was designed as four short and four long forms and in our study, a short form consisting of 7 questions was used. A validity and reliability research were made for both short and long form of IPAQ to be used in Turkey (25, 29). The questionnaire provides information about sitting, walking, moderate activities and time spent in vigorous activities. The calculation of the total score includes the sum of time (minutes) and frequency (days) of walking, moderate vigorous activity, and vigorous activity. The sitting score (sedentary behavior level) is calculated separately. In the evaluation of all activities, the criterion is that each activity is done at least 10 minutes at a time. A score is obtained as "MET-minute/week" by multiplying the minute, day and MET value. In calculating the walking score, 3.3 MET for walking, 4 MET for moderate-intensive activity, and 8 MET for vigorous activity are taken. Physical activity levels are categorized as low (<600 MET-min/week), moderate (600-3000 MET-min/week) and high (> 3000 MET-min/week) (8, 22)

The height and body weight of the students were taken according to the students' own statements. Body Mass Index (BMI) was categorized according to the criteria published by the World Health Organization; “Less than 18.5 - underweight”, “18.5-24.99 - normal, “25-29.99 - Pre-obesity”, “30 and higher – obese” (19, 37).

Data Analysis

Descriptive statistics (frequency, percentage) and Mann Whitney U, Kruskal-Wallis and chi-square tests were used to analyze the data. Statistical analysis was done using nonparametric tests. Statistical significance between two groups was determined using Mann-Whitney U test and Kruskal Wallis tests were utilized for multiple comparisons. Chi-Square tests were performed to analyze associations between categorical variables. Due to the large standard deviations of the data revealed in the Physical Activity Questionnaire applications, it is generally not possible to meet the parametric test assumptions and the use of nonparametric tests is recommended (8). In this study, nonparametric statistical methods are preferred both because the assumptions were not fulfilled and are in line with the recommendation of the literature. In statistical analysis, the significance level is accepted as $p < 0.05$.

RESULTS

As a result of the analysis, the findings of the demographic and physical characteristics of the students participating in the study are presented in Table 1. 49.1% of the students participating in the study were male and 50.9% were female. 7% of the students participating in the study were in the underweight category, 71.3% were in the normal weight, 18.4% were pre-obesity and 3.3% were in the obese category. When the physical activity categories of the students participating in the study were examined, 27.8% of the students were in the low category, 38.2% were in the moderate category, and 34% were in the high category.

Table 1. Distribution of students according to gender, education level, BMI and activity levels

Gender (n=1717)	n	%
Male	843	49.1
Female	874	50.9
BMI		
Underweight	121	7
Normal	1,224	71.3
Pre-obesity	316	18.4
Obese	56	3.3
Activity Levels		
Low	478	27.8
Moderate	656	38.2
High	583	34

A statistically significant difference was found according to the gender variable in terms of Total PA, Vigorous PA, Moderate PA and Walking Scores of the students. While the total MET score for men is 3,237, it is 1,963 for women. When the time spent sitting by male and female students was examined, it was found that women spent more time sitting than men. Table 2 shows that the weekly energy consumption of the students participating in the study is 2,588 ± 2,636 MET-min/ week and walking activity constitutes a significant part of the total PA score.

Table 2. Comparison of Students' Physical Activity Scores According to Their Gender

	Total	Female		Male		z	p
Physical Activity	**Mean±SD**	**Mean±SD**	**Mean Rank**	**Mean±SD**	**Mean Rank**		
Total PA (MET-min/week)	2588±2636	1963±2065	744.46	3237±2986	977.75	-9,759	.000
Vigorous PA (MET-min/week)	728±1597	313±1019	737.34	1158±1939	985.14	-12,958	.000
Moderate PA (MET-min/week)	424±850	306±685	808.14	547±977	911.73	-4,992	.000
Walking Scores (MET-min/week)	1435±1317	1343±1291	822,74	1531±1336	896.59	-3,102	.002
Sitting Time (min)	470±469	486±415	691.89	455±513	613	-3,804	.000

When students' PA levels were examined in terms of gender variable it was found that while 21.8% of male students have "Low", 32.3% "Moderate" and 45.9% "High" PA levels, 33.6% of female students have "Low", 43% 9 of them have "Moderate" and 22.4% have "High" PA levels.

It was observed that there was a significant association between the gender variable and the students' PA levels ($p < 0.05$). Table 3 shows that 27.8% of the students are not physically active, 38.2% have moderate activity levels, and 34% have sufficient physical activity levels.

Table 3. Physical activity levels of students according to their gender

	Total (n=1717)		Male (n=843)		Female (n=874)			
Physical Activity Levels	N	%	%	%	n	%	χ2	p
Low	478	27,8	184	21.8	294	33.6	106,485	.000
Moderate	656	38,2	272	32.3	384	43.9		
High	583	34	387	45.9	196	22.4		
Total	1717	100	843	100	874	100		

When the BMIs of the students and their FA scores are compared, there is a significant difference between the underweight and normal weight groups and between the underweight and overweight groups in Vigorous PA dimension, and no difference was found in terms of BMI at other levels (Table 4).

