

*Full Length Research Paper*

# The relationship between physical activity level and healthy life-style behaviors of distance education students

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The purpose of the study was to determine the relationship between physical activity levels and healthy life-style behaviors in distance education students in Hoca Ahmet Yesevi University. In total, 526 distance education students in Hoca Ahmet Yesevi University participated in this study voluntarily. The short form of International Physical Activity Questionnaire was administered for the determination of physical activity level of distance education students. Their physical activity levels were categorized as inactive, minimally active, and physically active by using Metabolic Equivalent Term method. For the determination of healthy life-style behaviors, Health-promoting Life-style Profile Questionnaire was used with self-actualization, health responsibility, exercise, nutrition, interpersonal support, and stress management subscales. Results of Pearson's Product Moment Correlation analyses indicated significant positive correlations between total physical activity level and exercise ( $r=0.23$ ;  $p<0.05$ ) and healthy life-style behaviors ( $r=0.30$ ;  $p<0.01$ ) among the study subjects. There was no significant correlation between healthy life-style behaviors and sport index of physical activity questionnaire ( $p>0.05$ ). The findings of the present study indicated that healthy life-style behaviors were not indicators of physical activity level of distance education students.

**Key words:** Distance education students, health-promoting life-style, physical activity.

## INTRODUCTION

Physical activity and physical fitness are closely related issues. The fitness variables are important determinants of various health outcomes, and several specific biological mechanisms have been elucidated to confirm the causal relationship of fitness variables with health. We considered the general health-related behaviors and health-related fitness as these relate to health outcomes, that is, health responsibility, stress management, diet, nutrition, exercise (physical activity), and fitness

behaviors (Blair et al., 2001). Studies indicated that healthy life-styles enhance lifelong health, increase quality of life, and decrease morbidity and mortality (Ebem, 2007) associated with the development of chronic diseases, specifically heart disease, cancer, stroke, and diabetes (CDC, 2004; NHC, 1998).

On the other hand health-promoting life-styles include activities that are focused on improving the level of well-being. The focus of these activities is on the development

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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 (Ebem, 2007; Walker et al., 1987; Walker and Hill-Polerecky, 1986; JAMA, 1995). 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 heartbeat rate and blood pressure at rest, reducing hypertension and blood glucose, decreasing fat mass, increasing lean body mass, bone mass, bone strength and muscle strength; preventing arthritis, some types of cancer and type 2 diabetes (Kramer and Wells, 1996; WHO, 2013; Turkish Republic Ministry of Health, 2013). There is also evidence that regular PA may reduce or prevent mild or moderate depression (Yıldırım, 2010). In addition, physical activity, exercise, and healthy life-style play important roles in the prevention and improvement of mild to moderate depressive disorders and anxiety (Tsai and Liu, 2012).

Further, with developing technology, many individuals pursue sedentary activities and become physically less active. Sedentary life-style leads to a greater risk of developing coronary heart disease, hypertension, high blood lipid profile, type 2 diabetes, obesity, and some forms of cancer, like colon and breast cancer (Türkmen et al., 2013).

On the other hand some studies found demographic variables to be related to the practice of health behaviors. Duffy et al. (1996) found that age and education affected healthy life-style behaviors. Moreover, with increase in age, education, work experience, status, and income, health-promoting behaviors also increased. Kuster and Fong (1993) reported that age, education, and income play important roles in promoting healthy life-style behaviors. Walker et al. (1986) stated that workers received the highest scores on self-actualization and exercise, but that they got low scores on health responsibility and stress management. Similar to this finding, Esin (1997), in her study on 450 workers, established that workers had a moderate level of healthy life-style behaviors. In addition, physical activity and exercise play important roles in prevention and improvement of mild to moderate depressive disorders, anxiety, and stress management. Regular physical activity and exercise help improve physical fitness of individuals and, therefore, promote 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 for

the exercise to improve physical fitness of an individual, the exercise program should have standardized principles (Türkmen et al., 2013; ACSM, 2011; Heyward, 1997).

