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An Investigation on Physical Activity and Fatigue Levels of Health Sciences Students

Oguz S[1*], Yildiz A[1], Yurdalan S U[1], Polat M G[1]

[1]Marmara University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Istanbul, Turkey
*Corresponding author: ptsemraoguz@gmail.com

ABSTRACT

Aim: The increase in the rates of physical inactivity in recent years has observed. Physical inactivity is one of the major health problems according to World Health Organisation because of it caused many of chronic diseases. This situation has caused physical inactivity to become a serious public health problem. In this study our aim is to assess the physical activity and fatigue level of the university students and to investigate whether there is a difference in terms of gender.

Methods: Volunteer health sciences students aged between 18-25 and with no known health problems were included in this study. Socio-demographic profiles of paticipants were saved, physical activity (PA) levels were determined with The International Physical Activity Questionnaire - Short Form (IPAQ-SF) and fatigue levels were determined with Piper Fatigue Scale (PFS). SPSS 11.5 statistics software program was used to analyze the data.

Results: 150 students (average age was 20.73 ± 1.68 years, height 169.68±8.96 cm, and Body Mass Index (BMI) as 21.98±2.69 kg/m2) were included in the study. Student's average IPAQ-SF score was found 2765.56±3021.85 MET-min/wk and PFS level was 3.82±2.02. While the PA levels of female students was found lower than male students (p=0.001), the total fatigue level of the both genders was found similar (p=0.363). In the correlation analysis, no correlation between IPAQ-SF and the PFS subscales was found (p>0.05).

Conclusion: In this study that investigate fatigue and physical activity levels, students' physical activity levels were found low level. The low physical activity levels of female students were consistent with the literature. Finding that the fatigue levels of the students were low may be explained by low physical activity levels.

Key words: Physical activity, fatigue, student

INTRODUCTION

Physical activity (PA) refers to activities that happen with the use of skeletal muscles in daily life, which increase the heart and breathing rates and that result in various degrees of fatigue. PA is all kinds of striated muscle movement requiring more energy than the resting state and includes games and various activities done during the day as well as training done for sports (WHO, 2011). Physical inactivity is the inverse of physical activity and may cause to many chronic pathologies and noncommunicable diseases (Lee et al, 2012).

There is no universally accepted definition of fatigue. Fatigue is a complex and subjective concept referring to a state wherein there is extreme energy loss due to physical strain or lack of sleep (Fink et al, 2010)

Fatigue is caused by all events affecting our body such as problems in the enzymes involved in cell activity, diseases, problems related to food and environmental factors. The feeling of fatigue is interpreted as an indication that the cells are not working efficiently for whatever reason. Deficit in any of the factors affecting the activity of cells and an increase in lactic acid, which is the final product of overactive cells can also be a cause of "fatigue" (Fritschi, 2007). In healthy individuals fatigue may be due to lack of sleep, malnutrition, lack of movement in daily life and a temporary increase in the responsibilities in working or social life (Yurtsever, 2000).

The World Health Organization recommends regular physical activity for health protection. In order for the positive effects of physical activity to be seen in adulthood and old age, it is important that it is done regularly since the childhood or adolescent period (WHO, 2011).

In this study, our aim is to evaluate the level of fatigue and physical activity in college students and to investigate whether there is a relationship between them.

METHODS

Participants: Health sciences students aged between 18-25 with no known health problem who agreed to participate on a volunteer basis were included in the research. A non-interventional ethics committee approval (ethics committee number: 10840098-05) was obtained for the study. The participants were informed about the content of the study and their approval was gained. Individuals with a congenital problem preventing physical activity and those with a history of cardiopulmonary, orthopedic, rheumatic or metabolic disease within the past 6 months were excluded from the study.

Work procedure: The age, gender, height and weight and presence of musculoskeletal and chronic disease of the participants was questioned. Body Mass Index (BMI) was calculated and classified as thin, normal weight, overweight and obese (WHO, 2011). The physical activity level was evaluated with the "International Physical Activity Questionnaire - Short Form (IPAQ-SF)" and the fatigue level with the "Piper Fatigue Scale".

