Determination of the Relationship between Physical Activity Levels and Healthy Lifestyle Behaviors of University Students

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Abstract: The purpose of the present study was to determine the relationship of physical activity levels and healthy lifestyle behaviors of students in Bartın University. 2218 male and female students from ($n_{\text{school of physical education and sport}}$:195, $n_{\text{faculty of literature}}$:142, $n_{\text{faculty of education}}$: 201, $n_{\text{faculty of economics and administrative sciences}}$: 431, $n_{\text{faculty of engineering}}$: 515, $n_{\text{faculty of forestry}}$: 318, $n_{\text{faculty of sciences}}$: 25, $n_{\text{vocational school}}$: 372, $n_{\text{vocational school of health}}$: 19). All the students attended to this research voluntarily. In the study, the short form of International Physical Activity Questionnaire was adopted to the students in order to determine their physical activity levels. Physical Activity (PA) levels were categorised as inactive (low), minimum active and physically active group by using MET method. Besides Health Promotion Lifestyle Profile Questionnaire was used with self-actualization (SA), health responsibility (HR), exercise (E), nutrition (N), interpersonal support (IS) and stress management(SM) subscales in order to determine healthy life styles of the students. Results of Pearson Product Moment Correlation analyses indicated significant positive correlations between total physical activity level and health responsibility (r=.60; p<0.05), exercise (r=.69; p<0.05), interpersonal support (r=.62; p<0.01), stress management (r=.72; p<0.05), nutrition (r=.60; p<0.05), and healthy lifestyle behaviors (r=.63; p<0.05). It has vital importance to determine the physical activity levels of university students as there is supposed to be a close relation between activity and physical, mental, social, and psychological health, which also affects academic success. Many researches so far have pointed out the importance of physical activity opportunities in campus life for university students as the students demonstrate to neglect physical activities during transition from high school to university period. Therefore this study also explored the relationship between physical activity levels and healthy lifestyle behaviors of university students in order to create awareness about this issue. As a conclusion, the findings of the present study indicated that physical activity level of university students directly affected their healthy lifestyle behaviors.

Key words: physical activity (PA), healthy lifestyle behaviors, university students.

INTRODUCTION

Promotion of healthy lifestyles has been gaining popularity as a tool for developing public health. Studies indicated that healthy lifestyles enhance lifelong health, increase quality of life, and decrease morbidity and mortality (Ebem, 2007). In other words, unhealthy lifestyles (Three modifiable lifestyle behaviors -smoking, unhealthy diet, and physical inactivity-) have been associated with the development of chronic diseases, specifically heart disease, cancer, stroke, and diabetes (Centers for Disease Control and Prevention, 2004) result in chronic diseases such as high cholesterol, osteoporosis, chronic heart disease, hypertension, colon cancer, and psychosocial health problems (National Health Committee 1998). On the other hand cross-sectional epidemiologic studies and controlled, experimental investigations have demonstrated that physically active adults, as contrasted with their sedentary counterparts, tend to develop and maintain higher levels of physical fitness. Epidemiologic research has demonstrated protective effects of varying strength between physical activity and risk for several chronic diseases, including coronary heart disease (CHD), hypertension, non-insulin-dependent diabetes mellitus, osteoporosis, colon cancer, and anxiety and depression (Physical Activity and Public Health, 1995).

Health promoting lifestyles include activities that are focused on improving the level of well-being. The focus of these activities is on the development of positive potential for physical, social, mental, intellectual or spiritual health (Ebem, 2007). Considering this multidimensional structure of health promotion (e.g. physical, social, mental, and intellectual), the researchers identified six health-promoting behaviors. These are social support, life appreciation, health responsibility, stress management, nutrition and exercise (physical activity) behaviors (Walker *et al.* 1987; Walker and Hill-Polerecky, 1996; Physical Activity and Public Health, 1995; Esin, 1997). Therefore, it is generally accepted that physical activity (PA) can improve quality of life and is a critical component in reducing or eliminating health disparities through lowering resting heart rate and blood pressure; reducing hypertension and blood glucose; decreasing fat body mass; increasing lean body mass, bone mass, bone strength and muscle strength; preventing arthritis, some type of cancer and type 2 diabetes (Kramer

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et al., 1996; WHO, 2010; Turkish National Burden of Disease, 2004). There is also evidence that regular PA may reduce or prevent from mild or moderate depression (Yıldırım, 2010), and also, with developing technology many individuals pursue sedentary activities and become physically less active. Sedentary lifestyle leads to a greater risk of developing coronary heart disease, hypertension, high blood lipid profile, Type II diabetes, obesity and some forms of cancer like colon and breast cancer. Studies reported that regularly engaging in physical activity and exercise lower blood pressure, improve lipoprotein profile, C-reactive protein and other CHD biomarkers, enhance insulin sensitivity and play important role in weight management. In addition PA and exercise play important role in prevention and improvement of mild to moderate depressive disorders and anxiety. Regular physical activity and exercise help to improve physical fitness of individuals and therefore promotes a healthy life style. Physical fitness is the ability of an individual to perform occupational, recreational and daily activities without becoming unduly fatigued and has components like aerobic fitness, muscular fitness, flexibility and body composition. However in order to improve physical fitness of an individual, the exercise program should have standardized principles (Heyward, 1997; ACSM, 2011).

