THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY LEVEL AND ACADEMIC ACHIEVEMENT IN HIGH SCHOOL STUDENTS

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Approval of the Graduate School of Social Sciences

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

The Relationship between Physical Activity Level and Academic Achievement in High School Students

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The main purpose of this study was to examine the relationship between physical activity level and academic achievement in high school students. This study is limited with grade 9-12 high school students in Kastamonu. There are 16 high schools and 8244 students in Kastamonu. The schools have divided into four randomly. Four of them have chosen for grade 9, four of them have chosen for grade 10, four of them have chosen for grade 11 and four of them have chosen for grades 12. Two classes were chosen randomly from every school. To measure the physical activity levels of the students, Physical Activity Evaluation Questionnaire (FADA) have applied. It is the Turkish version of International Physical Activity Questionnaire (IPAC). To measure the academic achievement of the students, e-school grand point average scores were considered. Design of the study was associational. Dependent variables of this study were Grand Point Average (GPA) score and Physical Activity Level. Independent variables were socio economic status, education level of parents, gender, time spent studying lessons, age, time spent with computer and time spent with

watching television. For the statistical analysis Pearson Correlation Coefficient, MANOVA and Hierarchical Regression Analysis have been applied.

In this study, the results revealed that socio economic status has no significant effect on academic achievement. Age and gender have significant effect on academic achievement. Father education level has no significant effect on academic achievement but, mother education level has significant effect on academic achievement. Time spent studying lessons has significant effect on academic achievement. Time spent with computer and time spent with watching television have significant effect negatively on academic achievement. As a result of this research, it was proven that there was no statistically significant relationship between physical activity level and academic achievement in high school students.

Keywords: Physical Activity Level, Academic Achievement

ÖZ

LİSE ÖĞRENCİLERİNDE FİZİKSEL AKTİVİTE SEVİYESİ İLE AKADEMİK BAŞARI ARASINDAKİ İLİŞKİ

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Bu çalışmanın esas amacı, lise öğrencilerinde fiziksel aktivite seviyesiyle, akademik başarı arasındaki ilişkinin incelenmesidir. Bu çalışma Kastamonu'daki, 9-12. Sınıflar arasındaki lise öğrencileriyle sınırlıdır. Kastamonu'da 16 lise ve 8244 öğrenci vardır. Okullar rastgele dörde bölündü. Dört tanesi 9. Sınıflar için, dört tanesi 10. Sınıflar için, dört tanesi 11. Sınıflar için ve dört tanesi de 12. Sınıflar için rastgele seçildi. Her okuldan ikişer sınıf rastgele seçildi. Öğrencilerin fiziksel aktivite seviyesini ölçmek için Fiziksel Aktivite Değerlendirme Anketi (FADA) uygulandı. Bu, Uluslararası Fiziksel Aktivite Anketi'nin (IPAC) Türkçe versiyonudur. Öğrencilerin akademik başarılarını ölçmek için e-okul genel başarı ortalaması puanları dikkate alındı. Çalışmanın dizaynı ilişkiseldir. Bu çalışmanın bağımlı değişkenleri Genel Not Ortalaması ve Fiziksel Aktivite Seviyesi'dir. Bağımsız değişkenler, sosyo-ekonomik statü, ebeveynlerin eğitim seviyesi, cinsiyet, ders çalışmaya harcanan zaman, yaş, bilgisayarla geçirilen zaman ve televizyon izleyerek geçirilen zamandır.

İstatistiksel analizler için, Pearson korelasyon katsayısı, karışık desen çok değişkenli varyans analizi (MANOVA) ve hiyerarşik regresyon analizleri kullanıldı.

Bu çalışmada sosyo-ekonomik statünün akademik başarıya etkisinin olmadığı görüldü.

Yaş ve cinsiyetin akademik başarıda etkili olduğu görüldü. Baba eğitim seviyesinin akademik başarıda etkili olmadığı fakat anne eğitim seviyesinin akademik başarıda etkili olduğu görüldü. Ders çalışmaya harcanan zamanın akademik başarıda etkili olduğu görüldü. Bilgisayarla geçirilen zaman ve televizyon izleyerek geçirilen zamanın olumsuz yönde etkili olduğu görüldü. Bu çalışmanın sonucunda, lise öğrencilerinde fiziksel aktivite ve akademik başarı arasında istatistiksel olarak anlamlı bir ilişki olmadığı kanıtlanmıştır.

Anahtar Kelimeler: Fiziksel Aktivite Seviyesi, Akademik Başarı

To My Father

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CHAPTER I

I.INTRODUCTION

Physical inactivity is one of the major health problems in our modern society. A century ago people had to do their daily works physically. The development of technology has lead to a more sedentary life style (Akıncı, 2014; Arabacı & Çankaya, 2007). The lack of physical activity causes some diseases like childhood obesity, type 2 diabetes mellitus, cardiovascular diseases, hypertension, hyperlipidemia, stroke, colon cancer and breast cancer (Castelli, Hillman, Buck, & Erwin, 2007). On the other hand participating physical activities regularly improves mental health, musculoskeletal health, immune function. It reduces diabetes mellitus, upper respiratory tract infections, coronary heart disease, hypertension, colon cancer, stroke, vascular and metabolic disturbances and all-cause mortality (Allison, Dwyer, & Makin, 1999; Castelli et al., 2007; Rowe, van der Mars, Schuldheisz, & Fox, 2004; M. S. Tremblay, Inman, & Willms, 2000).

Physical activity, defined as any body movement that needs more energy than resting and works your muscles or any bodily movement produced by skeletal muscles that needs energy expenditure (Torbeyns, Bailey, Bos, & Meeusen, 2014). To defeat physical inactivity, 150 minutes per week of moderate-vigorous intensity physical activity is recommended (Hallal, Cordeira, Knuth, Mielke, & Victora, 2014).

Physical activity is also linked with physiological and psychological utilities. It is believed that physical activity is not stable over time and vigorous physical activity habits were gained in the younger years, both for health related benefits get and to develop positive behaviors which can be continued throughout a lifelong process (Allison et al., 1999).

Factors affecting well-being, health and living conditions have been changed radically by new technological changes in the last fifty years. Since the transportation have been mechanized, energy expenditure of individuals have been decreased radically in daily life. Participating in physical activities regularly, positively influences psychosocial and physical health (Biddle, 1995). A sedentary lifestyle has been known as a risk factor for some diseases that become more common with age. Conversely, regular physical activity performed is accepted as a health-related behavior with positive results on many commonly known health outcomes. Of course everybody who is physically active will not be immune to metabolic and vascular diseases, but still the preventive effects and decrease in risk levels which were related with all-cause mortality are present to vindicate the contribution of a lifestyle which is physically active. Besides these, psychosocial benefits are known as one of the most positive benefits of physical activity. Exercise and sport has also some benefits on social adaptation and mental health. Besides the maintenance and development of organic health, poor mental health will also be prevented by physical activities. Personality corruption and physical corruption are parallel to one another, therefore both types of corruption should be minimized by the improvement of physical fitness. There is a relationship between psychosocial health and physical activity and psychopathology is oppositely correlated with physical fitness (Biddle, 1995). Consequently, the most effective method of increasing the total well-being of the society may be introducing people with physical activities for all age groups (Brady, 1998).

21st century's greatest public health problem is physical inactivity (Trost, Blair, & Khan, 2014). For many non-communicable diseases, physical inactivity is proven as an important modifiable risk factor. As Warburton mentioned, greater than 50 % decrease in the risk of cardiovascular related and all cause death, 30 % - 40 % decrease in the dependent risk of colon cancer, and 20 % - 30 % decrease in the dependent risk of female breast cancer is related to physical activity (Maresova, 2014). Social isolation and physical inactivity increase with age, and these factors are harmful to mental and physical well-being (S. B. Reed, Crespo, Harvey, & Andersen, 2011).

In all age groups, inactive lifestyle has increased in developing and developed countries. Also non communicable diseases have increased by inactive lifestyle. Therefore, for mortality in the world, inactivity is shown as the fourth risk factor (CAN, ARSLAN, & ERSÖZ, 2015). Sedentary persons have the highest risk of all-cause mortality who remain inactive. Additionally, with age, the dominance of physical inactivity tends to increase (Sahebi, 2014). As well as improved mental health in older adults, improved functioning in performance of activities of daily living might also be included as the benefits of increased physical activity. It is also believed that increased physical activity is most essential for those who have lower levels of physical and mental health. It is important to find strategies to support physical activity in older adults so that they have difficulties with activities of daily living and they are more likely to be sedentary (S. B. Reed et al., 2011).

Obesity is a rising and important health problem within adolescents. This is one of the major worries because obesity affects adolescents' overall well-being and it has many health and social outcomes. In addition obesity within adolescents has a high tendency to continue into adulthood (Mereish & Poteat, 2015). Almost 30% of American adolescents are over-weight and it is predicted by the International Journal of Pediatric Obesity that, by 2020, this number will increase to 50% between North American adolescents. Overweight children have four times bigger risk to become overweight later in life (Landolfi, 2014). In fact, we can say that this is a rising problem, also in Turkey.

Adolescent obesity is a state where youth store extreme fat that can negatively affect miscellaneous elements of health. Body mass index (BMI, kg/m2) is an instrument mostly used to objectively measure fatness in which adolescent obesity is defined as BMI $\geq$ 95th percentile. Adolescent obesity has increased dramatically in the past few years and has been mostly ascribed to a decrease in chances for physical activity (PA) and an increase in electronic media use (cellular phones, televisions in bedrooms, video games). Furthermore, sleep period (SLP) has also been shown to be relate d with obesity. Youth reporting more physical activity, also report more sleep period (Laurson, Lee, & Eisenmann, 2015).

In the United States, in spite of the rising number of overweight and obese children, lots of schools are cutting physical education programs in order that presenting more academic courses. These curricular modifications applied to increase the students' academic achievement, but the literature doesn't support this idea. Recent studies have shown positive relationships among physical activity or participation in sports and academic achievement.

Coe, Pivarnik, Womack, Reeves,and Malina (2006) assumed that, including the activity from physical education classes, increased physical activity could conduct to better classroom performance because of the positive effects it has on self-esteem, concentration and arousal level (Siegel, 2007). Other gains of a physically active lifestyle involves less absenteeism and better productivity in office workers, better academic performance in students, in elderly people, an improvement in independent living and a decrease in cognitive decline (Torbeyns et al., 2014).

1.1. Purpose of the Study

This study has mainly two purposes: Firstly, the purpose of the study is to examine the relationship between physical activity level and academic achievement in high school students. Secondly, to examine the effect of selected variables on academic achievement.

1.2. Research Questions

Research question 1: What is the relationship between physical activity level and academic achievement in high school students?

Research question 2: What is the effect of monthly family income on academic achievement in high school students?

Research question 3: What is the effect of education level of parents on academic achievement in high school students?

Research question 4: What is the effect of gender on academic achievement in high school students?

Research question 5: What is the effect of time spent studying lessons on academic achievement in high school students?

Research question 6: What is the relationship between age and academic achievement in high school students?

Research question 7: What is the effect of time spent with computer on academic achievement in high school students?

Research question 8: What is the effect of time spent with watching television on academic achievement in high school students?

1.3. Hypothesis

Hypothesis 1: There is no significant relationship between physical activity level and academic achievement in high school students.

Hypothesis 2: There is a significant effect of monthly family income on academic achievement in high school students.

Hypothesis 3: There is a significant effect of education level of parents on academic achievement in high school students.

Hypothesis 4: There is a significant effect of gender on academic achievement in high school students.

Hypothesis 5: There is a significant effect of time spent studying lessons on academic achievement in high school students.

Hypothesis 6: There is a significant relationship between age and academic achievement in high school students.

Hypothesis 7: There is a significant effect of time spent with computer on academic achievement in high school students.

Hypothesis 8: There is a significant effect of time spent with watching television on academic achievement in high school students.

1.4. Significance of the Study

As we all know there are lots of exams in our education system in Turkey. There are TEOG (Transition to Intermediate School in Basic Education Exam), LYS (Bachelor's Degree Accommodation Exam), YGS (Transition to University Exam), KPSS (Selecting Personnel for the Public Exam), ALES (Education for Academic Personnel and Graduates Entrance Exam), ÜDS (Inter Universities Committee Foreign Languages Exam), etc. If a student wants to graduate from a university and get a job

and earn his or her own money, then he or she has to pass these exams one by one. The students will not have a good future unless they would succeed these exams. So, there are big pressure on both students, parents and teachers in Turkey. Every member of the education system are focused on academic success in these test exams. As a result of this, there is no time left for the students except academic lessons. Students, parents, even some of the teachers think that lessons like physical education, drawing and music are unnecessary. They think that especially time spend in the students' leisure times, influences academic achievement negatively. Conversely we all know that physical health and mental relaxation are the basic needs of a healthy individual. Indeed, we know from the literature that physical activities don't effect academic achievement negatively. Therefore, we have to consider the health benefits of physical activities for Turkish society to a healthy future life. For youth, both academic achievement and physical activities have to be indispensable. In Turkey there are very few studies about physical activity and academic achievement. Because of this reason, the study was conducted in order to fill this gap in the literature.

1.5. Limitations of Study

This study has been applied to high school students in Kastamonu in 2014-2015 educational period. So the study has been limited in Kastamonu, a small town of Turkey.

1.6. Assumptions of Study

We assume that all the questions in the questionnaire has been answered by the students honestly. The test has been applied to the students by well-trained testers. All the questions of the test have been understood well by the students.

1.7. Definition of Terms

Physical Activity: any body movement that needs more energy than resting and works your muscles or any bodily movement produced by skeletal muscles that needs energy expenditure. (Torbeyns et al., 2014)

Academic Achievement: Achievement is that project, thought, work or will is realized upon desire of person or institution and as properly in a certain time period (Akça, 2002). But the arithmetic means of the scores of passing class the student get

from all lessons expressing to his/her work in a year is called as academic achievement. Studies interesting with examination projects and students' performances are scored over full point in our country (Açıkgöz, 2005; Elİöz, 2013).