Physical Activity Level (PAL): The physical activity level can be calculated using the intensity, duration, and frequency of the activity being done. In our study, the International Physical Activity

Questionnaire - Short Form (IPAQ-SF) was used to evaluate the physical activity level of the participants. The IPAQ-SF is a community-based survey enabling the recording of the duration of physical activity at different levels in the past one week. In the survey physical activity is examined under four groups; intense physical activity, moderate physical activity, walking and sitting. In the evaluation the data are converted into MET values (Bauman, 2006).

The IPAQ-SF consists of seven questions and gives information on the time spent on sitting, walking, moderately intense activities and intense activities. The total score is calculated by taking the sum of duration (minutes) (min) and frequency (days) of walking, moderate activity and intense activity. The sitting score (sedentary lifestyle) is calculated separately. Every activity being done for at least 10 minutes at a time is taken as a measure in the evaluation of all activities. The low, moderate and intense physical activity scores were calculated based on the answers given by students to the IPAQ-SF. The number of days of activity, daily activity duration and the MET value specific to the type of activity were multiplied, yielding a score in the form of "MET-minutes/week". Light degree physical activity was calculated using a 3.3 MET value, moderate degree physical activity using a 4.0 MET value, moderately intense physical activity using a 5.5 MET value, intense physical activity using a 6.0 MET value and very intense physical activity using an 8.0 MET value. PALs were classified as physically inactive (<600 MET-min/week), low PAL (minimally active) (600-3000 MET-min/week) and PAL sufficient for health (very active) (>3000 MET-min/week) (B. Sudha, Samuel & Narkeesh, 2018).

Fatigue Level: The total score of the "Piper Fatigue Scale (PFS)" Turkish version the validity and reliability for which was done was used for the fatigue level of the participants. The PFS is a 22 item scale used to measure subjective fatigue. The scale is composed of four subscales including behavioral, affective, emotional and cognitive. Every item in the scale is rated based on strength and weakness from 1 (weak) to 10 (strong). The person marks the number which best describes the experience of fatigue he/she is experiencing in that moment. Subscale scores are calculated by summing up the score of all items in that subscale and dividing it by the number of items. The total fatigue score is obtained by summing up all items and dividing it by the number of items. The score received from the scale varies between 0 and 10 and as the score increases, the fatigue experienced by the person increases. There are also 5 open end questions in the scale and these questions are not taken into account when calculating the PFS score (Piper, 1998; Can, 2001).

Statistical analysis: The data were evaluated using the SPSS 11.5 statistics software (SPSS Inc., Chicago, IL, USA). Compliance of the data with normal distribution was done with the Kolmogorov Smirnov test. Variables indicated by measurement were expressed as mean ± standard deviation (x± ss) and variables indicated by counting were expressed as percentages. The student t-test was used in the paired comparison of variables complying with normal distribution and the Mann-Whitney U test was used in the comparison of variables not complying with normal distribution. The Spearman correlation analysis was used in the correlation analysis. The significance level was accepted as $p<0.05$.

RESULTS

A total of 150 students, consisting of 89 (59.3%) females and 61 (40.7%) males, joined the study. The mean age of the students was 20.73 ± 1.68 years, their height 169.68 ± 8.96 cm, body weight 63.82 ± 12.39 kg and their BMI 21.98 ± 2.69 kg / m^2. Based on their BMIs, 6 students (4%) were seen to be very thin, 127 (84.6%) were seen to be at normal weight and 17 (11.4%) were seen to be overweight.

34% of the participants were year 1 students, 8.7% were year 2 students, 32% were year 3 students and 25.3% were year 4 students. 16% of all students were smokers and 24.7% worked at a part time job outside of school. The average IPAQ-SF value of the students was 2765.56 ± 3021.85 MET-min/wk and their PFS level was 3.82 ± 2.02. When their PA levels were examined, it was detected that 18% were inactive, 48.5% were lightly active and 33.3% were sufficiently active.

Although the BMI values of the working students were higher and their IPAQ-SF values lower than those who did not work, the difference was not found to be significant. The total PFS and subscale values of students who smoked were lower than those who did not but the statistical difference was not found to be significant.

Demographic characteristics, physical activity level and fatigue level by gender are shown in Table 1.