Table 4. Comparison of Physical Activity Scores According to BMI Groups

Physical Activity	BMI	n	Mean Rank	χ2	sd	p	Significant Difference
Total PA (MET-min/week)	Underweight	121	841,73	2.003	3	.861	
	Normal	1224	857,75				
	Overweight	372	882,85				
	Obese	56	789,12				
Vigorous PA (MET-min/week)	Underweight	121	737,18	15,848	3	.001	Underweight - Normal
	Normal	1224	860,28				
	Overweight	372	904,71				Underweight - Overweight
	Obese	56	836,25				
Moderate PA (MET-min/week)	Underweight	121	878,89	.956	3	.646	
	Normal	1224	862,06				
	Overweight	372	845,16				
	Obese	56	827,12				
Walking Scores (MET-min/week)	Underweight	121	914,93	2,614	3	.366	
	Normal	1224	858,70				
	Overweight	372	850,16				
	Obese	56	794,54				
Sitting (min)	Underweight	93	675,47	7,421	3	.499	
	Normal	931	642,90				
	Overweight	276	646,00				
	Obese	37	808,01				

DISCUSSION

In this study, the physical activity levels of the students studying at Karabük University were examined according to their gender and BMI values. Findings obtained from the study showed that male students have higher activity levels than female. In parallel with this, the sitting times of female students were found to be significantly higher than male. It was observed that 34% of the students participating in the study had sufficient PA levels and 66% of them had inadequate PA levels. The mean sitting time of the female students was found to be 486 minutes, thus showing that female students spend more time sitting than male students. These results demonstrate the fact that physical inactivity is at a serious level and students spend most of their time sitting.

In a study conducted with university students, it was stated that male students were more active and 82% of the students had inadequate PA levels (30). In another study, it was found that the PA levels of female students were lower than that of male students, and 64% of the students had inadequate PA levels (24). Another study conducted by Erdoğan and Revan found that physical activity levels vary by department and men have higher physical activity levels than women (12). National and international studies in the literature support this finding (2-4, 7, 9, 13, 15, 23, 26, 27, 34, 38). The reason why the physical activity level of men is higher than women may be related to anatomical structure and social roles.

In our study, a significant difference was found between the Vigorous PA scores of the underweight and normal weights, and underweight and overweight individuals according to the BMI variable. We can say that underweight students avoid Vigorous PA. When the studies are examined, different results are encountered. In a study examining the physical activities of normal weight and obese university students, it was stated that 8.5% of university students were obese, and the physical activity measurement was different between normal weighted and obese groups in terms of Physical Activity Assessment Questionnaire (PAAQ) stairs, PAAQ sports, PAAQ transportation and PAAQ total variables. A negative relationship was found between BMI and PAAQ stairs, sports, transportation and total values, and as BMI value increased, PAAQ sports and total values decreased (31). In a study examining the PA levels of young individuals with low back pain, PA scores differ according to the BMI variable (1). In a study examining the PA levels of desk workers, a significant difference was found in the PA levels of the groups with BMI <25 kg / m2 and BMI> 25 kg / m2 (34). In a study conducted with female students studying at the Faculty of Health Sciences, no statistically significant difference was found between the activity levels of the students whose BMI value was below and above 25 kg / m2 (33). In a study conducted with university students, no difference was found between those who were overweight and those who were not (25). In another study examining the PA levels of university students, no significant difference was found between the BMIs and PA levels of the students (23). Factors such as the location of the studies and the age of the sample groups may be the reasons for the different results.

This study has its limitations. Physical activity was assessed using self-reported IPAQ short form. More accurate results can be obtained in longitudinal studies using devices such as Pedometer, actigraph. In addition, BMI was categorized into 2 groups as overweight and non-overweight in other studies, in this study, it was categorized into 4 groups according to the WHO recommendation.

As a result, in this study, the physical activity levels of the students studying at Karabük University were examined according to the variables of gender and BMI, and it was found that the PA level of the students was insufficient. A significant difference was found in PA levels and PA scores according to the gender variable. When we compare the intensity of physical activity men shows significantly higher PA. The highest gender differences are found in vigorous PA. According to the variable of BMI, a significant difference was found between the underweight and normal weight groups in Vigorous PA dimension and between the underweight and overweight groups. In particular, it is recommended to plan to increase the physical activity levels of female students and to take into account the physical activity preferences of the students in the course and course-like activities. It is believed that increasing the opportunities to participate in physical activity on the university campus and encouraging practices will benefit.

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