CHAPTER II

LITERATURE REVIEW

2.1. Physical Activity

Physical activity, defined as any body movement that needs more energy than resting and works your muscles or any bodily movement produced by skeletal muscles that needs energy expenditure. (Helena Igelström, Margareta Emtner, Eva Lindberg, 2013; Janssen, 2012; L. Miles, 2007; Torbeyns et al., 2014).

Physical activity is a major precaution for health problems as it is improving strength, balance, coordination flexibility, endurance and reaction time. (Bielemann, Martinez-mesa, & Gigante, 2013; Christoffersen et al., 2015)

For a lifelong process, it has proven that physical activity has high benefits for health (Aittasalo et al., 2015; Services, 2008). Since obesity and other health problems which are related with extreme fat have become to expand also in younger ages, the concern in assessing children and adolescents about physical activity and sedentary behavior has become more important and in younger populations, the proof about the health gains of physical activity has strengthened (Aittasalo et al., 2015; Janssen & Leblanc, 2010).

To maintain health and prevent chronic diseases, 30 minutes of moderate intensity physical activity (5 days per week or a total of 150 min/wk) has been recommended. In the assessment of physical activity, metabolic equivalents (METs [1 MET=3.5 mL Oj-kg'-min"*]) have been used frequently. As multiples of the oxygen consumption at rest (1.0 MET), various METs have been derived to measure the energy expended in different types of physical activity. Low intensity physical activity has been determined as lower than 3 METs, moderate intensity physical activity has been determined as 3 to 6 METs, and vigorous intensity physical activity has been determined as higher than 6 METs (Helena Igelström, Margareta Emtner, Eva Lindberg, 2013).

2.2. Health Benefits of Physical Activity

As we mention about physical activity, we saw that there is not a deep understanding about the rules, applications and health gains of physical activity in the society. For many years, these rules and applications have been useful, but with time, they have changed. In early times, vigorous-intensity physical activity was the focus of these applications. In mid 90's, moderate intensity activities were accepted as the most beneficial application. In recent times, muscle strength exercises have been included in these applications. For the common health of the society, it is useful for the population to understand these changes. It can be said that the majority of the society understands the relation between physical activity and health but they have suspicion about frequency, intensity and volume which is needed to ensure health gains (Borges et al., 2015)

Although the utilities related physically active life style has been proven, a considerable part of the population is not active enough. In our society, physical inactivity is a basic health risk factor and to underline this connection, physical education programs are continually determined as a tool. An important role in supporting physical activity can be played by physical education programs. Policies which require time periodisations and devices for physical education and physical activity in schools are important in order to ensure substructure to make being physically active reachable. It is obvious that, policies are not enough to explain physical inactivity alone. We have to take into consideration individual differences which effect decisions of the children to be physically active (Solmon, 2015).

It is very obvious that physical activity is becoming more important for a long and high quality life. On many health parameters, physical activity has effective influences (Dishman et al., 2006; Torbeyns et al., 2014). Person who have high activity level shows lower risk of developing cardiovascular disease, metabolic syndrome, cancer, obesity, hypertension, diabetes and some mental health problems like depression and anxiety. On the other hand, a better self-perception, better social interaction and less stress are the benefits of physical activity which contributes to a better quality of life. (Torbeyns et al., 2014)

2.3. Obesity

Obesity levels in children and adolescents has increased dramatically in the past few years (Bassett, John, Conger, Fitzhugh, & Coe, 2015; Kopczynski, Chen-Stute, & Kellmann, 2014; Landolfi, 2014; Laurson, Lee, et al., 2015; Mereish & Poteat, 2015; Nemet, 2015). It is suggested that the decrease in physical activity levels may be the one of the reasons of the increase in childhood obesity rates (Bassett et al., 2015; Kopczynski et al., 2014; Laurson, Lee, et al., 2015; Malkogeorgos, Argiriadou, Kotzamanidou, & Mavrovouniotis, 2010; Nemet, 2015; Yoon & So, 2015). Obese children and adolescents have a greater risk to become obese adults (Bassett et al., 2015; Mereish & Poteat, 2015; Nemet, 2015). Since physical activity habits chase from adolescence to adulthood, adolescence may act a critical period for assembling a physically active lifestyle to prohibit illnesses related with inactivity in adulthood (Nemet, 2015).

2.4. Childhood Obesity

Because of its relationship with accelerated risk of diabetes, coronary heart disease, cancer, hypertension, and many other health problems, children's obesity is characterized as major epidemic health problem of the modern days. Institutions responsibly should be faced with it effectively. According to the World Health Organization, one of the three more major reasons of death for the citizens of developed countries in the Western world formed by obesity (Malkogeorgos et al., 2010).

2.5. Physical Inactivity

Physical inactivity is approved as a public health problem in Canada and the world. A common way to measure the public health effect of physical inactivity is to evaluate how common the population not meeting physical activity guidelines. Last objectively measured observation data states that Canada’s physical activity guidelines of 150 min/week of moderate-to-vigorous physical activity have not been met by 85 % of Canadian adults. A second way to measure the public health effect of physical inactivity is to predict the percent of a disease in the society which is directly traceless to physical inactivity. For example, physical inactivity is the reason for 19 % of the

coronary artery disease cases in Canadian men. A third way to measure the public health effect of physical inactivity is to predict the expenditures it cover on the health care system and economy. The last Canadian prediction, based on 2001 data, suggests that the yearly economic cost of physical inactivity is $5.3 billion (Janssen, 2012).

For several aspects of a long and high quality life, it is becoming more obvious that physical activity is very important. The literature obviously indicates that a lifestyle which is physically active has profitable outcomes on a few health parameters. Lower risks of improving cardiovascular disease, metabolic syndrome, hypertension, obesity, cancer, diabetes and mental health problems such as anxiety and depression has been shown by people with higher physical activity levels. A better quality of life, a better self-perception, a better social interaction and less stress have also been experienced by them. Physical activity makes neuro-protective, neuro-adaptive and neuro-generative processes easier and it increases executive functions, including motor learning, some types of learning and cognition. So, it is also known to positively affect brain plasticity. Better productivity and less absenteeism in office workers (Brown, Gilson, Burton, & Brown, 2011), better academic performance in students, an improvement in independent living and a decrease in cognitive decline in elderly people are other benefits of a physically active lifestyle (Tak, Kuiper, Chorus, & Hopman-rock, 2013).

After all of these known utilities of being physically active, globally, in 2008, the physical activity guidelines (at least 150 min of moderate physical activity per week) have not been met by about 31 % of all people aged 15 years and older. In terms of direct and indirect health care expenditures, this has a big effect on society (Cadilhac et al., 2011).

The needed thing is not just a focus on physical activity. In fact, latest literature recommends that, sedentary behavior, consulting to ‘any waking activity characterized by an energy expenditure B1.5 metabolic equivalents and a sitting or reclining posture’ (M. Tremblay, 2012), as even a more powerful identifying element for health than physical activity. The results of automation and mechanization of the community are, substantially decreased requests for physical activity in the community. Sedentary

behavior traces, such as electronic games and computer use, watching television, time spent in automobiles and sitting at work have substantially rised, since the middle of the last century (Plotnikoff & Karunamuni, 2012).

Physical inactivity is the greatest public health problem of the 21st century (Trost et al., 2014). For not being physically active, a lack of time is the common given reason. Thereby, a good solution could be combining physical activity into people's daily life activities. To foster people to begin active transport is one possibility. Between middle aged to elderly subjects, a powerful opposite relationship between going to work cycling and all-cause mortality, cancer mortality and morbidity was found in a systematical study by Oja et al. (Oja, Bull, Fogelholm, & Martin, 2010). Among working age adults, some improvements in cardiovascular risk factors and coherent improvements in cardiovascular fitness were found also. The positive effect on cardiovascular risk factors were confirmed by de Geus et al. (Geus, Hoof, Aerts, & Meeusen, 2008) and additionally a positive influence on the health related quality of life was found. Gainings similar to those observed with normal physical activity have been reached by active transport, according to last reports. On the other hand, as some people have to go to work over large distances, preferring active transport (for example, for going to work) might not be possible for everyone. To meet active workstations into people's daily life is another probability to decrease sedentary time and to improve physical activity levels, which is also suitable for people who cannot begin active transport. People will be allowed by these workstations to combine physical activity into normally sedentary desk duties (Torbeyns et al., 2014).

2.6. Suggestions for Physical Activity

Gathering "at least 60 minutes of moderate–vigorous intensity physical activity (MVPA) daily" was focused on the World Health Organization (WHO) suggestions for children aged 5 to 17 years. Less stress is placed on the concomitant suggestion that "vigorous-intensity activities (VPA) should be joint-stock… 3 times per week at least." These suggestions are based on substantial proof for the health gains of physical activity, and WHO claims that they are appropriate "regardless of gender, income level, race or ethnicity." On the other hand, there is insufficiency of supporting

research from low resource settings where large volumes of accidental moderate intensity physical activity (MPA) often occur while active transport. This is serious because cardiorespiratory fitness is most liable to VPA and in the existence of sufficient nutrition is a better estimator of health outcomes in young people than MVPA. We examined the relation of substantial suggestions that focus on MVPA, using datum from a low income and after conflict conditions (Richards, Doherty, & Foster, 2015).

2.7. As an Exercise Formula;

Type of Exercise; For major muscle groups, rhythmic, dynamic aerobic exercises and strength exercises.

Intensity of Exercise; Middle intensity exercises (VO-2max % 50-80); strength exercises are (% 60-80 of 1 RM).

Frequency of Exercise; Aerobic exercises 3-7 days/ week; strength exercises 2-3 days/ week.

Duration of Exercise; Aerobic exercises 20-60 min/day (150-300 min/week); strength exercises are 8-10 muscle exercises, 2-3 sets and 8-12 repetitions recommended (CAN et al., 2015).

2.8. IPAC

Assessment of Physical Activity (PA)

The International Physical Activity Questionnaire (IPAQ) was used to determine the level of physical activity (Booth, 2015). In a group of healthy subjects, Hagströmer, Oja, and Sjöström was validated the questionnaire (Hagströmer, Oja, & Sjöström, 2005). The questionnaire included questions about the previous week's physical activities performed during leisure time, at home, at travel, at work, during exercise, and sport, while moving from place to place, and everyday life. The results were taken into account as the number of days spent on a certain physical activity for one week. The stated time spent on an exercise was taken into account and transformed into MET (Kamelska & Mazurek, 2015; Wang et al., 2015).

CHAPTER III

METHOD

3.1. Participants

High school boys and girl students in Kastamonu have participated in the study. There were 8641 students in Kastamonu's high schools in semester 2014-2015. For representativeness, about 10% of the population have been selected. There were 16 high schools in Kastamonu in semester 2014-2015. Every school's names have written on small papers. Then the papers have folded up and put in a bag. After that, four names have chosen randomly for 9th grades (high school 1), four names have chosen randomly for 10th grades (high school 2), four names have chosen randomly for 11th grades (high school 3) and four names have chosen randomly for 12th grades (high school 4). From every school, two classes have randomly assigned for the test. A class consists of approximately 30 students. Outliers have been excluded. At the end, we had about 767 participants and this number was enough to represent the overall population. 434 girls, 333 boys.

Permissions were taken from both University Ethics Committee of METU and Kastamonu directorate of Ministry of Education, to manage the study. All the participants were informed about the test, before application. An inform consent form was given to the participants, which was signed by their parents.

3.2. Instrumentation

Design of this study is associational. For academic achievement scores of students, their cumulative grand point average (gpa) scores which were get from Ministry of Education's e-school system were considered. For assessing the physical activity level of the students, International Physical Activity Questionnaire (IPAC)'s Turkish version was applied. Dependent variables of this study are Grand Point Average (GPA) score and Physical Activity Level. Independent variables are socio economic status, education level of parents, gender, time spent studying lessons, age, time spent with computer and time spent with watching television.

3.3. Data Analysis Plan

Statistical Package for the Social Sciences (SPSS, version 23) were used to analyze the statistics.

For explanatory information, descriptive statistics were performed; means and standard deviations were assessed. Assumption check was done for both research questions by appropriate test procedures.

For all analysis, $p < .05$ was determined as significant level.

3.4. Operational Definitions

IPAC: It is a questionnaire which assess physical activity level. To determine physical activity status, a physical activity score was calculated in terms of Metabolic Equivalent (MET) value (Hallal et al., 2014). Low physical activity level accepted as less than 600 MET, moderate physical activity level accepted as between 601 and 3000 MET, and vigorous physical activity level accepted as more than 3001 MET.

CHAPTER IV

RESULTS

The result part includes three sections. In the first section, results of the descriptive statistics as means and standard deviations for each variable were computed and demographics were mentioned one by one. After that, results of essential assumptions were reported. Finally, in order to evaluate the effect of physical activity level on academic achievement in high school students, Pearson Correlation Coefficient was applied. In order to see the effects of demographics on the effect of physical activity level on academic achievement in high school students, Multiple Analysis of Variance (MANOVA) and Hierarchical Regression analysis were performed.

Table 1. Descriptive Statistics of Gender

	Frequency	*Percent*
Girls	434	56,6
Boys	333	43,4
Total	767	100,0

There are 767 students in the study, 434 (% 56,6) of them are girls, 333 (% 43,4) of them are boys in the study.

Table 2. Descriptive Statistics of Class

	Frequency	*Percent*
9	177	23,1
10	210	27,4
11	166	21,6
12	214	27,9
Total	767	100,0

There are 177 (% 23,1) students in grade 9, 210 (% 27,4) students in grade 10, 166 (% 21,6) students in grade 11 and 214 (% 27,9) students in grade 12 in the study.

Table 3. Descriptive Statistics of Monthly Income

	Frequency	*Percent*
1950 TL and less	230	30,0
1951- 3900 TL	343	44,7
3901 TL and more	101	13,2
Total	674	87,9
System Missing	93	12,1
Total	767	100,0

There are 230 (% 30) families earning 1500 TL. and less monthly, 343 (%44,7) families earning between 1951 TL. and 3900 TL. and 101 (%13,2) families earning 3901 TL. and more. 93 (% 12,1) students didn't mention about their monthly family income.

