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# Examination of Physical Activity Levels of University Students

**Dondu Ugurlu[1], Busra Emlek[1], Fatma Hilal Yagin [2], Murat Uygurtas [1], Hakan Yapici[1*]**

[1]Faculty of Sport Sciences, Kirikkale University, Kirikkale 71450, Turkey
[2]Inonu University, Medicine Faculty, Department of Biostatistics, and Medical Informatics, Malatya, Turkey

## ABSTRACT

**Background:** The aim of this study was to determine the levels of physical activity level among university students.

**Methods:** An online survey method was used to collect data from 388 students (198 females, 190 males) studying at Kirikkale University Faculty of Sports Sciences. The International Physical Activity Questionnaire-Short Form (IPAQ-SF) was administered for data collection. Data analysis was conducted using SPSS 25.0 software. Descriptive statistics, such as mean and standard deviation (SD), were calculated. Gender differences were examined using an independent samples t-test. The relationship between age, Body Mass Index (BMI), and physical activity levels was evaluated using the Pearson correlation test. Correlation coefficients were interpreted as follows: 0-.10 very weak; .10-.30 weak; .40-.60 moderate; .70-.90 strong; and 1 and above as excellent.

**Result:** As a result, it was found that due to the positive effects of physical activity, there was a significant difference in height and weight between female and male students, with males performing better in on-campus physical activities than females.

**Conclusions:** However, no differences were observed in off-campus activities; this is thought to be due to the sporting age of the participants.

**Keywords:** College students; physical inactivity, sedantery life, BMI, physical health

***Corresponding**: Dr. Hakan YAPICI; hakanyapici@kku.edu.tr
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## INTRODUCTION

Physical activity, which has become an indispensable part of our daily lives, defined as the activities that individuals perform through movements involving muscles and joints, leading to an increase in heart and respiratory rates (McTiernan et al., 2019; WHO, 2018). Developing awareness of physical activity from a young age has long-term positive effects on individuals throughout their lives (Rock et al., 2020). Particularly, active participation in physical activity by individuals during their educational years has both physiological and psychological benefits (Carl et al., 2020). Therefore, the World Health Organization (WHO) recommends that adults over the age of 17 engage in aerobic exercises twice a week for a total of 75-150 minutes (Matlary et al., 2022; WHO, 2018).

Individuals who do not engage in regular physical activity are at risk of facing various health problems, especially in later life, due to physical inactivity (Kanaley et al., 2022). Those who do not meet their movement needs or engage insufficiently in physical activity cannot maintain a healthy development compared to those who exercise regularly (WHO, 2020). Physical activity has beneficial effects on various body systems, including the respiratory, nervous, immune, endocrine, and cardiovascular systems (Lee et al., 2022). It has protective and preventive effects on common health issues such as hypertension, diabetes, heart disease, and various types of cancer, positively impacting all aspects of the body (Tian and Meng, 2019; Zhang et al., 2023). Research has shown that engaging in moderate-intensity physical activity for five days a week reduces the risk of colon and breast cancer by approximately 20-40% and lowers recurrence rates by 26-40% (Zelenović et al., 2021; Lee et al., 2021).

Beyond physical health, the impact of physical activity on mental, social health, and future experiences are also crucial factors influencing engagement in physical activity (Angevaren et al., 2008). According to a study conducted by the Ministry of Health, university students are among the age groups with the lowest rates of physical activity in our country (TFAR, 2014). Literature studies have indicated that university students have adopted a sedentary lifestyle due to the influence of the pandemic and distance learning processes (Ferrara et al., 2022). Being a critical period, this sedentary behavior not only affects their academic performance but also directly influences their physical, mental, and social well-being (Chu and Li, 2022; Fernandes and Zanesco, 2010). In this context, regular support and encouragement in engaging in physical activities contribute to a healthy future for individuals in their later years (Boğa et al., 2020; Rudnicka et al., 2020).

There are numerous studies on participation in physical activity in the literature. However, there is limited research specifically focusing on the physical activity levels of students in sports science faculties. Understanding the physical activity levels of these students is essential for improving their quality of life and maintaining a healthy lifestyle. The aim of this study is to examine the physical activity levels of students in sports science faculties.