Previous studies in health promoting behaviors indicated a high level of risky health behaviors in university students. Especially, sedentary lifestyles and low physical activity level were the most critical findings of these studies. Other studies examining the physical activity behavior as a health promoting factor found that physical activity level dramatically decrease from high school to university years (Ebem, 2007). Although health-promoting behaviors of the university students were examined in several studies, there is a lack of knowledge about those behaviors of the students who has just started to the university education. The research aim of this study was to examine the health promoting behaviors and especially the physical activity levels of Bartın University students. Besides, the present study explored the relationship between healthy lifestyle behaviors and physical activity levels of the students.

MATERIALS AND METHODS

2.1. Sample Group:

2218 male and female students ($n_{school\ of\ physical\ education\ and\ sport}$:195, $n_{faculty\ of\ literature}$:142, $n_{faculty\ of\ education}$: 201, $n_{faculty\ of\ economics\ and\ administrative\ sciences}$: 431, $n_{faculty\ of\ engineering}$: 515, $n_{faculty\ of\ forestry}$: 318, $n_{faculty\ of\ sciences}$: 25, $n_{vocational\ school}$: 372, $n_{vocational\ school\ of\ health}$: 19) studying at Bartın University participated to this study voluntarily. The mean measurements were found as follows: age 20.3 ± 1.09 yrs; body height 171.4 ± 9.2 cm; body mass 65.1 ± 8.6 kg and BMI 21.8 ± 4.6. Before data collection, the students were informed briefly about the questionnaires.

2.2. Data Gathering Instruments:
Health Promoting Lifestyle Profile Scale:

The participants were asked to answer basic demographic questions, such as age, gender, education, etc. before answering the scales. The first scale was Health Promoting Lifestyle Profile Scale, which was used to collect data about health behaviors. The scale was developed by Walker *et al*. (1987). It is composed of 48 items and 6 subscales and consists of questions about health promoting behaviors. The subscales are defined as self-actualization (SA), health responsibility (HR), exercise (E), nutrition (N), interpersonal support (IS) and stress management (SM). The total score reflects the healthy life-style behavior. Four more items were added to the scale by Walker *et al*. (1996), and the scale reached to 52 items in total. Each item was ranked with a 4 point likert scale, where: 1 corresponds to never, 2 sometimes, 3 often, and 4 regularly. Alpha coefficient reliability of the scale was 0.92 and alpha coefficient reliability of the subscales varied from 0.70 to 0.90. The reliability of the scales for Turkish population was tested by Esin (1997) and Akça (1998). Alpha coefficient reliability of the scale was found as 0.91 in Esin's study and 0.90 in Akça's study.

International Physical Activity Questionnaire (IPAQ):

IPAQ is a validated instrument to determine the participants' physical activity level (Craig *et al*., 2003). IPAQ measures the frequency, duration, and level of intensity of physical activity in the last seven days across all contexts and allows for the calculation of metabolic equivalents (MET). MET presents the weekly amount of physical activity. It is a product of frequency, duration, and intensity of the physical activity performed in the last seven days. Physical activity related METs as hours per week (MET-hours/week) were calculated according to the existing guidelines (IPAQ, 2005). Based on the self-reported MET, frequency and intensity of the physical activity, people can be classified into a low, moderate and high level of physical activity group.

Inactive (sedentary, low) group included the participants who reported lower than 600 MET-min/week of exercise participation, minimum active (moderate level of physical activity) group included the participants who reported 601-3000 MET-min/week of exercise participation, and physically active group (high, recommended level) included the participants who reported more than 3000 MET-min/week of exercise participation. In this study, participants' PA level was evaluated through Turkish short version of IPAQ (Öztürk, 2005). Translation

and validation study of Turkish version for the university students indicated an evidence for construct validity, criterion validity (accelerometer-IPAQ short form) (r = .30), and test retest stability (r = .69) (Öztürk, 2005).

2.3. Statistical Analyses:

Means and standard deviations are given as descriptive statistics, and the relationship between healthy lifestyle behaviors and physical activity level was evaluated by Pearson Product Moment Correlation Analysis. All analyses were executed in SPSS for Windows version 16.0 and the statistical significance was set at p < .05.

3. Results:

The physical activity levels and healthy lifestyle behaviors of the students are presented in Table 1 and Table 2, respectively.

Table 1: Mean and standard deviation of the physical activity levels.

International Physical Activity Questionnaire (IPAQ)			University Students (n=2218)
			IPAQ Categories
Walking	(3.3MET)	389.71 MET-min/w	
Moderate	(4.0MET)	364.34 MET-min/w	Physically Active Group (high, recommended level) (>3000 MET-min/w)
Vigorous	(8.0MET)	737.12 MET-min/w	
Total IPAQ		1491.17 MET-min/w	

According to the Table 1, the students' total IPAQ score was found as 1491.17 MET-min/w (389.71 MET-min/w for walking, 364.34 MET-min/w for moderate physical activities, and 737.12 MET-min/w for vigorous physical activities). This result shows that students at Bartın University can be classified as minimum active.