Table 4. Descriptive Statistics of Mother Education

	Frequency	*Percent*
Primary sch. and less	525	68,4
High school	162	21,1
University and more	77	10,0
Total	764	99,6
System Missing	3	,4
Total	767	100,0

There are 525 (% 68,4) mothers graduated from primary school and less, 162 (% 21,1) mothers graduated from high school and 77 (% 10,0) mothers graduated from university and more. Three (% 0,4) students didn't mention about their mothers' education level.

Table 5. Descriptive Statistics of Father Education

	Frequency	*Percent*
Primary sch. and less	334	43,5
High school	236	30,8
University and more	193	25,2
Total	763	99,5
System	4	,5
Total	767	100,0

There are 334 (% 43,5) fathers graduated from primary school and less, 236 (% 30,8) fathers graduated from high school and 193 (% 25,2) fathers graduated from university and more. Four (% 0,5) students didn't mention about their fathers' education level.

Table 6. Descriptive Statistics of Total TV

	Frequency	*Percent*
150 min. and less	314	40,9
151-300 between	127	16,6
301-450 between	91	11,9
451 and more	235	30,6
Total	767	100,0

There are 314 (% 40,9) students watching TV 150 minutes and less weekly, 127 (% 16,6) students watching TV between 151 to 300 minutes weekly, 91 (% 11,9) students watching TV between 301 to 450 minutes weekly and 235 (% 30,6) students watching TV 451 minutes and more weekly.

Table 7. Descriptive Statistics of Total PC

	Frequency	*Percent*
150 min. and less	362	47,2
151-300 between	131	17,1
301-450 between	66	8,6
451 and more	208	27,1
Total	767	100,0

There are 362 (% 47,2) students using PC 150 minutes and less weekly, 131 (% 17,1) students using PC between 151 to 300 minutes weekly, 66 (% 8,6) students using PC between 301 to 450 minutes weekly and 208 (% 27,1) students using PC 451 minutes and more weekly.

Table 8. Descriptive Statistics of Total Lesson Study

	Frequency	*Percent*
150 min. and less	271	35,3
151-300 between	140	18,3
301-450 between	90	11,7
451 and more	266	34,7
Total	767	100,0

There are 271 (% 35,3) students studying lesson 150 minutes and less weekly, 140 (% 18,3) students studying lesson between 151 to 300 minutes weekly, 90 (% 11,7) students studying lesson between 301 to 450 minutes weekly and 266 (% 34,7) students studying lesson 451 minutes and more weekly.

Table 9. Descriptive Statistics of Continuous Variables

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
cumulative GPA	767	41,78	97,52	73,7	10,49
Age	759	14	22	16,5	1,22
sport.MET.week	758	0,00	166,50	32,6	28,30
total.MET.week	767	55,33	461,16	156,1	54,61
Valid N (listwise)	750				

The mean of the students' ages who were participated in the study was found 16,5 (*SD*=1,22), grand point average scores which were our dependent variable was found 73,7 (*SD*=10,49), metabolic equivalent values of the students in the sporting activities was found 32,6 (*SD*=28,30) and total weekly metabolic equivalent values of the students which were our another dependent variable was found 156,1 (*SD*=54,61).

4.1. Normality Tests

Table 10. *One-Sample Kolmogorov-Smirnov Test*

		cumulative GPA	total.MET.week
N		767	767
Normal Parameters[a,b]	Mean	73,7411	156,1155
	Std. Deviation	10,48539	54,61374
Most Extreme Differences	Absolute	,037	,087
	Positive	,021	,087
	Negative	-,037	-,058
Kolmogorov-Smirnov Z		1,033	2,416
Asymp. Sig. (2-tailed)		**,236**	**,000**

a. Test distribution is Normal.

b. Calculated from data.

According to Kolmogorov-Smirnov value for cumulative GPA (p> .05), the normality assumption has not been violated but for total.MET.week (p< .05), the normality assumption has been violated.

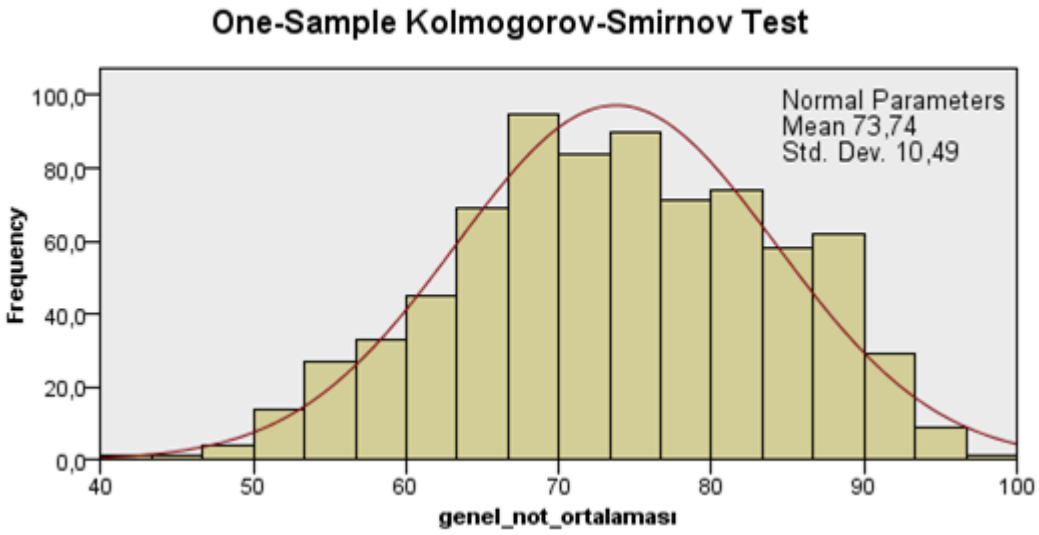

Figure 1. Kolmogorov Smirnov Test of Academic Achievement

According to figure , normality was met (p =0,236 > 0,05).

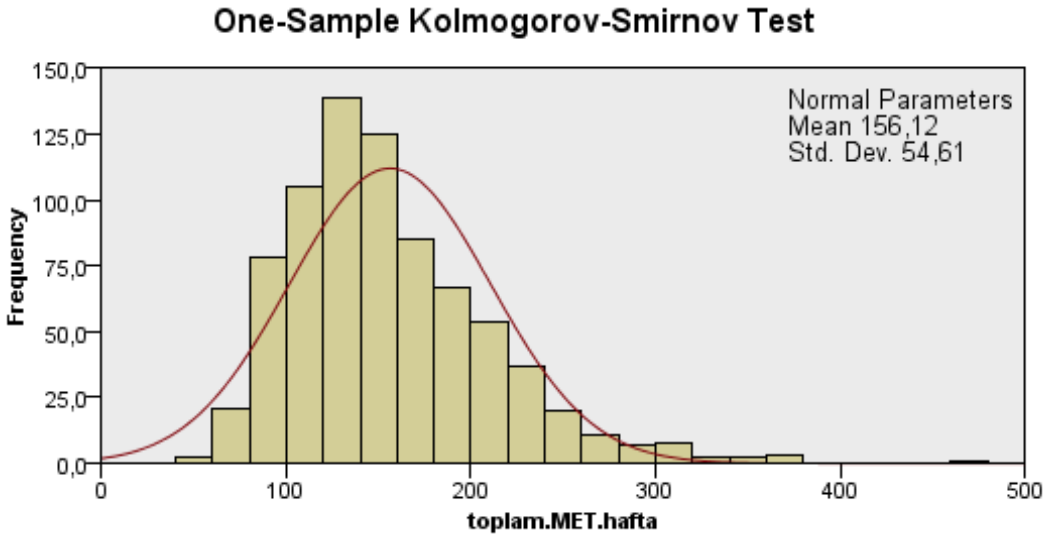

Figure 2. Kolmogorov Smirnov Test of Physical Activity

According to figure , normality was not met ($p < 0,05$). However, it doesn't mean that we can-not use parametric tests. In these situations, parametric tests should be continued. Literature shows some conflicts about this situation. While Prof.Dr. Reha Alpar finds it enough to have more than 30 data (Alpar, R., 2010), in some references this number accepted as 200, 400 and 1000. Common opinion is that, while the sample size is discussed, in the data appear to be of a certain size, it is not seen as a problem that normality was not met (Ghasemi & Zahediasl, 2012; Pallant, 2002).

Pearson Correlation between Dependent Variables

Hypothesis 1: There is no significant relationship between physical activity level and academic achievement in high school students.

Table 11. Descriptive Statistics of Correlation

	Mean	*Std. Deviation*	*N*
cumulative GPA	73,7411	10,48539	767
sport.MET.week	32,6066	28,29815	758

Table 12. Correlations

		cumulative GPA	total.MET.week
cumulative GPA	Pearson Correlation	1	,065
	Sig. (2-tailed)		,074
	N	767	767
total.MET.week	Pearson Correlation	,065	1
	Sig. (2-tailed)	**,074**	
	N	767	767

Pearson Correlation Coefficient has been applied between dependent variables. There is no statistically significant relationship between physical activity level and academic achievement ($p= 0,07 > .05$).

Hypothesis 2: There is a significant effect of monthly family income on academic achievement and physical activity level in high school students.

Table 13. Descriptive Statistics of Monthly Income

	Monthly Income	*M*	*SD*	*N*
cumulative GPA	1950 TL and less	73,8217	10,03515	230
	1951- 3900 TL	73,3239	10,81811	343
	3901 TL and more	75,0624	11,06860	101
	Total	73,7543	10,59696	674
total.MET.week	1950 TL and less	150,5498	51,85012	230
	1951- 3900 TL	162,0419	55,64113	343
	3901 TL and more	158,0768	56,85711	101
	Total	157,5261	54,73091	674

According to academic achievement scores, the mean scores of the students whose families earning 1500 TL. and less monthly (*M*=73.82, *SD*=10.04), families earning between 1951 TL. and 3900 TL. (*M*=73.32, *SD*=10.82) and families earning 3901 TL. and more (*M*=75.06, *SD*=11.07). According to physical activity level scores, the mean scores of the students whose families earning 1500 TL. and less monthly (*M*=150.55, *SD*=51.85), families earning between 1951 TL. and 3900 TL. (*M*=162.04, *SD*=55.64) and families earning 3901 TL. and more (*M*=158.08, *SD*=56.86).

Table 14. Levene's Test for Monthly Income

	F	*df1*	*df2*	*Sig.*
Cumulative GPA	1,902	2	671	,150
total.MET.week	1,030	2	671	,357

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Gelir_Düzeyi

Non-significant results showed that the homogeneity of variances assumption was not violated for this study. (p=0.15 > .05) for cumulative GPA and (p=0.36 > .05) for total.MET.week. Therefore, our dependent variables varied homogeneitly according to monthly income. So, the MANOVA result indicating the effect of the independent variable on the dependent variables was interpreted by using the Wilk's Lambda value.

Table 15.MANOVA for Monthly Income

Effect		*Value*	*F*	*Hypothesis df*	*Error df*	*Sig.*
Intercept	Pillai's Trace	,977	14337,633[b]	2,000	670,000	,000
	Wilks' Lambda	,023	14337,633[b]	2,000	670,000	,000
	Hotelling's Trace	42,799	14337,633[b]	2,000	670,000	,000
	Roy's Largest Root	42,799	14337,633[b]	2,000	670,000	,000
Monthly Income	Pillai's Trace	,012	2,102	4,000	1342,000	,078
	Wilks' Lambda	,988	2,101[b]	4,000	1340,000	**,079**
	Hotelling's Trace	,013	2,100	4,000	1338,000	,079
	Roy's Largest Root	,010	3,355[c]	2,000	671,000	,036

a. Design: Intercept + Monthly Income

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

The MANOVA result showed that there was not significant relationship between academic achievement and physical activity level. Value of Wilks' Lambda was (F (4, 1340) = 2.10, p> .05) which means there was non-significant relationship among Independent Variables. This result showed that monthly family income had no statistically significant effect on academic achievement and physical activity level in high school students.

Table 16. ANOVA for Monthly Income

Source	*Dependent Variable*	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	cumulative GPA	237,390[a]	2	118,695	1,057	,348
	total.MET.week	18218,917[b]	2	9109,459	3,060	,048
Intercept	cumulative GPA	2876697,01	1	2876697,0	25621,561	,000
	total.MET.week	12906391,9	1	12906391,9	4335,005	,000
Monthly Income	cumulative GPA	237,390	2	118,695	1,057	**,348**
	total.MET.week	18218,917	2	9109,459	3,060	**,048**
Error	cumulative GPA	75337,474	671	112,276		
	total.MET.week	1997734,31	671	2977,249		
Total	cumulative GPA	3741930,75	674			

Table 16 (Continued)

	total.MET.week	18740899,6	674
Corrected Total	cumulative GPA	75574,864	673
	total.MET.week	2015953,23	673

a. R Squared = ,003 (Adjusted R Squared = ,000)

b. R Squared = ,009 (Adjusted R Squared = ,006)

The results of univariate analysis indicated that monthly family income had no significant effect on academic achievement (F (2, 671) = 1.06, p> .05). However it had a significant effect on physical activity level (F (2, 671) = 3.06, p< .05). But since alpha level is (P= .048), this is a small effect.

Hypothesis 3: There is a significant effect of education level of parents on academic achievement in high school students.

Table 17. Descriptive Statistics of Mother Education

	Mother Education	*Mean*	*Std. Deviation*	*N*
cumulative GPA	Primary sch. and less	72,9965	10,32712	525
	High school	73,4072	10,24575	162
	University and more	79,7934	10,16225	77
	Total	73,7686	10,47765	764
total.MET.week	Primary sch. and less	153,9458	54,92822	525
	High school	160,1188	52,79384	162
	University and more	163,3738	54,01940	77
	Total	156,2049	54,43137	764

According to academic achievement scores, the mean scores of the students whose mothers graduated from primary school and less (*M*=73.00, *SD*=10.33), mothers graduated from high school (*M*=73.41, *SD*=10.25) and mothers graduated from university and more are (*M*=79.79, *SD*=10.16). According to physical activity level scores, the mean scores of the students whose mothers graduated from primary school and less (*M*=153.95, *SD*=54.93), mothers graduated from high school (*M*=160.12, *SD*=52.79) and mothers graduated from university and more are (*M*=163.37, *SD*=54.02).