## MATERIALS AND METHODS

### Research Model

In this study, the Descriptive Research Model, which is one of the quantitative research methods, was used. Descriptive research models aim to reveal the status and outcomes related to a specific subject (Rahi, 2017). As there is no intention to manipulate or change parameters, this method is cost-effective for data collection (Atmowardoyo, 2018).

### Research Group

The research group consisted of a total of 388 students (age = 23.2 ± 5.1 years, height: 172.9 ± 9.2, weight: 68.3 ± 14.8, body mass index: 22.6 ± 4.8) They are studying at Kırıkkale University, Faculty of Sport Sciences. Participants participated online voluntarily. They were informed that their information would be kept confidential and used only for scientific purposes.

### Data Collection

The online survey method was used for data collection. The International Physical Activity Questionnaire-Short Form (IPAQ-SF), developed by Craig et al. (2003) and adapted into Turkish by Sağlam et al. (2010), was used to determine students' physical activity levels. The Turkish version of IPAQ-SF has a Cronbach's alpha coefficient of 0.69 (Yılmaz and Kartal, 2021). IPAQ-SF consists of 7 questions, including moderate and vigorous physical activities performed in the last 7 days, at least 10 minutes of continuous walking, and the time spent sitting for 7 days.

The criterion for the activities included in the survey is to be performed as a minimum of 10 minutes in a single session. To determine the physical activity level, a score is calculated in MET-minutes per week using appropriate minutes, days, and metabolic equivalent (MET) factors for each type of physical activity. Thus, individuals' physical activity levels are categorized as follows: physically inactive (<600 MET-min/week), low physical activity level/minimally active (600–3000 MET-min/week), and sufficient physical activity level/active (>3000 MET-min/week) (Noğay and Özen, 2019).

### Statistical Analysis

The normality of the quantitative data was evaluated using the Kolmogorov-Smirnov test. Since the quantitative data exhibited a normal distribution ($p < 0.05$), they were summarized using mean and standard deviation. Independent samples t-test and one-way ANOVA were employed for group comparisons of the data where appropriate. Post-hoc analyses following ANOVA were conducted using Tukey's test. The American Psychological Association (APA) 6.0 style was used to report statistical differences (Yağin et al., 2021a). All analyzes were performed using Python 3.9 and IBM SPSS Statistics 28.0 for Windows (New York; USA) software.

## RESULTS

Descriptive statistics of men and women participants are given in Table 1. A total of 388, 190 men and 198 women, participated in the study.

**Table 1.** Descriptive statistics of age, height, body weight and BMI values of female and male students (mean ± SD).

| | Variables | N | M±SD |
|---|---|---|---|
| **Male and Female** | Age (yrs) | 388 | 23.2±5.1 |
| | Height (cm) | | 172.9±9.2 |
| | Body weight (kg) | | 68.3±14.8 |
| | BMI (kg/m2) | | 22.6±3.4 |
| **Male** | Age (yrs) | 190 | 23.5±5.7 |
| | Height (cm) | | 178.4±.7.4 |
| | Body weight (kg) | | 76.0±15.2 |
| | BMI (kg/m2) | | 23.5 ±3.5 |
| **Female** | Age (yrs) | 198 | 23.0±4.5 |
| | Height (cm) | | 166.9±6.4 |
| | Body weight (kg) | | 60.9±9.9 |
| | BMI (kg/m2) | | 21.8 ±3.1 |

BMI: Body Mass Index.

**Table 2.** Comparison of Physical Activity Scale of male and female participants

| Variables | Female (n=198) | Male (n=190) | *t-test* | |
|---|---|---|---|---|
| Vigorous Physical Activity | 1087± 1548 | 1153± 1526 | -,423 | 0,672 |
| Moderately Vigorous Physical Activity | 439 ± 573 | 445 ± 583 | -,097 | 0,923 |
| Walking activity | 1424 ± 992 | 1330 ± 981 | ,942 | 0,347 |
| Seating activity | 2951 ± 2339 | 2929 ± 2352 | ,095 | 0,925 |
| Total | 535± 180 | 525 ± 164 | ,577 | 0,563 |

*p< 0,001

The effect of gender was not significant for physical activity scores (p > 0.05) (Table 2). When examining the scores of students' participation in physical activity according to the gender variable, significant differences were found between male and female students in terms of vigorous physical activity, moderate-to-vigorous physical activity, walking activity, and sedentary activity scores based on gender (Table 3).