Previous studies in health-promoting behaviors indicated a high level of risky health behaviors in the university students. Specifically, sedentary life-styles and low physical activity level were the most critical findings from these studies. Other studies examining the physical activity behavior as a health-promoting factor found that physical activity level dramatically decreases from high school to the university years (Ebem, 2007). Goldfield et al. (2012) pointed out the importance of gaining healthy life-style behaviors during preschool years. 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 entered the university. Moreover, there have been limited studies on health-promoting behaviors, such as health responsibility, self-actualization, health control, stress management, nutrition, and exercise; also, very few health-promoting programs have been developed in the world also in Turkey (Beşer et al., 2007).

On the other hand developments which grow very fast in science and technology in the world in the last century and fast increasing population of the world. At the same time increase of the needs of the societies in education, but despite these, insufficiency of educational institutions, course materials and teachers, settlement far from the educational institutions, high prices in traditional educations. Education requests of the adults who have to go to work, requests for changing department by having a certificate or a diploma or by developing themselves, requests for promotion in the institution, but their obligation to continue courses in educational institutions; these factors pushed the societies to find new searches in education area (Bozkuş, 2014). These searches which are mostly made by developed countries provided the developing of the "distance learning" method (Alkan, 1996). Distance education is used in a variety of settings and for a broad range of purposes. Universities use it to increase the number of students who have access to higher education; companies use it to upgrade their workers' skills and keep them abreast of rapidly advancing technologies; individuals use it for their own professional development and to enhance their career opportunities; governments use it to provide on-the-job training to teachers or other workers, to enhance the quality of traditional primary and secondary schooling, and to deliver instruction to remote rural areas that might not otherwise be served. Various technologies have been used for distance education, but print-based correspondence courses have been, and will continue to be, the dominant delivery mechanism in both the developed and the developing worlds. Print is still the cheapest

technology, and, even if the costs of using high-tech dissemination tools fall below those of print, it will be some time before many countries have adequate infrastructures.

Higher education; within the university setting, some institutions offer only distance education, while others provide both distance and conventional education. And also distance education students physical activity levels dramatically decrease from adolescence to adulthood, as people get older. Especially, late adolescence and university years are seem to be very critical period for the increased level of risky health behaviors such as irregular meals and sleep patterns, inactivity, bad eating habits and risk-taking behaviors like illicit drug, alcohol and tobacco use, and sexual activity (Ebem, 2007). Recently, Lee and Loke (2005) have identified limited sense of health responsibility, low physical activity, and poor nutritional habits in university students.

The objective of this study was to examine the health-promoting behaviors, especially the physical activity levels of the distance education students in Hoca Ahmet Yesevi University to determine the relationship between healthy life-style behaviors and physical activity level in the study subjects.

## MATERIALS AND METHODS

### Subjects and experiment approach

Five hundred and twenty six male and female ( $N_{\text{male}}:418$ ;  $N_{\text{female}}:108$ ) distance education students in Hoca Ahmet Yesevi University participated in this study voluntarily. Mean $\pm$ SD age of the study subjects was 32.5 $\pm$ 6.13 years; height was 173.41 $\pm$ 8.08 cm; weight was 76.8 $\pm$ 14.87 kg; and BMI was 23.4 $\pm$ 3.4. Before data collection, the students were given information comprehensibility of the questions. Health-promoting life-style behaviors and physical activity data were obtained with the questionnaire by mailing with students.

### Health-promoting life-style profile scale

The participants were asked to provide information about the demographic factors, such as age, gender, and education. Health-promoting Life-style Profile Scale was used for collecting data on their 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 were on 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, and now the scale is composed of 52 items (Walker et al., 1987). Each respondent was asked to rate each item on Likerts' 1 to 4 response scale where 1 corresponds to never, 2 sometimes, 3 often, 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 scale for Turkish population was tested by Esin (1987) and Akça (1998). Alpha coefficient reliability of the scale was 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 physical activity level of the participants (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 level was measured as hours per week (MET-hours/week) calculated according to the existing guidelines (IPAQ, 2013). Based on the self-reported MET, frequency, and intensity of the physical activity, people can be classified into groups having low, moderate and high level of physical activity.