Table 18. Descriptive Statistics of Father Education

	Father Education	*Mean*	*Std. Deviation*	*N*
cumulative GPA	Primary sch. and less	72,6015	10,12213	334
	High school	73,2442	10,26831	236
	University and more	76,4915	10,89101	193
	Total	73,7842	10,47562	763
total.MET.week	Primary sch. and less	150,9684	54,08680	334
	High school	157,1988	56,72504	236
	University and more	164,1235	51,46766	193
	Total	156,2231	54,46476	763

Table 20. Multivariate Analysis of Variance of Parent Education

Effect		*Value*	*F*	*Hypothesis df*	*Error df*	*Sig.*
Intercept	Pillai's Trace	,970	12302,054[b]	2,000	757,000	,000
	Wilks' Lambda	,030	12302,054[b]	2,000	757,000	,000
	Hotelling's Trace	32,502	12302,054[b]	2,000	757,000	,000
	Roy's Largest Root	32,502	12302,054[b]	2,000	757,000	,000
Mother Education	Pillai's Trace	,021	4,053	4,000	1516,000	,003
	Wilks' Lambda	,979	4,068[b]	4,000	1514,000	**,003**
	Hotelling's Trace	,022	4,084	4,000	1512,000	,003
	Roy's Largest Root	,021	8,110[c]	2,000	758,000	,000
Father Education	Pillai's Trace	,012	2,276	4,000	1516,000	,059
	Wilks' Lambda	,988	2,279[b]	4,000	1514,000	**,059**
	Hotelling's Trace	,012	2,282	4,000	1512,000	,059
	Roy's Largest Root	,012	4,392[c]	2,000	758,000	,013

a. Design: Intercept + Mother Education + Father Education

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

According to academic achievement scores, the mean scores of the students whose fathers graduated from primary school and less (*M*=72.60, *SD*=10.12), fathers graduated from high school (*M*=73.24, *SD*=10.27) and fathers graduated from university and more are (*M*=76.49, *SD*=10.89). According to physical activity level scores, the mean scores of the students whose fathers graduated from primary school and less (*M*=150.97, *SD*=54.09), fathers graduated from high school (*M*=157.20, *SD*=56.73) and fathers graduated from university and more are (*M*=164.12, *SD*=51.47).

Table 19. Levene's Test for Education Level of Parents

	F	df1	df2	Sig.
genel_not_ortalaması	,604	8	754	,775
toplam.MET.hafta	,570	8	754	,803

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + anne_egitim + baba_egitim + anne_egitim * baba_egitim

Non-significant results showed that the homogeneity of variances assumption was not violated for this study. (p=0.78 > .05) for cumulative GPA and (p=0.80 > .05) for total.MET.week. Therefore, our dependent variables varied homogeneitly according to education level of parents.

The MANOVA results showed that there was a significant relationship between mother education level and academic achievement and physical activity level. Value of Wilks' Lambda was (F (4, 1514) = 4.07, p< .05) which means there was a significant relationship. This result showed that mother education level had a statistically significant effect on academic achievement and physical activity level in high school students. Since relationship was found between variables, main effects of results should be checked in order to see if there exists significant differences. On the other hand, when we look at the father education level, results showed that there was no significant relationship between father education level and academic achievement

and physical activity level. Value of Wilks' Lambda was (F (4, 1514) = 2.28, p> .05) which means there was no significant relationship. This result showed that father education level had no statistically significant effect on academic achievement and physical activity level in high school students.

Table 21. Univariate Analysis of Variance of Parent Education

Source	*Dependent Variable*	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	cumulative GPA	3661,172[a]	4	915,293	8,677	,000
	total.MET.week	22044,652[b]	4	5511,163	1,866	,114
Intercept	cumulative GPA	2325156,247	1	2325156,247	22041,982	,000
	total.MET.week	10278761,04	1	10278761,04	3480,808	,000
Mother Education	cumulative GPA	1710,611	2	855,305	8,108	**,000**
	total.MET.week	551,240	2	275,620	,093	**,911**
Father Education	cumulative GPA	549,856	2	274,928	2,606	**,074**
	total.MET.week	12983,891	2	6491,946	2,198	**,112**
Error	cumulative GPA	79959,617	758	105,488		
	total.MET.week	2238359,961	758	2952,981		
Total	cumulative GPA	4237479,071	763			
	total.MET.week	20881915,58	763			
Corrected Total	cumulative GPA	83620,789	762			

Table 21 (Continued)

	total.MET.week	2260404, 613	762

a. R Squared = ,044 (Adjusted R Squared = ,039)

b. R Squared = ,010 (Adjusted R Squared = ,005)

According to the results of multivariate analysis, mother education level was significant, the nature of the relationship between the dependent and independent variables was still unknown. In order to see mother education level was more effective on which dependent variables, it was reasonable to interpret the univariate ANOVA results. In the follow up studies through two way ANOVA, results of univariate analysis revealed that mother education level had a statistically significant effect on academic achievement (F (2, 758) = 8.11, p< .05). On the other hand, it had no statistically significant effect on physical activity level (F (2, 758) = 0.09, p> .05).

Hypothesis 4: There is a significant effect of gender on academic achievement in high school students.

Table 22. Descriptive Statistics of Gender

	Gender	*Mean*	*Std. Deviation*	*N*
cumulative GPA	Girls	77,3177	9,45728	434
	Boys	69,0796	9,92462	333
	Total	73,7411	10,48539	767
total.MET.week	Girls	153,5854	49,02464	434
	Boys	159,4130	61,05596	333
	Total	156,1155	54,61374	767

According to academic achievement scores, the mean scores of the girls (*M*=77.32, *SD*=9.46), the mean score of the boys (*M*=69.08, *SD*=9.92). According to physical activity level scores, the mean score of the girls (*M*=153.59, *SD*=49.02), the mean score of the boys (*M*=159.41, *SD*=61.06).

Table 23. Levene's Test for Gender

	F	df1	df2	Sig.
genel_not_ortalaması	,085	1	765	,770
toplam.MET.hafta	21,290	1	765	,000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + cinsiyet

The variances of cumulative GPA varied homogeneitly according to gender (p=0.77> .05). On the other hand, the variances of total.MET.week didn't homogeneitly vary (p=0.00< .05). Significant results showed that the homogeneity of variances assumption was violated for this study. (p=0.77 > .05) for cumulative GPA and (p=0.00 < .05) for total.MET.week. However we can not observe variation in total.MET.week according to gender in the table below, group variances are pretty different. When we examine the means and standard deviations of boys, it can be seen that boys took part in a wider score scale statistically.

Table 25. Univariate Analysis of Variance of GenderB

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	cumulative GPA	12787,737[a]	1	12787,737	136,956	,000
	total.MET.week	6399,110[b]	1	6399,110	2,149	,143
Intercept	cumulative GPA	4038358,799	1	4038358,799	43250,571	,000
	total.MET.week	18459633,41	1	18459633,41	6198,264	,000

Table 25 (Continued)

Gender	cumulative GPA	12787,737	1	12787,737	136,956	**,000**
	total.MET.week	6399,110	1	6399,110	2,149	**,143**
Error	cumulative GPA	71428,987	765	93,371		
	total.MET.week	2278318,666	765	2978,194		
Total	cumulative GPA	4254967,348	767			
	total.MET.week	20978091,01	767			
Corrected Total	cumulative GPA	84216,724	766			
	total.MET.week	2284717,776	766			

a. R Squared = ,152 (Adjusted R Squared = ,151)

b. R Squared = ,003 (Adjusted R Squared = ,001)

Table 24. Multivariate Analysis of Variance of Gender

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	,984	23378,083[b]	2	764	,000
	Wilks' Lambda	,016	23378,083[b]	2	764	,000
	Hotelling's Trace	61,199	23378,083[b]	2	764	,000
	Roy's Largest Root	61,199	23378,083[b]	2	764	,000
Gender	Pillai's Trace	,158	71,663[b]	2	764	,000
	Wilks' Lambda	,842	71,663[b]	2	764	**,000**
	Hotelling's Trace	,188	71,663[b]	2	764	,000

Table 24 (Continued)	ırgest	,188	71,663[b]	2	764	,000
	Root					

a. Design: Intercept + Gender

b. Exact statistic

The MANOVA results showed that there was a significant relationship between gender and academic achievement and physical activity level. Value of Wilks' Lambda was (F (2, 764) = 71.66, p< .05) which means there was a significant relationship. This result showed that gender had a statistically significant effect on academic achievement and physical activity level in high school students. Since relationship was found between variables, main effects of results should be checked in order to see if there exists significant differences.

According to the results of multivariate analysis, gender was significant, the nature of the relationship between the dependent and independent variables was still unknown. In order to see the effect of gender on dependent variables, it was reasonable to interpret the univariate ANOVA results. In the follow up studies through two way ANOVA, results of univariate analysis revealed that gender had a statistically significant effect on academic achievement (F (1, 765) = 136.96, p< .05). On the other hand, it had no statistically significant effect on physical activity level (F (1, 765) = 2.15, p> .05).

Hypothesis 5: There is a significant effect of time spent studying lessons on academic achievement in high school students.

Table 26. Descriptive Statistics of Lesson Study Time

	Total Study Lesson code	Mean	Std. Deviation	N
cumulative GPA	150 min. and less	69,4141	9,19881	271
	151-300 between	72,4347	10,14942	140
	301-450 between	75,1720	11,51243	90
	451 and more	78,3528	9,53665	266
	Total	73,7411	10,48539	767
total.MET.week	150 min. and less	148,7662	59,04207	271
	151-300 between	150,3087	51,88397	140
	301-450 between	155,9349	49,45239	90
	451 and more	166,7204	51,48356	266
	Total	156,1155	54,61374	767

According to academic achievement scores, the mean scores of the students whose study time is 150 minutes and less (*M*=69.41, *SD*=9.20), between 151 to 300 minutes (*M*=72.43, *SD*=10.15), between 301 to 450 minutes (*M*=75.17, *SD*=11.51) and 451 minutes and more are (*M*=78.35, *SD*=9.54). According to physical activity level scores, the mean scores of the students whose study time is 150 minutes and less (*M*=148.77, *SD*=59.04), between 151 to 300 minutes (*M*=150.31, *SD*=51.88), between 301 to 450 minutes (*M*=155.93, *SD*=49.45) and 451 minutes and more are (*M*=166.72, *SD*=51.48).

Table 27. Levene's Test for Lesson Study Time

	F	df1	df2	Sig.
genel_not_ortalaması	3,648	3	763	**,012**
toplam.MET.hafta	2,202	3	763	**,086**

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Toplam_DERS_kod

The variances of cumulative GPA didn't homogeneitly vary according to total lesson study (p=0.01< .05). On the other hand, the variances of total.MET.week homogeneitly varied (p=0.09> .05). Significant results showed that the homogeneity of variances assumption was violated for this study. (p=0.01 < .05) for cumulative GPA and (p=0.09 > .05) for total.MET.week.

Table 28. MANOVA Results for Lesson Study Time

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	,981	20079,084[b]	2	762	,000
	Wilks' Lambda	,019	20079,084[b]	2	762	,000
	Hotelling's Trace	52,701	20079,084[b]	2	762	,000
	Roy's Largest Root	52,701	20079,084[b]	2	762	,000
Total Lesson Study code	Pillai's Trace	,148	20,319	6	1526	,000
	Wilks' Lambda	,852	21,142[b]	6	1524	**,000**
	Hotelling's Trace	,173	21,965	6	1522	,000
	Roy's Largest Root	,172	43,720[c]	3	763	,000

a. Design: Intercept + Total Study Lesson code

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

The MANOVA results showed that there was a significant relationship between total lesson study time and academic achievement and physical activity level. Value of Wilks' Lambda was (F (6, 1524) = 21.14, p< .05) which means there was a significant relationship. This result showed that total lesson study time had a statistically significant effect on academic achievement and physical activity level in high school students. Since relationship was found between variables, main effects of results should be checked in order to see if there exists significant differences

Table 29. Anova Results for Lesson Study Time

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	cumulative GPA	11154,489[a]	3	3718,163	38,829	,000
	total.MET.week	49276,028[b]	3	16425,343	5,606	,001
Intercept	cumulative GPA	3394319,311	1	3394319,311	35447,391	,000
	total.MET.week	15038804,12	1	15038804,12	5133,038	,000
Total Lesson Study code	cumulative GPA	11154,489	3	3718,163	38,829	**,000**
	total.MET.week	49276,028	3	16425,343	5,606	**,001**
Error	cumulative GPA	73062,235	763	95,757		
	total.MET.week	2235441,748	763	2929,806		
Total	cumulative GPA	4254967,348	767			

Table 29 (Continued)

	total.MET.week	20978091,01	767
Corrected Total	cumulative GPA	84216,724	766
	total.MET.week	2284717,776	766

a. R Squared = ,132 (Adjusted R Squared = ,129)

b. R Squared = ,022 (Adjusted R Squared = ,018)

According to the results of multivariate analysis, total lesson study time was significant, the nature of the relationship between the dependent and independent variables was still unknown. In order to see the effect of total lesson study time on dependent variables, it was reasonable to interpret the univariate ANOVA results. In the follow up studies through two way ANOVA, results of univariate analysis revealed that total lesson study time had a statistically significant effect on both academic achievement (F (3, 763) = 38.83, p< .05) and on physical activity level (F (3, 763) = 5.61, p< .05).

Hypothesis 6: There is a significant relationship between age and academic achievement and physical activity level in high school students.

Table 30. Correlation for Age

		Cumulative GPA	Total MET week
Age	Pearson Correlation	-,292**	,031
	Sig. (2-tailed)	**,000**	**,387**
	N	759	759

Table 31. Levene's Test for Age

	F	df1	df2	Sig.
genel_not_ortalaması	4,478	8	750	**,000**
toplam.MET.hafta	,727	8	750	**,668**

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + yas

The variances of cumulative GPA didn't homogeneitly vary according to (p=0.00< .05). On the other hand, the variances of total.MET.week homogeneitly varied (p=0.67> .05). Significant results showed that the homogeneity of variances assumption was violated for this study. (p=0.00 < .05) for cumulative GPA and (p=0.67 > .05) for total.MET.week.