**Table 3.** Statistical data on physical activity levels

*p< 0,001

| Variables | Inactive (n=21) | Minimal active (n=111) | Veryactive(n =256) | F | p | Tukey |
|---|---|---|---|---|---|---|
| **Male andFemale** | | | | | | |
| Walking activity | 365 ± 169 | 707,3 ± 233,8 | 1752 ± 1015 | 53,900 | **0,001*** | I<M<V |
| Moderate activity | 30,5 ± 63,1 | 131,8 ±177,2 | 611,1± 638,7 | 38,576 | **0,001*** | I<M<V |
| Severe activity | 15,2 ± 54,4 | 141,3 ± 235,8 | 1634± 1665 | 76,662 | **0,001*** | I<M<V |
| Total | 411,1 ± 157,1 | 980,4 ± 259,8 | 3998 ± 2230 | 127,739 | **0,001*** | I<M<V |
| Seating activity | 664,3 ± 178,8 | 653,5 ± 167,6 | 466,82± 135,9 | 71,036 | **0,001*** | V<M<I |
| **Female** | | | | | | |
| Walking activity | 315 ± 180 | 679,7 ± 240,4 | 1702 ± 1019 | 25,118 | **0,001*** | I<M<V |
| Moderate activity | 48,9 ± 84,3 | 153,7 ±175,7 | 608,4± 656,6 | 22,307 | **0,001*** | I<M<V |
| Severe activity | 8,9 ± 26,7 | 164,2 ± 258,9 | 1691± 1646 | 40,146 | **0,001*** | I<M<V |
| Total | 373,1 ± 171,9 | 997,6 ± 262,4 | 4002 ± 2257 | 65,373 | **0,001*** | I<M<V |
| Seatingactivity | 620,0 ± 158,8 | 637,9 ± 163,4 | 466,7 ± 134,0 | 42,156 | **0,001*** | V<I<M |
| **Male** | | | | | | |
| Walkinga ctivity | 402 ± 159 | 736,4 ± 225,3 | 1799 ± 1013 | 28,690 | **0,001*** | I<M<V |
| Moderate activity | 16,7 ± 39,9 | 108,7 ±177,6 | 613,6 ± 623,9 | 16,308 | **0,001*** | I<M<V |
| Severe activity | 20,0 ± 69,3 | 117,1 ± 208,3 | 1581± 1687 | 36,015 | **0,001*** | I<M<V |
| Total | 439,5 ± 145,8 | 962,2 ± 258,2 | 3994 ± 2213 | 61,391 | **0,001*** | I<M<V |
| Seating activity | 697,5 ± 192,4 | 670,0 ± 171,9 | 465,7 ± 138,2 | 29,427 | **0,001*** | V<M<I |

In addition to the general participants, significant intragroup and intergroup differences were found between inactive, minimally active and very active physical activity levels according to gender variable. ($p < 0.05$).

## DISCUSSION

The purpose of this study is to determine the physical activity levels of students studying in the Faculty of Sports Sciences. Physical activity and exercise have a great importance in human life in today's world (Yuldashev, 2021). Especially in recent years, the number and intensity of research on this subject has become quite remarkable (Ravalli & Müzeci, 2020; Bowden Davies et al., 2019). In many countries, the inability of people to engage in regular and sufficient physical activity is a serious problem (Di Pietro et al., 2020). Therefore, promoting an active lifestyle is an important part of national and international public health policies (Laddu et al., 2021). When the results obtained from the research are examined, a significant difference is found between female and male students in terms of height, body weight, and BMI values. When the students' physical activity participation scores are examined according to the gender variable, it is observed that male students have higher scores in the variables of Vigorous Physical Activity and Moderate Physical Activity, while female students have higher scores in walking and sitting activities. When the physical activity levels are examined according to the gender variable, it is found that male

students have higher scores in walking activity compared to female students in inactive, minimally active, and highly active categories.