Inactive (sedentary, low) group included the participants who reported lower than 600 MET-min/week of exercise, minimally active (moderate level of physical activity) group included the participants who reported 601-3,000 MET-min/week of exercise, and physically active group (high, recommended level) included the participants who reported more than 3,000 MET-min/week of exercise. In this study, PA levels of the participants were evaluated through Turkish short version of IPAQ (Ozturk, 2005). Translation and validation study of Turkish version for the university students indicated an evidence for construct validity, criterion validity (accelerometer-IPAQ short form) ( $r=0.30$ ), and test-retest stability ( $r=0.69$ ) (Ozturk, 2005).

## Statistical analyses

Means and standard deviations are given as descriptive statistics, and the relationship between healthy life-style behaviors and physical activity level was evaluated by Pearson's Product Moment Correlation Analysis. All analyzers were executed in SPSS for Windows (version 16.0) and the level of statistical significance was set at  $p<0.05$ .

## RESULTS

The healthy life-style behaviors and physical activity level of distance education students in Hoca Ahmet Yesevi University as assessed in this study are displayed in Tables 1 and 2, respectively. Table 3 shows the correlations between healthy life-style behaviors and physical activity level.

Table 1 shows the healthy life-style behaviors of the distance education students in Hoca Ahmet Yesevi University. According to this table, the highest rate was reached in self-actualization sub-scale, and the lowest rate in exercise. This finding depicts the contradictory attitude of distance education students towards exercise.

The Table 2, the distance education students in Hoca Ahmet Yesevi University is in minimally active group. Results of Pearson's Product Moment Correlation Analyses indicated significantly positive correlations between total physical activity level and exercise ( $r=0.23$ ;  $p<0.05$ ) and healthy life-style behaviors ( $r=0.30$ ;  $p<0.01$ ) in the study subjects. There was no significant correlation between healthy life-style behaviors and sport index of physical activity questionnaire ( $p>0.05$ ). The findings of

**Table 1.** Mean and standard deviation of scores of the healthy life-style behavior among the study participants.

Healthy life-style behavior	Distance education students		
	Mean	Range variability	
		Min	Max
Self-actualization	40.17	27	52
Health responsibility	25.51	11	40
Exercise	10.73	5	20
Nutrition	18.55	8	24
Interpersonal support	21.71	9	28
Stress management	18.72	8	28
Total score of the healthy and life-style behavior	135.41	85	180

**Table 2.** Mean and standard deviation of the physical activity level among the study participants.

International Physical Activity Questionnaire (IPAQ)			Distance Education Students
			IPAQ categories
Walking	(3.3MET)	620.79 MET-min/week	Minimally active group
Moderate	(4.0MET)	106.84 MET-min/week	(moderate level of physical activity)
Vigorous	(8.0MET)	83.04 MET-min/week	
Total IPAQ		813.075 MET-min/week	(601-3000 MET-min/week)

**Table 3.** Correlations between physical activity level and healthy life-style behavior.

Healthy life-style behaviors	Distance education students
	Total physical activity level
Self-actualization	NS
Health responsibility	NS
Exercise	0.23*
Nutrition	NS
Interpersonal support	NS
Stress management	NS
Total score of the healthy and life-style behavior	0.30**

\*p<0.05; \*\*p<0.01; NS: Non significant.

the present study indicated that healthy life-style behaviors were not an indicator of physical activity level of distance education students in Hoca Ahmet Yesevi University.