Table 32. MANOVA for Age

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	,422	275,763[b]	2,000	756,000	,000
	Wilks' Lambda	,578	275,763[b]	2,000	756,000	,000
	Hotelling's Trace	,730	275,763[b]	2,000	756,000	,000
	Roy's Largest Root	,730	275,763[b]	2,000	756,000	,000
age	Pillai's Trace	,088	36,300[b]	2,000	756,000	,000
	Wilks' Lambda	,912	36,300[b]	2,000	756,000	**,000**
	Hotelling's Trace	,096	36,300[b]	2,000	756,000	,000
	Roy's Largest Root	,096	36,300[b]	2,000	756,000	,000

a. Design: Intercept + age

b. Exact statistic

Pearson Correlation Coefficient has been applied between age and dependent variables. There is a statistically significant negative relationship between age and

academic achievement (p= 0.00< .05), but there is no statistically significant relationship between age and physical activity level (*p*= 0.39 > .05).

Table 33. Anova for Age

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	cumulative GPA	7066,952[a]	1	7066,952	70,385	,000
	total.MET.week	2241,499[b]	1	2241,499	,750	,387
Intercept	cumulative GPA	54463,574	1	54463,574	542,440	,000
	total.MET.week	72587,740	1	72587,740	24,276	,000
age	cumulative GPA	7066,952	1	7066,952	70,385	**,000**
	total.MET.week	2241,499	1	2241,499	,750	**,387**
Error	cumulative GPA	76006,407	757	100,405		
	total.MET.week	2263505,758	757	2990,100		
Total	cumulative GPA	4217681,494	759			
	total.MET.week	20803737,64	759			
Corrected Total	cumulative GPA	83073,359	758			
	total.MET.week	2265747,257	758			

a. R Squared = ,085 (Adjusted R Squared = ,084)

b. R Squared = ,001 (Adjusted R Squared = ,000)

The results of the Pearson Correlation Coefficient Analysis revealed that age had a statistically significant effect on academic achievement (F (1, 757) = 70.39, p< .05), but it had a non-significant effect on physical activity level (F (1, 757) = 0.75, p> .05).

Hypothesis 7: There is a significant relationship between time spent with computer and academic achievement and physical activity level in high school students.

Table 34. Descriptive Statistics of Total PC

	Total PC code	Mean	Std. Deviation	N
cumulative GPA	150 min. and less	73,8272	10,51703	362
	151-300 between	75,9520	10,79302	131
	301-450 between	72,5168	9,91165	66
	451 and more	72,5873	10,24792	208
	Total	73,7411	10,48539	767
total.MET.week	150 min. and less	141,8800	47,87700	362
	151-300 between	145,3258	45,56594	131
	301-450 between	169,0010	68,27614	66
	451 and more	183,5977	55,06466	208
	Total	156,1155	54,61374	767

According to academic achievement scores, the mean scores of the students whose total PC time is 150 minutes and less (*M*=73.83, *SD*=10.52), between 151 to 300 minutes (*M*=75.95, *SD*=10.80), between 301 to 450 minutes (*M*=72.52, *SD*=9.91) and 451 minutes and more are (*M*=72.59, *SD*=10.25). According to physical activity level scores, the mean scores of the students whose total PC time is 150 minutes and less (*M*=141.88, *SD*=47.88), between 151 to 300 minutes (*M*=145.33, *SD*=45.57), between 301 to 450 minutes (*M*=169.00, *SD*=68.28) and 451 minutes and more are (*M*=183.60, *SD*=55.06).

Table 35. Levene's Test for Total PC

	F	df1	df2	Sig.
genel_not_ortalaması	,550	3	763	,648
toplam.MET.hafta	4,882	3	763	**,002**

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Toplam_PC_kod

The variances of cumulative GPA homogeneitly varied according to total PC time (p=0.65> .05). On the other hand, the variances of total.MET.week didn't homogeneitly vary (p=0.00< .05). Significant results showed that the homogeneity of variances assumption was violated for this study (p=0.65 > .05) for cumulative GPA and (p=0.00 < .05) for total.MET.week.

Table 36. Manova for Total PC

Effect		Value	F	Df	Error df	Sig.
Intercept	Pillai's Trace	,975	14678,241[b]	2	762	,000
	Wilks' Lambda	,025	14678,241[b]	2	762	,000
	Hotelling's Trace	38,526	14678,241[b]	2	762	,000
	Roy's Largest Root	38,526	14678,241[b]	2	762	,000
Total PC code	Pillai's Trace	,128	17,430	6	1526	,000
	Wilks' Lambda	,872	17,936[b]	6	1524	,000
	Hotelling's Trace	,145	18,441	6	1522	,000
	Roy's Largest Root	,140	35,498[c]	3	763	,000

a. Design: Intercept + Total PC code

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

The MANOVA results showed that there was a significant relationship between total PC time and academic achievement and physical activity level. Value of Wilks' Lambda was (F (6, 1524) = 17.94, p< .05) which means there was a significant relationship. This result showed that total PC time had a statistically significant effect

on academic achievement and physical activity level in high school students. Since relationship was found between variables, main effects of results should be checked in order to see if there exists significant differences.

Table 37. Anova for Total PC

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	cumulative GPA	1018,856[a]	3	339,619	3,115	,026
	total.MET.week	256663,820[b]	3	85554,607	32,188	,000
Intercept	cumulative GPA	2864617,489	1	2864617,489	26271,14	,000
	total.MET.week	13485311,65	1	13485311,65	5073,481	,000
Total PC kod	cumulative GPA	1018,856	3	339,619	3,115	,026
	total.MET.week	256663,820	3	85554,607	32,188	,000
Error	cumulative GPA	83197,868	763	109,040		
	total.MET.week	2028053,956	763	2658,000		
Total	cumulative GPA	4254967,348	767			
	total.MET.week	20978091,01	767			
Corrected Total	cumulative GPA	84216,724	766			
	total.MET.week	2284717,776	766			

a. R Squared = ,012 (Adjusted R Squared = ,008)

b. R Squared = ,112 (Adjusted R Squared = ,109

According to the results of multivariate analysis, total PC time was significant, the nature of the relationship between the dependent and independent variables was still unknown. In order to see the effect of total PC time on dependent variables, it was reasonable to interpret the univariate ANOVA results. In the follow up studies through two way ANOVA, results of univariate analysis revealed that total PC time had a statistically significant effect on both academic achievement (F (3, 763) = 3.12, p< .05) and on physical activity level (F (3, 763) = 32.19, p< .05).

Hypothesis 8: There is a significant relationship between time spent with watching television and academic achievement and physical activity level in high school students.

Table 38. Descriptive Statistics for Total TV

	Total TV code	Mean	Std. Deviation	N
cumulative GPA	150 min. and less	74,4891	10,63233	314
	151-300 between	74,3268	10,82911	127
	301-450 between	74,7922	9,45632	91
	451 and more	72,0180	10,33453	235
	Total	73,7411	10,48539	767
total.MET.week	150 min. and less	143,7653	51,30026	314
	151-300 between	143,3767	46,58395	127
	301-450 between	155,7666	59,50790	91
	451 and more	179,6371	53,52224	235
	Total	156,1155	54,61374	767

According to academic achievement scores, the mean scores of the students whose total TV watching time is 150 minutes and less (M=74.49, SD=10.63), between 151 to 300 minutes (M=74.33, SD=10.83), between 301 to 450 minutes (M=74.79, SD=9.46) and 451 minutes and more are (M=72.02, SD=10.33). According to physical activity level scores, the mean scores of the students whose total TV watching time is 150 minutes and less (M=143.77, SD=51.30), between 151 to 300 minutes (M=143.38,

SD=46.58), between 301 to 450 minutes (*M*=155.77, *SD*=59.51) and 451 minutes and more are (*M*=179.64, *SD*=53.52).

Table 39. Levene's Test for Total TV

	F	df1	df2	Sig.
genel_not_ortalaması	1,130	3	763	,336
toplam.MET.hafta	1,294	3	763	,275

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Toplam_TV_kod

Non-significant results showed that the homogeneity of variances assumption was not violated for this study. (p=0.34 > .05) for cumulative GPA and (p=0.28 > .05) for total.MET.week. Therefore, our dependent variables varied homogeneitly according to total TV code.

Table 40. Manova for Total TV

Effect		Value	F	df	Error df	Sig.
Intercept	Pillai's Trace	,978	16793,139[b]	2	762	,000
	Wilks' Lambda	,022	16793,139[b]	2	762	,000
	Hotelling's Trace	44,076	16793,139[b]	2	762	,000
	Roy's Largest Root	44,076	16793,139[b]	2	762	,000
Total TV code	Pillai's Trace	,103	13,859	6	1526	,000
	Wilks' Lambda	,897	14,222[b]	6	1524	,000
	Hotelling's Trace	,115	14,585	6	1522	,000
	Roy's Largest Root	,114	28,957[c]	3	763	,000

a. Design: Intercept + Total TV code

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Table 41. Anova for Total TV

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	cumulative GPA	1017,471[a]	3	339,157	3,110	,026
	total.MET.week	198531,660[b]	3	66177,220	24,204	,000
Intercept	cumulative GPA	3322609,104	1	3322609,104	30470,835	,000
	total.MET.week	14734526,24	1	14734526,24	5388,994	,000
Total TV code	cumulative GPA	1017,471	3	339,157	3,110	**,026**
	total.MET.week	198531,660	3	66177,220	24,204	**,000**
Error	cumulative GPA	83199,253	763	109,042		
	total.MET.week	2086186,115	763	2734,189		
Total	cumulative GPA	4254967,348	767			
	total.MET.week	20978091,01	767			
Corrected Total	cumulative GPA	84216,724	766			
	total.MET.week	2284717,776	766			

a. R Squared = ,012 (Adjusted R Squared = ,008)

b. R Squared = ,087 (Adjusted R Squared = ,083)

The MANOVA results showed that there was a significant relationship between total TV watching time and academic achievement and physical activity level. Value of Wilks' Lambda was (F (6, 1524) = 14.22, p< .05) which means there was a significant relationship. This result showed that total TV watching time had a statistically significant effect on academic achievement and physical activity level in high school students. Since relationship was found between variables, main effects of results should be checked in order to see if there exists significant differences.

According to the results of multivariate analysis, total TV watching time was significant, the nature of the relationship between the dependent and independent variables was still unknown. In order to see the effect of total TV watching time on dependent variables, it was reasonable to interpret the univariate ANOVA results. In the follow up studies through two way ANOVA, results of univariate analysis revealed that total TV watching time had a statistically significant effect on both academic achievement (F (3, 763) = 3.11, p< .05) and on physical activity level (F (3, 763) = 24.20, p< .05).

Regression Analysis

Table 42. Descriptive Statistics for Regression

	Mean	*Std. Deviation*	*N*
cumulative GPA	73,905	10,5719	644
Gender	1,42	,494	644
Age	16,50	1,192	644
Siblings	2,5978	1,15706	644
Monthly Income	1,8121	,67649	644
Mother Education	1,4161	,67212	644
Father Education	1,8354	,81065	644
total.MET.week	157,00	54,7265	644
Total TV code	2,3323	1,28327	644
Total PC code	2,1693	1,27211	644
Total Study Lesson	2,5140	1,29172	644

In order to see how much change in the dependent variable was explained by the independent variables, Regression Analysis have been applied. Analysis have been made in eight steps.

Table 43. Intercorrelations Among Predictor Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,460[a]	,212	**,208**	9,40909	,212	57,247	3	640	**,000**
2	,460[b]	,212	,207	9,41611	,000	,047	1	639	,829
3	,482[c]	,232	,**226**	9,29800	,021	17,337	1	638	**,000**
4	,486[d]	,237	,229	9,28066	,004	3,386	1	637	,066
5	,493[e]	,243	**,234**	9,25022	,006	5,199	1	636	**,023**
6	,498[f]	,248	**,238**	9,22749	,005	4,137	1	635	**,042**
7	,504[g]	,254	**,243**	9,19724	,006	5,184	1	634	**,023**
8	,547[h]	,299	**,288**	8,92274	,045	40,609	1	633	**,000**

a. Predictors: (Constant), siblings, age, Gender

b. Predictors: (Constant), siblings, age, Gender, Monthly Income

c. Predictors: (Constant), siblings, age, Gender, Monthly Income, Mother Education

d. Predictors: (Constant), siblings, age, Gender, Monthly Income, Mother Education, Father Education

e. Predictors: (Constant), siblings, age, Gender, Monthly Income, Mother Education, Father Education, total.MET.week

f. Predictors: (Constant), siblings, age, Gender, Monthly Income, Mother Education, Father Education, total.MET.week, TV code Total

g. Predictors: (Constant), siblings, age, Gender, Monthly Income, Mother Education, Father Education, total.MET.week, Total TV code, Total PC code

h. Predictors: (Constant), siblings, age, Gender, Monthly Income, Mother Education, Father Education, total.MET.week, Total TV code, Total PC code, Total Study Lesson

In modal a, modal consists of siblings, age and gender. Modal A has a statistically significant effect on dependent variable (Cumulative GPA) (p=0.00 < .05). When monthly income has been added to this modal, there was not a significant increase observed in the R square (p=0.83 > .05). When mother education was added to the modal, there was a significant increase observed in the R square (p=0.00 < .05). When father education was added to the modal, there was not a significant increase observed in the R square (p=0.07 > .05). When total.MET.week was added to the modal, there was a significant increase observed in the R square (p=0.02 < .05). When total TV code was added to the modal, there was a significant increase observed in the R square (p=0.04 < .05). When total PC code was added to the modal, there was a significant increase observed in the R square (p=0.02 < .05). When total study lesson was added to the modal, there was a significant increase observed in the R square (p=0.00 < .05).

When all the variables were added to the modal, the table below was formed. (See APPENDIX 1 for the whole table).