In the Moderate Vigorous Activity variable, inactive and minimally active female students have higher scores, while highly active male students have higher scores in this variable. In the Vigorous Activity variable, inactive males have higher scores than inactive females, but minimally active and highly active females have a higher score difference compared to males. In the Sitting Activity variable, inactive and minimally active male students have higher scores, while highly active females have higher scores compared to highly active males. Additionally, there is no significant difference between female and male students in the sitting activity variable. The reason for this may be attributed to the students' ongoing education in the Faculty of Sports Sciences, their training ages, and their eating habits.When examining various studies that determine physical activity levels, it is evident that there are many studies focused on the benefits of physical activity on health, mental, and psychological aspects, as well as its effects on different professions and age groups. Physical activity habits may vary depending on gender differences (Cahuas et al., 2020). When the moderate-intensity activity pattern recommended by the American College of Sports Medicine (ACSM) for at least five days a week, each lasting at least 30 minutes, was examined in studies, the proportion of girls (48.2%) who followed this guideline was found to be higher than boys (31.1%) (Haskell et al., 2007; Castellani et al., 2021). In another study, the physical activity habits of university students in 23 countries, including Europe, the Mediterranean region, Pacific Asian countries, developing countries (Colombia, South Africa, and Venezuela), and the United States of America, were evaluated. According to the results of this study, it was observed that among university students studying in all these countries, girls (38%) had less physical activity habits than boys (27%) when evaluated by gender (Ge et al., 2019; Gallè et al., 2020).

It may be considered that the effect of gender on physical activity (PA) level may be due to the tendency of female students to be more busy with housework and to prefer walking and nature trips as PA, and the tendency of males to be more interested in exercise and sports. In addition, although it is accepted that it is a health risk for male and female students to spend more than six hours a day sitting continuously, it can be considered that this situation may necessarily increase when the course hours of the students are taken into consideration. In various studies conducted both in Turkey and in other countries, it has been found that men have higher levels of physical activity compared to women. In 2010, the aim of the US Department of Health was to determine the average amount of intense and vigorous physical activity performed in various groups and to support people with places that would encourage them to be physically active (Sondik et al., 2010). The findings, when compared with the existing literature, show that there is not yet a definite consensus on physical activity level and gender. However, it was determined that there are more studies showing that men have higher physical activity levels than women. In this context, it can be stated that the results of this study are compatible with the existing literature.

Zaccagni et al. (2014) conducted a study on Italian university students, investigating body image and weight perceptions related to real measurements through a new index and physical activity levels. They found that

female students participated in less physical activity compared to male students, which led to higher weight gain among females. Staurowsky et al. (2015) conducted a study to determine the health and well-being of American girls and women concerning sports and physical activity. They observed that active female colleagues at the same workplace had lower levels of physical activity compared to active male colleagues. According to the results, the duration of residence of the individuals constituting the study group was among the most striking data points. Ishii et al. (2015) examined objectively measured physical activity and sedentary behavior patterns among Japanese children and adolescents. They found that female students engaged in less walking activity on both weekdays and weekends compared to males. Ghorbani et al. (2020) investigated the relationship between perceived competence and physical activity among middle school students and found that male students had higher levels of moderate physical activity compared to female students.

## CONCLUSIONS

In conclusion, based on the data obtained from this study on the students of the Faculty of Sports Sciences, it was determined that very active students had better physical activity than inactive and minimally active students. The findings of this research are consistent with previous studies highlighting that males tend to have better physical activity levels than females. Therefore, it is recommended to instill awareness of physical activity in individuals throughout their lives, actively engage in physical activities based on age during school, and maintain proper nutrition to promote a healthy lifestyle. Considering that university students are the individuals who will shape our future, they should be encouraged to exercise regularly and sufficiently. It is thought that students studying at the Faculty of Sports Sciences should be more physically active and that such environments should be developed in other schools similarly, since the sports facilities of the school are favorable as well as the course content. Physical activity can therefore positively affect students' learning experiences. Increasing the opportunities for physical activity in the university environment and the benefits that encouraging practices can provide in this regard are very important. Such initiatives can encourage students to adopt healthy lifestyles and support student health in general.

### Author Contributions

Conceptualization, D.U. and H.Y.; methodology, H.Y.; formal analysis, H.Y.; investigation, H.Y.; data curation, D.U.; writing—original draft preparation, D.U., H.Y., B.E., F.H.Y., M.U.; writing—review and editing, D.U., H.Y., B.E., F.H.Y., M.U.;

### Informed Consent Statement:

Participants took part in the research voluntarily and the research was conducted in line with the Declaration of Helsinki.

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**Conflicts of Interest:**

The authors declare that no conflicts interest.

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