## DISCUSSION AND CONCLUSIONS

This study explored the relationship between physical activity levels and healthy life-style behaviors of students in distance education students. It is important to find out the relationship between physical activity and healthy life-style behavior as the results would convey the need for

more efficient opportunity of physical activities in students life. Physical activity is defined as any bodily movement produced by skeletal muscles that require energy expenditure. Physical inactivity (lack of physical activity) has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). Regular physical activity and exercise help improve physical fitness (aerobic fitness, muscular fitness, flexibility, and body composition) of individuals and, therefore, promote a healthy life-style (Özkan, 2011). Also, regular physical activity and exercise help improve physical fitness of individuals, thus promoting 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 for the exercise to improve physical fitness of an individual, the exercise program should have standardized principles (ACSM, 2011). Many of the previous researches have already outlined the positive relationship between academic success and physical activity in the literature (Chomitz et al., 2009; Logan et al., 2013; Tagoe et al., 2011; Tomporowski et al., 2008). However, with developing technology and intensive workload, many individuals in academic institutions pursue sedentary activities and become physically inactive (Pirinci et al., 2008). Sedentary life-style leads to a greater risk of developing coronary heart disease, hypertension, high blood lipid profile, type 2 diabetes, obesity, and some forms of cancer, like colon and breast cancer. Many studies reported that engaging in physical activity and exercise on regular basis lowers blood pressure, improves lipoprotein profile, C-reactive protein, and other CHD biomarkers, enhances insulin sensitivity, and plays an important role in weight management (Ay et al., 2012; Knechtle et al., 2004; Macauley et al., 2004). On the other hand physical inactivity and lack of exercise result in many problems including threatening or limiting a healthy life. Although some students were found to be a similar physically active but body fat percentage were high due to their diet. Body fat percentage can differ according to age, nutrition, race, environmental factors and gender. On the other hand, health and physical fitness improves quality of life. It is known fact that modern technology results in a sedentary lifestyle (Orhan, 2015; Finn, 2002). It has been reported in recent studies that environmental factors, lifestyles, diet, family structure, cultural differences and several other factors are closely related to physical fitness and physical activity. There are also contrary opinions about environmental and cultural factors (Orhan, 2015; Finn, 2002).

The present study depicted that distance education students in Hoca Ahmet Yesevi University are minimally active in terms of physical activity level and have an average score in healthy life-style behaviors. This finding is almost in line with the results of Turkish National Burden of Disease Report (2013), which highlighted that 35% of the male and 71% of the female population in Turkey have healthy life-style behaviors. More specifically Ebem (2007), Türkmen et al. (2013) and Çelik et al. (2009) reached to similar findings in their researches, which were carried on students in Middle East University, Çanakkale 18 Mart University and Bartın University in Turkey. 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 and physical activity is one of the most significant component of a healthy life style (Orhan, 2015). 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. On the other hand some factors, such as age, gender, body weight, health status, and environmental features (e.g., availability of sidewalks, green space, neighborhood safety), influence physical activity levels. Findings from the Behavioral Risk Factor Surveillance System show a clear association between lower educational levels and inactive lifestyles in both the 1990 and 2004 assessment periods (Harper and Lynch, 2007; Sawchuk et al., 2008). Although educational attainment tends to be positively associated with engaging in physical activity and exercise in the majority culture (Trost et al., 2002). Although disparities in physical activity and exercise engagement are evident among older, ethnically diverse populations, few attempts have been made to better understand demographic, personal, and environmental factors that affects this important health-related behavior. Routine physical activity can reduce the risk for many health problems disproportionately experienced (Galloway, 2005). Future research should investigate novel, low-cost methods for promoting exercise in older, especially at the frequency and intensity levels recommended by public health agencies. Furthermore, several variables likely mediate and moderate the education-physical activity relationship.

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. Another important issue this study brings into discussion is the need for further researches focusing on differences of physical activity levels, healthy life style behaviors, and other related topics between on-campus and distance education students. These kinds of studies will give opportunity to evaluate the advantages and disadvantages of new education technologies against traditional education systems.

### Conflict of Interests

The author has not declared any conflict of interest.

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