Table 44. Correlational Matrix Among Variables

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	106,298	5,571		19,081	,000
Gender	-5,938	,766	-,278	-7,755	**,000**
Age	-1,922	,304	-,217	-6,321	**,000**
siblings	,204	,318	,022	,642	,521
Monthly Income	-1,012	,596	-,065	-1,700	,090
Mother Education	1,981	,643	,126	3,079	**,002**
Father Education	,568	,536	,044	1,061	,289
total.MET.week	,014	,007	,073	1,962	**,050**
Total TV code	-,263	,290	-,032	-,907	,365

Table 44 (Continued)

Total PC code	-,540	,301	-,065	-1,792	,074
Total Study Lesson	1,903	,299	,233	6,373	**,000**

When we look at the table above, we can conclude that there is a statistically significant negative relationship between gender (p=0.00, < .05) and cumulative GPA, also there is a statistically significant negative relationship between age (p=0.00, < .05) and cumulative GPA. But siblings (p=0.52, > .05) and monthly income (p=0.09, > .05) doesn't have a relationship with cumulative GPA. On the other hand, there is a statistically significant positive relationship between mother education (p=0.00, < .05) and cumulative GPA, while father education (p=0.29, > .05) does not have a significant relationship with it. Total.MET.week (p=0.05 = .05) has a significant but week positive effect on cumulative GPA, while total TV code (p=0.37, > .05) and total PC code (p=0.07, > .05) does not have a significant effect on cumulative GPA. Among the variables, the highest positive correlation was between total study lesson (p=0.00, < .05) and cumulative GPA.

4.9. Summary of Results

Research question 1: What is the effect of physical activity level on academic achievement in high school students?

Pearson Correlation Coefficient has been applied between dependent variables. There is no statistically significant relationship between physical activity level and academic achievement.

Research question 2: What is the effect of monthly family income on academic achievement in high school students?

The results of univariate analysis indicated that monthly family income had no significant effect on academic achievement. However it had a significant effect on physical activity level, but this is a small effect.

Research question 3: What is the effect of education level of parents on academic achievement in high school students?

The results of univariate analysis revealed that mother education level had a statistically significant effect on academic achievement but, it had no statistically significant effect on physical activity level. On the other hand, father education level had no statistically significant effect on academic achievement and physical activity level in high school students.

Research question 4: What is the effect of gender on academic achievement in high school students?

The results of univariate analysis revealed that gender had a statistically significant effect on academic achievement but, it had no statistically significant effect on physical activity level.

Research question 5: What is the effect of time spent studying lessons on academic achievement in high school students?

The results of univariate analysis revealed that total lesson study time had a statistically significant effect on both academic achievement and on physical activity level.

Research question 6: What is the effect of age on academic achievement in high school students?

The results of Pearson Correlation Coefficient revealed that, there is a statistically significant negative relationship between age and academic achievement, but there is no statistically significant relationship between age and physical activity level.

Research question 7: What is the effect of time spent with computer on academic achievement in high school students?

The results of univariate analysis revealed that total PC time had a statistically significant effect on both academic achievement and on physical activity level.

Research question 8: What is the effect of time spent with watching television on academic achievement in high school students?

The results of univariate analysis revealed that total TV watching time had a statistically significant effect on both academic achievement and on physical activity level.

When we look at the table above, we can conclude that there is a statistically significant negative relationship between gender (p=0.00, < .05) and cumulative GPA, also there is a statistically significant negative relationship between age (p=0.00, < .05) and cumulative GPA. But siblings (p=0.52, > .05) and monthly income (p=0.09, > .05) doesn't have a relationship with cumulative GPA. On the other hand, there is a statistically significant positive relationship between mother education (p=0.00, < .05) and cumulative GPA, while father education (p=0.29, > .05) does not have a significant relationship with it. Total.MET.week (p=0.05 = .05) has a significant but week positive effect on cumulative GPA, while total TV code (p=0.37, > .05) and total PC code (p=0.07, > .05) does not have a

significant effect on cumulative GPA. Among the variables, the highest positive correlation was between total study lesson (p=0.00, < .05) and cumulative GPA.

CHAPTER V

DISCUSSION

The main purpose of this study was to examine the relationship between physical activity level and academic achievement in high school students. Our findings revealed that there is no significant relationship between physical activity level and academic achievement.

There were 767students participated in the study (434 girls, 333 boys). The mean of their cumulative GPA scores was 73.7±10.49, the mean of their ages was 16.5±1.22 and the mean of their physical activity participation value was 156.1±54.61.

Also some independent variables were mentioned which could affect academic achievement scores like, monthly family income, education level of parents, gender, studying lesson time, age, time spent with computer and time spent with watching TV.

The findings indicated that there is not a significant relationship between monthly family income and academic achievement and physical activity level in high school students. When we consider the education level of parents, the findings indicated that there is a significant relationship between mother's education level and academic achievement, while there is not a relationship between mother's education level and physical activity level of students. Conversely, there is not a significant relationship between father's education level and academic achievement and physical activity level in high school students. On the other hand, there is a significant relationship between gender and academic achievement, but there is not a relationship between gender and physical activity level in high school students. Moreover, there is a significant relationship between time spent studying lesson and both academic achievement and physical activity level in high school students. Besides, there is a significant negative relationship between age and academic achievement, while there is not a relationship between age and physical activity level in high school students. Additionally, there is a significant negative relationship between time spent with computer and both academic achievement and physical activity level in high school

students. Besides, there is a significant negative relationship between time spent with watching TV and both academic achievement and physical activity level in high school students.

In conclusion, monthly family income and father's education level has no significant relationship between academic achievement and physical activity level. But we can say that as time spent with computer and time spent watching TV increases, both academic achievement scores and physical activity level scores decreases. Similarly, as age increases, academic achievement score decreases while it doesn't have a relationship with physical activity level scores. Conversely, as time spent studying lesson increases, both academic achievement scores and physical activity level scores increase. Additionally, as mother's education level increases, academic achievement scores of the students increase, while it doesn't have a relationship with physical activity level scores. On the other hand, girls perform better than boys in academic achievement scores, while they are not differentiated in physical activity level scores. The reason for that may be the conservative structure of Kastamonu. Boys have more chance than girls to go out and spend their time outside the house. Girls do not have so much opportunities for the activities after evening hours outside the house. So they should study their lessons more than boys.

In the light of our results, we can say that watching TV and spending their time with computer is a waste of their precious time for the students and it causes a sedentary and unhealthy life style. As expected, time spent studying lesson increases academic achievement but, unexpectedly it also increases the physical activity level. The reason for that may be the students' boredom of being in a closed and stable environment and their need to being active. One more important finding of the study was the effect of mother's education level, while father's education level is not effective. The reason for that may be fathers' being outside the house mostly, working in a job and earning money for the family and mothers' caring with the kids, helping their homework and spending more time with them together in the house.

Our results support previous literature, stating that increasing the physical activity level do not decrease academic achievement (Ardoy et al., 2014). Furthermore

there are other factors which effect academic achievement. For example lesson study time has the most powerful effect on academic achievement, but it won't have been forgotten that students are human beings, not machines. There is a threshold level for studying lessons also. When the threshold level has been reached, extra lesson study time do not contribute academic achievement. In the study of Coe (Coe, Pivarnik, Womack, Reeves, & Malina, 2006), students divided into two groups. One group received an extra hour of physical education lesson and other group received an extra hour of academic instruction per day. The results showed that physical education class didn't show a decrease according to academic instruction class in academic achievement. So, there should be a balance in the lives of students. For a healthy body and mind, physical activity is indispensable. Some scientists claimed that academic achievement can be improved due to increased physical activity including reduced boredom and increased arousal which leads to increased concentration and attention. It can be also related with increased self-esteem, which is improving classroom behavior (Allison et al., 1999; Chomitz et al., 2009; Coe et al., 2006; Donnelly & Lambourne, 2011; Käll, Nilsson, & Lindén, 2014; Lodewyk, 2009; J. A. Reed et al., 2010; Strong et al., 2005; Taras, 2005; M. S. Tremblay et al., 2000). Data from previous studies recommend that enhancing the time allocated to physical education on the school curriculum can give rise to mental and physical health benefits in youth (Ardoy et al., 2014).

In Turkey there is a prejudice that physical activity is unnecessary and waste of time. Most of the people thinks that the students will be unsuccessful in their lessons if they attend to physical activities. With this study it is aimed to contribute to break down the prejudice about physical activity. There is not enough space for physical activity in both education system and in the social life. New policies should be developed about physical activity.

As previously mentioned, one of the biggest health problems of the modern society is obesity. The preventive effect of physical activity against obesity and other chronic diseases is well known (Bassett et al., 2015; Cauderay & Cachat, 2015; Kopczynski et al., 2014; Landolfi, 2014; Laurson, Welk, & Eisenmann, 2015;

Malkogeorgos et al., 2010; Mereish & Poteat, 2015; Nemet, 2015; Yoon & So, 2015). Also it is known that obese adolescents tend to be obese adults (Malkogeorgos et al., 2010; Mereish & Poteat, 2015). Therefore, it is vital for every member of the society to be physically active, including students.

Conclusions and Recommendations

As for recommendations, parents, students and policy makers must be informed about the benefits of physically active life style and the harmful effects of physically inactive life style. As we mentioned above, the things which decrease academic achievement scores are time spent with computers and time spent watching TV. In order to increase academic achievement and physical activity level in high school students, the students should decrease the time they spent with computers and the time they spent watching TV. Finally, with the time they saved from PC and TV, they would have more time to do physical activities and study their lessons.

As we mentioned above, being physically active is necessary for every member of the society. So, people should be encouraged to transport with bicycle or by walking, instead of buses or cars. In the cities, environment should be arranged for physical activities, so that everyone should reach to sports facilities easily. Also the environment of the schools should be designed as healthy places.

Since physical activity is very essential for every age categories in the society and vigorous physical activity habits were gained in the younger years which can be continued throughout a lifelong process, it is important to study with younger individuals. So, future studies should be done with younger age groups.

Kastamonu is a small city in the north region of Turkey. This is a limitation for the study. Future studies should be done in different cities and different regions of Turkey.

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APPENDICES

Appendix A

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

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03 Temmuz 2015

Gönderilen : Prof. Dr. Settar Koçak
Beden Eğitimi ve Spor Bölümü

Gönderen : Prof. Dr. Canan Sümer
IAK Başkan Vekili

İlgi : Etik Onayı

Danışmanlığını yapmış olduğunuz Beden Eğitimi ve Spor Bölümü öğrencisi Uğur Doğan'ın "**Lise Öğrencilerinde Fiziksel Aktivite Seviyesi ve Akademik Başarı Arasındaki ilişki** " isimli araştırması "İnsan Araştırmaları Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı

Uygundur

03/07/2015

Prof.Dr. Canan Sümer
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkan Vekili
ODTÜ 06800 ANKARA

Appendix B

T.C.
KASTAMONU VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : 75048956-44-E.5043434 14.05.2015
Konu: Anket İzni

VALİLİK MAKAMINA

İlgi: a) Milli Eğitim Bakanlığı Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 07/03/2012 tarihli ve 3616 (Genelge No:2012/13) sayılı emirleri.
b) 07/05/2015 tarihli dilekçe.

İlgi (b) dilekçede Orta Doğu Teknik Üniversitesi Beden Eğitimi ve Spor Bölümü Tezli Yüksek Lisans Programı öğrencisi Uğur DOĞAN'ın "Fiziksel Aktivite Değerlendir" konulu anketi yapmak istediği belirtilmekte olup, söz konusu anket çalışması ile ilgili Araştırma Değerlendirme Formu ilişikte sunulmuştur.

Orta Doğu Teknik Üniversitesi Beden Eğitimi ve Spor Bölümü Tezli Yüksek Lisans Programı öğrencisi Uğur DOĞAN'ın "Fiziksel Aktivite Değerlendir" konulu anketi 2014-2015 Eğitim-Öğretim Yılında İlimiz merkezindeki Müdürlüğümüze bağlı liselerde gönüllülük esasına göre eğitim öğretim faaliyetlerini aksatmadan uygulanması ve sonuçlarının değerlendirilmesi Müdürlüğümüzce uygun görülmektedir.

Makamlarınızca da uygun görüldüğü takdirde olurlarınıza arz ederim.

Cengiz BAHÇACIOĞLU
İl Milli Eğitim Müdürü

OLUR
14.05.2015

Aytekin YILMAZ
Vali a.
Vali Yardımcısı

Saraçlar Mah.Bayındır Sok. No:8 37100 Kastamonu Bilgi için: Önder ÇOĞALAN Kadriye YİĞİT GÖKKAYA
Telefon No: (0366) 214 1001 Faks No: (0366)214 6494 VHKİ Şube Müdürü

Appendix C

Gönüllü Katılım Formu

Bu çalışma, ODTÜ Beden Eğitimi ve Spor Bölümü yüksek lisans öğrencisi Uğur Doğan'ın yürüttüğü bir bilimsel çalışma kapsamında yapılmaktadır. Çalışmanın amacı, lise öğrencilerinin fiziksel aktivite seviyeleri ve akademik başarıları arasındaki ilişkinin incelenmesi ve değerlendirilmesidir. Çalışmaya katılım tamimiyle gönüllülük temelinde olmalıdır. Cevaplarınız tamimiyle gizli tutulacak ve sadece araştırmacı tarafından değerlendirilecektir; elde edilecek bilgiler bilimsel yayımlarda kullanılacaktır.

Çalışma sırasında fiziksel aktivite öz-değerlendirme anketi kullanılacaktır. Anketteki sorular genel olarak kişisel rahatsızlık verecek herhangi bir ayrıntı içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz çalışmayı yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda çalışmada sorumlu kişiye, çalışmadan ayrılmak istediğinizi söylemek yeterli olacaktır. Çalışmanın veri toplama aşamasının sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için ODTÜ Beden Eğitimi ve Spor Bölümü yüksek lisans öğrencisi Uğur Doğan (Tel: 0543 788 88 83 E-posta: udo37@hotmail.com) ile iletişim kurabilirsiniz.