Table 2: Mean and standard deviation of the healthy lifestyle behaviors.

Healthy Lifestyle Behaviors	University Students (n=2218)	
	M	SD
Self-actualization	36.15	7.23
Health Responsibility	21.20	5.80
Exercise	11.01	3.62
Nutrition	15.31	3.24
Interpersonal Support	20.03	4.02
Stress Management	17.52	3.94
The Total Score of the Healthy Lifestyle Behavior	103.41	32.41

According to the Table 2, the total score of the healthy lifestyle behavior of the students was found to be 103.41. Table 3 presents the correlations between physical activity levels and healthy lifestyle behaviors of the students.

Table 3: Correlations between physical activity levels and healthy lifestyle behaviors.

Healthy lifestyle behaviors sub-scales	Pearson correlation (r)
Health responsibility	.60
Exercise	.69
Interpersonal support	.62
Stress management	.72
Nutrition	.60
Self actualization	.63

(p<0.05)

The Pearson Product Moment Correlation analyses indicated that significant positive correlations existed between total physical activity level and health responsibility (r=.60; p<0.05), exercise (r=.69; p<0.05), interpersonal support (r=.62; p<0.01), stress management (r=.72; p<0.05), nutrition (r=.60; p<0.05) and self actualization (r=.63; p<0.05). Therefore these findings proved that there is a positive and relatively strong correlation between physical activity and healthy lifestyle behaviors.

4. Discussion and Conclusions:

This study explored the relationship between physical activity levels and healthy lifestyle behaviors of students attending to Bartın University. It is important to find out the relationship between physical activity and healthy lifestyle behavior, as the results would convey the need for more efficient applications of physical activities in campus life. Many of the previous researches have already outlined the positive relationship between academic success and physical activity in the literature (e.g. Tomporowski *et al*., 2008; Chomitz *et al*., 2009; Tagoe and Dake, 2011; Turkmen, 2013). There are many benefits of physical activity for the individuals

to protect themselves from acute diseases and improve general health conditions (USDHHS, 1998). Inactive people can easily improve their health conditions through implementation of moderate level of physical activity to their daily lives. In order to achieve certain health benefits, moderate level of physical activity would be sufficient for any non-athlete person (USDHHS, 1998). People who do not participate in any kind of physical activity have the highest risk of death and disability, therefore physical activity should be a part of daily life routine (USDHHS, 2000).

Thus, creating awareness in students about physical activity will lead better health conditions, which would also result with academic success. Another study indicated that taking time away from traditional educational pursuits during the school day to spend an hour devoted to physical activity will not adversely influence performance of traditional educational skills (Carlson *et al*., 2008). Another study concluded that students who participate in physical activity programs in school are less likely to experience the adverse health complications resulting from degenerative diseases (Rennie *et al*., 2005). Taras (2005) also demonstrated that students who are physically active demonstrate greater attention during class than sedentary students. From a psychological perspective, physically active individuals report higher levels of self-esteem and lower levels of anxiety, which have both been associated with improved academic achievement (Flook *et al*., 2005).

The present study depicted that students attending to Bartın University are minimum active in terms of physical activity level and have an average score in healthy lifestyle behaviors. This finding is almost in line with the results of Turkish National Burden of Disease Report (2004), which reported that 35% of the male and 71% of the female population in Turkey was physically inactive between the ages of 15-29 years old. Besides another study which focused on the university students' physical activity levels found that 50% of them were inactive or exercising below the recommended level (Savcı *et al*., 2006). In another study carried out in Turkey, Nacar *et al*. (2013) found that even the Sports High Schools do not have sufficient sport facilities for the students. Therefore it is difficult to expect the students to have awareness of healthy lifestyle behaviors without the existence of necessary conditions.

This study found rather strong positive correlations between physical activity levels and healthy lifestyle behavior sub-scales. Therefore based on the citations listed in this study, the incorporation of physical activity into campus life would have many beneficial effects on students' physical, mental, social, and psychological well-being. Physical activity facilities of the universities and the awareness level of the students about them were found to be an important factor for the students to participate in any kinds of physical activity. Reed and Wilson (2006) stated that the majority of the students (73%) who were aware of the recreational facilities of the university benefited from them. Kazemi *et al*. (2013) stated that the facilities and environmental conditions have primary importance for sports participation. It is also important to note that a significant decline was found in physical activity level among students transitioning from the last two months of high school to the first two months of university (Bray and Born, 2004). Therefore it is suggested that more attention paid on the students beginning to their university study in order to motivate them for physical activity.

As a result, the findings of this study contribute to the field by providing evidence on the importance of physical activity for university students to have healthier lifestyles, and more successful academic results. This study also conveys the need for further researches to explore the differences in healthy lifestyle behaviors among different grades and genders at university.

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