Table 1: Demographic characteristics, physical activity level and fatigue level evaluation by gender

	Girls	**Men**	
	mean±SD	**mean±SD**	**p**
Height (cm)	1.63±5.37	1.78±5.18	*
Weight (kg)	56.21±6.6	74.93±10.3	*
BMI (kg/m^2)	20.95±2.04	23.49±2.85	*
IPAQ-SF (METmin/week)	2093.21±2309.14	3746.52±3634.21	**
PFS- Behavioral	3.35±2.12	3.17±1.83	NS
PFS- Affective	4.02±2.43	3.82±2.05	NS
PFS- Sensory	4.40±2.36	4.17±2.15	NS
PFS- Cognitive	3.97±2.25	3.72±1.99	NS
PFS-Total	3.95±2.17	3.64±1.80	NS

IPAQ-SF: International Physical Activity Questionnaire - Short Form; PFS: Piper Fatigue Scale; BMI: Body mass index; *:p<0.0001; **:p=0.001; NS: Not significant

While the PA levels of female students were lower than those of males (p=0.001), the total fatigue levels of both genders were found to be similar (p=0.363). In the correlation analysis, a low level of negative relationship was seen only between the BMI and the PFS-Physical subscale. No relationship was detected between the IPAQ-SF and the Piper fatigue scale subtitles and total score (p>0.05) (Table 2).

Table 2: Demographic characteristics, the relationship between physical activity level and fatigue

	BMI	**IPAQ-SF**
BMI	-	NS
PFS	NS	NS
PFS- Behavioral	NS	NS
PFS- Affective	NS	NS
PFS- Sensory	r=-0.166 p=0.042	NS
PFS- Cognitive	NS	NS
PFS-Total	NS	NS

IPAQ-SF: International Physical Activity Questionnaire - Short Form; PFS: Piper Fatigue Scale

BMI: Body mass index; NS: Not significant

DISCUSSION

This study aimed to investigate the levels of physical activity and fatigue in health science students and the factors affecting these parameters. According to our results, the PA levels of the female students were found to be low and the PA levels of the male students were found to be better compared to the females. Levels of fatigue, on the other hand, were found to be at similar levels in both genders. Also, although no statistical difference was detected, the impression was had that cigarette use and working at a part time job could negatively impact the BMI and fatigue and PA levels.

In this study, when the BMI values of the students were examined, thinness was more common among females than males. Despite PA levels based on gender being similar, hormonal and psychological changes in girls and the increased interest among students in their body appearance and the trend among women in recent years encouraging a "thin body" appearance may be the main reason for this (Pekcan, 2004).

The study by Gordon et al. (2004) indicates that obesity develops at a high rate among individuals near the end of their adolescent period and that obesity is permanent. The fact that 84.6% of the individuals

participating in our study were of normal weight is a pleasing result. On the other hand, in recent years physical inactivity remains a problem especially in the students (Afzal et al, 2018). In a study PA behavior reported approximately less than half of the participants (49.5%) were physically active in the medical students. Researchers expressed that male and preclinical students were more likely to be active. (Wattanapisit et al., 2016). Also, in a cross-sectional study that was executed on 409 students, 47.2% of students reported being physically active and male students were significantly involved more in PA than the female (Al-Drees et al, 2016). In Turkey Savci et al. (2006) and Nacar et al (2015) found in their studies that most of students are minimally active. We determined that the physical activity of only 33.3% of health science students was at a sufficient level. In this context, our results are consistent with previous studies.

According to a research it has been determined that fatigue is one of the most common problems in those who smoke (Altıntaş, 2006). Corwin et al. (2002), reported that males aged between 18-35 who smoke experienced more fatigue than those who did not. Saygili et al. (2015), investigated the effect of sleep quality on the level of fatigue on 558 college students. He reported that as the number of cigarettes that the students smoked increased, so did the fatigue that was experienced. Although in our study the fatigue level of students who smoke was found to be higher, the difference was not found to be significant. Also, although it was not found statistically significant, the BMI values of the working students were higher, and their IPAQ-SF values lower than those who did not work. The fact that no difference was found between the fatigue level, BMI and IPAQ-SF values may be due to the low number of students included in our study.

CONCLUSION

Physical activity is the cornerstone in increasing physical and mental wellness in health and in illness. The computer dependent lifestyle of the 21st century, increased participation in sedentary activities and rapidly developing technology are the most important factors in the adoption of the sedentary lifestyle. In this study in which we have investigated the physical activity and fatigue level of the university students, students' physical activity levels were found low level. The low FA levels of female students were consistent with the literature.

Finding that the fatigue levels of the students were low may be explained by low physical activity levels.

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