*Bu çalışmaya tamamen **gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum.*** (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad Tarih İmza

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Appendix D

Veli Onay Mektubu

Sayın Veli

Orta Doğu Teknik Üniversitesi (ODTÜ), Eğitim Fakültesi Beden Eğitimi ve Spor Bölümünde yüksek lisans öğrencisiyim. Yüksek lisans bitirme projesi kapsamında lise öğrencilerinin fiziksel aktivite düzeylerinin ve akademik başarılarının değerlendirilmesi hedeflenmektedir. Bu mektubun gönderilmesi sizleri çalışma hakkında bilgilendirmek ve tarafınızdan izin verilmesi amacını içermektedir.

Bu çalışmanın amacı, lise seviyesindeki öğrencilerin fiziksel aktivite seviyeleri ve akademik başarıları arasındaki bağlantının ortaya çıkarılmasıdır. Öğrencilerin fiziksel aktivite düzeylerinin belirlenmesi için bir kez fiziksel aktivite öz-değerlendirme anketi uygulanacaktır. Akademik başarılarını belirlemek için yıl sonu not ortalamaları kullanılacaktır. Araştırmanın sonunda öğrencilerin fiziksel aktivite düzeyleri ve akademik başarıları arasındaki bağlantının anlaşılması beklenmektedir.

Katılım sonunda herhangi bir maddi kazanç sağlanmayacaktır. Öğrencilerden kimlik bilgisi istenecek, daha sonra bu bilgiler not ortalamalarının kontrolü için kullanılacaktır. Elde edilen veriler tamamen gizli tutulacak ve sadece araştırmacı tarafından değerlendirilip bilimsel yayınlarda kullanılacaktır.

Yapılacak olan çalışmaya öğrencilerin katılımı tamamen gönüllülük esasına dayanmaktadır. Arzu edildiği takdirde, herhangi bir yaptırıma maruz kalmadan katılımdan vazgeçme hakkına sahiptirler. Sizin onayınızın yanı sıra çocuğunuzun kendi gönüllülüğü de bir ön koşuldur.

Çalışmaya ya da çocuğunuzun katılımına yönelik daha fazla bilgi için başvurulacak kişinin adresi, telefon numarası ve e-posta adresi aşağıdadır.

Saygılarımla

Teşekkürler.

Araştırmacı: Uğur Doğan

Adres: Saraçlar Mah. İstanbul Cad. Kastamonu Sitesi B Blok No:25 Kastamonu

Tel: (0543) 788 88 83

E-posta: udo37@hotmail.com

Yukarıda açıklamasını okuduğum çalışmaya, oğlum/kızım _____'nin katılımına izin veriyorum. Ebeveynin:

Adı, soyadı: _____ İmzası: _____ Tarih: _____

İmzalanan bu formu lütfen öğrencimiz aracılığı ile beden eğitimi ve spor öğretmeninize ulaştırın.

Çocuğunuzun katılımı ya da haklarının korunmasına yönelik sorularınız varsa ya da çocuğunuz herhangi bir şekilde risk altında olabileceğine, strese maruz kalacağına inanıyorsanız Orta Doğu Teknik Üniversitesi Etik Kuruluna (312) 210-37 29 telefon numarasından ulaşabilirsiniz.

Appendix E

Sevgili Öğrenciler,

Bu anketin amacı, bireylerin fiziksel aktivite düzeylerinin saptanmasıdır. Elde edilen verilerle harcanan kilokalori miktarı hesaplanacaktır. Verdiğiniz bilgilerin doğruluğu, gerçekte harcadığınız kilokalori miktarına en yakın değeri elde edebilmemiz açısından önemlidir. Fiziksel aktivite her gün farklılık gösterebilir. Bu nedenle sorulara cevap verirken **"GENEL OLARAK NE KADAR"** sorusuna cevap aramanız yeterli olacaktır. **Haftada en az 1 kez** olmak üzere, **düzenli** olarak yapmakta olduğunuz aktiviteleri yazmanız belirtmeniz, fiziksel aktivite alışkanlığınızı belirlememizi sağlayacaktır. Bu bilgiler sadece bilimsel amaçlı kullanılacaktır. **Zaman ayırıp katıldığınız için teşekkür ederim.**

Uğur DOĞAN

ODTÜ/Beden Eğitimi ve Spor Bölümü

FİZİKSEL AKTİVİTE DEĞERLENDİRME ANKETİ

Adınız Soyadınız:_____

Cinsiyetiniz: K ☐ E ☐ Kaç kardeşsiniz? _____ Ailedeki birey sayısı:_____ kişi

Yaşınız:_____ Boyunuz:_____ Kilonuz:_____

Okulunuzun adı:_____ Sınıfınız: _____

Birinci dönem not ortalamanız:-_____ Genel not ortalamanız:_____

Annenizin en son mezun olduğu okul:

İlkokul: ☐ Ortaokul: ☐ Lise: ☐ Üniversite: ☐ Yüksek Lisans: ☐ Doktora: ☐

Babanızın en son mezun olduğu okul:

İlkokul: ☐ Ortaokul: ☐ Lise: ☐ Üniversite: ☐ Yüksek Lisans: ☐ Doktora: ☐

Ailenizin aylık ortalama geliri:_____

Yaşadığınız yerde spor yapabileceğiniz tesis var mı?

Evet var: ☐ Hayır yok: ☐

OKUL İLE İLGİLİ AKTİVİTELER

3-Bir haftada kaç saat okuldasınız?_____saat

4-Bir günde kaç dersiniz var?_____ ders

5- Tenefüslerde genellikle ne yaparsınız?

- ☐ Otururum : _____ dakika
- ☐ Yürürüm: _____ dakika
- ☐ Merdiven inip-çıkarım: _____ dakika
- ☐ Diğer (belirtiniz) : _____ dakika

6- Beden eğitimi derslerinde etkinliklere katılmadan kenarda oturduğunuz olur mu?

☐ HAYIR Cevabınız EVET ise kaç dakika? _____ dakika

7-Beden eğitimi derslerinde orta ve yüksek şiddetli aktivitelere katılım süreniz kaç dakikadır? (koşu, voleybol, basketbol, futbol oynama v.b.). _____ dakika

8-Beden eğitimi derslerinde hareket halinde olduğunuz süre kaç dakikadır? _____ dakika

ULAŞIM İLE İLGİLİ AKTİVİTELER

Bu bölümde okul, ev, alışveriş, v.b. yerlere ulaşım şeklinizi belirtirken gidiş-dönüş toplamını yazınız.

	HAFTA İÇİ		HAFTA SONU		
9- Ulaşım şekli	**Haftada kaç gün**	**Günde kaç dakika**	**Haftada kaç gün**	**Günde kaç dakika**	**Kaç aydan beri**
Yürüyerek					
Bisikletle					
Oturarak (araba, otobüs v.b)					
Ayakta (otobüs, metro v.b)					
Diğer (belirtiniz)					

MERDİVEN ÇIKMA

10-Bir günde toplam kaç kat merdiven çıkıyorsunuz? _____ kat

Örn: 5. katta oturuyor ve günde 2 kez çıkıyorsanız, (5 katX2 kez) 1 günde 10 kat merdiven çıkıyorsunuz anlamına gelir. Not: Sadece çıktığınız kat sayısını yazınız (1 kat merdiven = 20 basamak).

EVDE GEÇİRİLEN ZAMAN İÇERİSİNDEKİ AKTİVİTELER

Uyku

11-Hafta içi bir günde kaç saat uyuyorsunuz? _____ saat

Cumartesi günleri kaç saat uyuyorsunuz? _____ saat

Pazar günleri kaç saat uyuyorsunuz? _____ saat

12- **Evde, uyku dışında geçirdiğiniz süre içinde yaptığınız ev işlerini, hafta içi kaç gün ve 1 günde kaç dakika, hafta sonu kaç gün ve 1 günde kaç dakika yaptığınızı belirtin.**

	HAFTA İÇİ		HAFTA SONU	
Ev işleri	**Haftada kaç gün**	**Günde kaç dk.**	**Haftada kaç gün**	**Günde kaç dk.**
Temizlik yapma				
Yemek yapma, masa hazırlama ve toplama				
Bulaşık (makineye dizme ve çıkartma veya elde)				
Çamaşır (makineye koyma, çıkarıp asma ve katlama)				
Etrafı toplama				
Kendi odasını düzenleme				
Diğer (Belirtiniz):				
13- Evde oturarak yapılan aktiviteler				
Ders çalışma				
Kitap okuma v.b.				
Televizyon izleme				
Playstation / video oyunları oynama				
Bilgisayar / internet kullanma:				
Diğer (Belirtiniz):				
Diğer (Belirtiniz):				

14-SPOR AKTİVİTELERİ

Halen düzenli olarak haftada en az bir kere yaptığınız spor aktivitelerini haftada kaç gün, günde kaç dakika ve kaç aydan beri yaptığınızı yazınız ve zorlanma düzeyinizi işaretleyiniz.

	HAFTA İÇİ		HAFTA SONU					
	Haftada	**Günde**	**Haftada**	**Günde**	**Kaç**	**Zorlanma düzeyi**		
Spor dalı	**kaç gün**	**kaç dk.**	**kaç gün**	**kaç dk.**	**aydan beri**	**Az**	**Orta**	**Çok**
Yürüyüş	_____	_____	_____	_____	_____	☐	☐	☐
Koşu	_____	_____	_____	_____	_____	☐	☐	☐
Basketbol	_____	_____	_____	_____	_____	☐	☐	☐
Aerobik-step	_____	_____	_____	_____	_____	☐	☐	☐
Futbol	_____	_____	_____	_____	_____	☐	☐	☐
Masa tenisi	_____	_____	_____	_____	_____	☐	☐	☐
Diğer (.....)	_____	_____	_____	_____	_____	☐	☐	☐
Diğer (.....)	_____	_____	_____	_____	_____	☐	☐	☐

15-DİĞER AKTİVİTELER

Evde ya da ev dışında düzenli olarak haftada en az bir kez yaptığınız hobileriniz ya da herhangi bir bölümde belirtmediğiniz fiziksel aktivite düzeyinizin belirlenmesinde sonucu etkileyecek aktivitelerinizi yazınız ve bu sorulara cevap verirken hafta içi kaç gün ve 1 günde kaç dakika, hafta sonu kaç gün ve 1 günde kaç dakika olduğunu belirtiniz.

	HAFTA İÇİ		HAFTA SONU	
	Haftada	**Günde**	**Haftada**	**Günde**
Hobileriniz	**kaç gün**	**kaç dk.**	**kaç gün**	**kaç dk.**
Resim yapmak	_____	_____	_____	_____
Müzik aleti çalmak	_____	_____	_____	_____
Halk oyunları oynamak	_____	_____	_____	_____
Diğer (Belirtiniz):	_____	_____	_____	_____
Diğer (Belirtiniz):	_____	_____	_____	_____

KATILIMINIZ İÇİN TEŞEKKÜRLER

Appendix F

Table 45. Total Matrix

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	120,530	5,244		22,983	,000
	Gender	-7,706	,766	-,360	-10,061	,000
	Age	-2,165	,314	-,244	-6,897	,000
	Siblings	,020	,325	,002	,060	,952
2	(Constant)	120,205	5,459		22,019	,000
	Gender	-7,709	,767	-,360	-10,056	,000
	Age	-2,160	,315	-,243	-6,853	,000
	Siblings	,028	,327	,003	,087	,931
	Monthly Income	,120	,555	,008	,216	,829
3	(Constant)	116,274	5,473		21,246	,000
	Gender	-7,500	,759	-,351	-9,885	,000
	Age	-2,088	,312	-,235	-6,698	,000
	Siblings	,281	,329	,031	,855	,393
	Monthly Income	-,891	,600	-,057	-1,485	,138
	Mother Education	2,556	,614	,163	4,164	,000
4	(Constant)	114,553	5,542		20,670	,000
	Gender	-7,510	,757	-,351	-9,917	,000

	Age	-2,028	,313	-,229	-6,485	,000
	Siblings	,322	,329	,035	,978	,329
	Monthly Income	-1,174	,618	-,075	-1,900	,058
	Mother Education	2,065	,668	,131	3,090	,002
	Father Education	1,013	,551	,078	1,840	,066
5	(Constant)	112,608	5,589		20,147	,000
	Gender	-7,563	,755	-,354	-10,015	,000
	Age	-2,046	,312	-,231	-6,562	,000
	Siblings	,373	,329	,041	1,136	,257
	Monthly Income	-1,206	,616	-,077	-1,958	,051
	Mother Education	2,092	,666	,133	3,140	,002
	Father Education	,898	,551	,069	1,628	,104
	total.MET.week	,015	,007	,080	2,280	,023
6	(Constant)	112,954	5,578		20,249	,000
	Gender	-7,537	,753	-,352	-10,005	,000
	Age	-2,011	,312	-,227	-6,453	,000
	Siblings	,339	,328	,037	1,032	,302
	Monthly Income	-1,181	,615	-,076	-1,921	,055
	Mother Education	2,031	,665	,129	3,052	,002
	Father Education	,888	,550	,068	1,614	,107
	total.MET.week	,019	,007	,099	2,737	,006
	Total TV code	-,601	,296	-,073	-2,034	,042
7	(Constant)	114,339	5,593		20,443	,000
	Gender	-7,319	,757	-,342	-9,668	,000
	Age	-2,085	,312	-,235	-6,676	,000
	Siblings	,306	,328	,034	,935	,350
	Monthly Income	-1,100	,614	-,070	-1,793	,074
	Mother Education	2,042	,663	,130	3,079	,002
	Father Education	,945	,549	,072	1,721	,086

	total.MET.week	,024	,007	,122	3,268	,001
	Total TV code	-,531	,296	-,065	-1,795	,073
	Total PC code	-,705	,310	-,085	-2,277	,023
	(Constant)	106,298	5,571		19,081	,000
	Gender	-5,938	,766	-,278	-7,755	,000
	Age	-1,922	,304	-,217	-6,321	,000
	Siblings	,204	,318	,022	,642	,521
	Monthly Income	-1,012	,596	-,065	-1,700	,090
8	Mother Education	1,981	,643	,126	3,079	,002
	Father Education	,568	,536	,044	1,061	,289
	total.MET.week	,014	,007	,073	1,962	,050
	Total TV code	-,263	,290	-,032	-,907	,365
	Total PC code	-,540	,301	-,065	-1,792	,074
	Total Study Lesson	1,903	,299	,233	6,373	,000

a. Dependent Variable: cumulative GPA

Appendix G

Turkish Summary

Giriş

Fiziksel aktivite eksikliği, modern toplumumuzun en büyük sağlık problemlerinden biridir. Bundan yüz yıl öncesinde insanlar günlük işlerini bedenen yapmak zorundaydılar. Teknolojinin gelişimi daha sedanter bir yaşam tarzına yol açtı (Akıncı, 2014; Arabacı & Çankaya, 2007). Fiziksel aktivite eksikliği, çocuk obezitesi, tip 2 diyabet, kalp-damar hastalıkları, hipertansiyon, hiperlipidemi, inme, kolon kanseri ve göğüs kanseri gibi bazı hastalıklara sebep olur (Castelli, Hillman, Buck, & Erwin, 2007). Öte yandan fiziksel aktivitelere düzenli katılım, zihinsel sağlık, kas-iskelet sistemi sağlığı ve bağışıklık fonksiyonlarını arttırır. Diyabet, üst solunum yolu enfeksiyonları, koroner kalp hastalığı, hipertansiyon, kolon kanseri, inme, damar ve metabolik rahatsızlıklar ve her türlü ölüm riskini azaltır (Allison, Dwyer, & Makin, 1999; Castelli et al., 2007; Rowe, van der Mars, Schuldheisz, & Fox, 2004; Tremblay, Inman, & Willms, 2000).

Fiziksel aktivite, dinlenme anından daha fazla enerji gerektiren ve kaslarınızı çalıştıran herhangi bir vücut hareketi veya enerji harcaması gerektiren, iskelet kasları tarafından üretilen herhangi bir vücut hareketi olarak tanımlanır (Torbeyns, Bailey, Bos, & Meeusen, 2014). Fiziksel hareketsizliği yenmek için haftada 150 dakika orta-yoğun şiddette fiziksel aktivite önerilmiştir (Hallal, Cordeira, Knuth, Mielke, & Victora, 2014).

Fiziksel aktivite ayrıca fizyolojik ve psikolojik faydalarla ilişkilidir. Fiziksel aktivitenin zaman içerisinde sabit olmadığı ve yoğun fiziksel aktivite alışkanlıklarının genç yaşlarda elde edildiği düşünülmektedir. Hem sağlıkla ilgili yararları için, hem de

yaşam boyu devam edecek olan olumlu alışkanlıkları geliştirebilmek için bu önemlidir (Allison et al., 1999).

Sedanter bir yaşam tarzı, bazı hastalıklar için yaşla daha fazla açığa çıkan bir risk faktörü olarak bilinmektedir. Tam tersine düzenli fiziksel aktivite yapmak, çoğunlukla bilinen birçok sağlık sonucu üzerinde olumlu sonuçları olan, sağlıkla ilgili bir alışkanlık olarak bilinmektedir. Egzersiz ve sporun ayrıca sosyal adaptasyon ve zihinsel sağlık üzerinde de bazı yararları vardır. Organik sağlığı koruyup geliştirmenin yanında, zayıf zihinsel sağlık da fiziksel aktiviteler tarafından önlenecektir. Kişilik bozulması ve fiziksel bozulma birbirleriyle paraleldir, dolayısıyla her iki cins bozulma da fiziksel sağlığın gelişimiyle minimize edilebilirler. Sonuç olarak, toplumun bütünsel sağlığını arttırmanın en etkili metodu, her yaş grubundan insanları fiziksel aktivitelerle tanıştırmak olabilir (Brady, 1998).

Yirmi birinci yüzyılın en büyük kamusal sağlık problemi fiziksel hareketsizliktir (Trost, Blair, & Khan, 2014). Birçok bulaşıcı olmayan hastalık için fiziksel hareketsizliğin, önemli bir değiştirilebilir risk faktörü olduğu kanıtlanmıştır. Warburton'un belirttiği gibi, kalple ilgili ve her türlü ölüm riskindeki 50 % 'den fazla düşüş, kolon kanserine bağlı riskteki 30 % - 40 % düşüş ve kadınlardaki göğüs kanseri riskine bağlı 20 % - 30 % düşüş fiziksel aktiviteyle bağlantılıdır (Maresova, 2014). Sosyal izolasyon ve fiziksel hareketsizlik yaşla birlikte artar ve bu faktörler zihinsel ve fiziksel sağlık için zararlıdır (S. B. Reed, Crespo, Harvey, & Andersen, 2011).

Bütün yaş gruplarında, gelişmiş ve gelişmekte olan ülkelerde hareketsiz yaşam tarzı artmıştır. Ayrıca bulaşıcı olmayan hastalıklar hareketsiz yaşam tarzı ile artmıştır. Dolayısıyla, dünyadaki ölüm oranı ile ilgili, hareketsizlik, dördüncü risk faktörü olarak gösterilmiştir (CAN, ARSLAN, & ERSÖZ, 2015). Hareketsiz kalan insanlar, her tür ölüm için en yüksek riske sahiptirler. Ayrıca, yaşla birlikte, fiziksel hareketsizliğin baskınlığı artma eğilimindedir (Sahebi, 2014). Yaşlı yetişkinlerin zihinsel sağlıklarının arttırılması kadar, günlük yaşam aktivitelerindeki performansın arttırılmış fonksiyonelliği de, ayrıca arttırılmış fiziksel aktivitenin yararları olarak dahil edilebilirler. Ayrıca inanılmaktadır ki arttırılmış fiziksel aktivite en çok, düşük

fiziksel ve zihinsel sağlığa sahip olanlarda yararlıdır. Günlük yaşam aktivitelerinde yaşadıkları zorluklardan ve onlar sedanter olmaya daha yatkın olduklarından dolayı, yaşlı yetişkinler için, fiziksel aktiviteyi desteklemek için stratejiler bulmak önemlidir (S. B. Reed et al., 2011).

Obezite, gençler arasında artmakta olan ve önemli bir sağlık problemidir. Bu en büyük korkulardan biridir çünkü obezite gençlerin bütünsel sağlık durumunu etkiler ve onun birçok sağlık ve sosyal sonucu vardır. İlaveten, gençler arasındaki obezitenin, yetişkinlikte de devam etmeye yüksek bir eğilimi vardır (Mereish & Poteat, 2015). Ayrıca kilolu çocuklar, daha sonraki yaşamlarında aşırı kilolu olmak için dört kat fazla risk altındadırlar (Landolfi, 2014). Çocukların ve gençlerin obezite seviyeleri son birkaç yılda dramatik bir şekilde artmıştır (Bassett, John, Conger, Fitzhugh, & Coe, 2015; Kopczynski, Chen-Stute, & Kellmann, 2014; Landolfi, 2014; Laurson, Lee, & Eisenmann, 2015; Mereish & Poteat, 2015; Nemet, 2015). Çocukların ve gençlerin obezite seviyelerindeki bu artış, çoğunlukla fiziksel aktivitedeki düşüşe ve elektronik medya kullanımındaki artışa atfedilmiştir (Bassett et al., 2015; Kopczynski et al., 2014; Laurson, Lee, et al., 2015; Malkogeorgos, Argiriadou, Kotzamanidou, & Mavrovouniotis, 2010; Nemet, 2015; Yoon & So, 2015).

Amerika Birleşik Devletlerinde, artan sayıdaki aşırı kilolu ve obez çocuğa rağmen, birçok okul daha fazla akademik ders görmek için beden eğitimi programlarında kesintiye gittiler. Bu müfredat değişiklikleri öğrencilerin akademik başarılarını arttırmak için yapıldı, ama literatür bu fikri desteklemiyor. Son zamanlarda yapılan çalışmalar, fiziksel aktivite veya spora katılım ve akademik başarı arasında olumlu bir ilişki göstermiştir. Coe, Pivarnik, Womack, Reeves ve Malina (2006) farzetmişlerdir ki, beden eğitimi derslerindeki aktivite de dahil olmak üzere, kendine güven, konsantrasyon ve uyanıklık seviyesindeki olumlu etkiler sayesinde, arttırılmış fiziksel aktivite daha iyi sınıf performansına yönlendirebilir (Siegel, 2007). Fiziksel aktif yaşam tarzının diğer getirileri ise; daha az devamsızlık ve ofis çalışanlarında daha iyi üretkenlik, öğrencilerde daha iyi akademik performans, yaşlı insanlarda, bağımsız yaşamada bir gelişme ve zihinsel gerilemede bir düşüştür (Torbeyns et al., 2014).

Hepimizin bildiği gibi, Türkiye'deki eğitim sisteminde birçok sınav vardır. Bunlar; TEOG (Temel Eğitimden Ortaöğretime Geçiş Sınavı), LYS (Lisans Yerleştirme Sınavı), YGS (Yükseköğretime Geçiş Sınavı), KPSS (Kamu Personel Seçme Sınavı), ALES (Akademik Personel ve Lisansüstü Eğitim Giriş Sınavı), vb. Eğer bir öğrenci, bir üniversiteden mezun olup, bir işe girmek ve kendi parasını kazanmak isterse, bu sınavları tek tek geçmek zorundadır. Öğrenciler, bu sınavlarda başarılı olamadıkları takdirde, güzel bir gelecek sahibi olamayacaklardır. Bu yüzden Türkiye'de hem öğrencilerin, hem ebeveynlerin ve hem de öğretmenlerin üzerinde büyük bir baskı vardır. Eğitim sisteminin her bir elemanı bu sınavlardaki akademik başarıya odaklanmış durumdadır. Bunun sonucu olarak, öğrencilere akademik dersler dışındaki faaliyetler için hiç zaman kalmamaktadır. Öğrenciler, ebeveynler ve hatta bazı öğretmenler bile beden eğitimi, resim ve müzik gibi derslerin gereksiz olduğunu düşünmektedirler. Onlar, öğrencilerin boş zamanlarında spora harcadıkları zamanın, akademik başarıyı olumsuz yönde etkilediğini düşünmektedirler. Tam tersine hepimiz biliyoruz ki fiziksel sağlık ve zihinsel rahatlama, sağlıklı bir bireyin temel ihtiyaçlarıdır. Daha da ötesi, literatürü taradığımızda fiziksel aktivitenin, akademik başarıyı olumsuz yönde etkilemediğini görürüz. Dolayısıyla, Türk toplumunun gelecekte sağlıklı bir hayata ulaşabilmesi için, fiziksel aktivitenin sağlık getirilerini göz önünde bulundurmalıyız. Gençlik için, hem akademik başarı ve hem de fiziksel aktivite vazgeçilmez olmalıdır. Türkiye'de fiziksel aktivite ve akademik başarı hakkında çok az çalışma vardır. Bu yüzden bu çalışma, literatürdeki bu boşluğu doldurmak için yapılmıştır. Bu çalışmanın birinci amacı, lise öğrencilerinde fiziksel aktivite seviyesi ve akademik başarı arasındaki ilişkinin incelenmesidir. Çalışmanın ikinci amacı ise bazı seçilmiş değişkenlerin akademik başarıya etkisini incelemektir.

YÖNTEM

Araştırma Deseni

Bu çalışmanın deseni ilişkiseldir. Öğrencilerin akademik başarı puanları için, Milli Eğitim Bakanlığı'nın e-okul sisteminden alınan genel puan ortalamaları dikkate alınmıştır. Öğrencilerin fiziksel aktivite seviyelerini ölçmek için, Uluslararası Fiziksel

Aktivite Anketi (IPAC)'nin Türkçe versiyonu (FADA) uygulanmıştır. Bu çalışmanın bağımlı değişkenleri, Genel Puan Ortalaması (GPA) ve Fiziksel Aktivite Seviyesi'dir. Bağımsız değişkenler ise; sosyo-ekonomik statü, ebeveynlerin eğitim seviyesi, cinsiyet, ders çalışmaya harcanan zaman, yaş, bilgisayar başında harcanan zaman ve televizyon izlerken harcanan zamandır.

Katılımcılar

Çalışmaya Kastamonu'daki kız ve erkek lise öğrencileri katılmıştır. 2014-2015 döneminde Kastamonu'daki liselerde toplam 8641 öğrenci vardı. Temsiliyet için, toplam popülasyonun % 10'u hedef alındı. 2014-2015 döneminde Kastamonu'da toplam 16 lise vardı. Her okulun ismi küçük kağıtlara yazıldı. Sonra bu kağıtlar katlanıp bir torbaya konuldu. Daha sonra dört isim dokuzuncu sınıflar için (lise 1), dört isim onuncu sınıflar için (lise 2), dört isim on birinci sınıflar için (lise 3), dört isim de on ikinci sınıflar için (lise 4) rastgele seçildi. Her okuldan, test için iki sınıf rastgele seçildi. Bir sınıf yaklaşık olarak 30 kişiden oluşuyordu. Aykırı veriler çıkarıldı. Sonunda, elimizde 767 katılımcı kaldı ve bu rakam toplam popülasyonu temsil etmek için yeterlidir. Toplam 434 kız ve 333 erkek katılımcımız vardır.

Çalışmayı yönetmek için gerekli olan izinler, hem Orta Doğu Teknik Üniversitesi Etik Komitesi'nden ve hem de Kastamonu Milli Eğitim Müdürlüğü'nden alınmıştır. Bütün katılımcılar uygulamadan önce, test hakkında bilgilendirilmiştir. Aileleri tarafından imzalanan veli izin belgeleri katılımcılardan toplanmıştır.

Ölçüm Araçları

Fiziksel Aktivite Değerlendirme Anketi

Öğrencilerin fiziksel aktivite seviyesini ölçmek için Fiziksel Aktivite Değerlendirme Anketi (FADA) uygulandı. Bu, Uluslararası Fiziksel Aktivite Anketi'nin (IPAC) Türkçe versiyonudur. Anket, geçen haftanın boş zamanlarında, evde, seyahatte, işte, egzersiz ve spor esnasında, bir yerden bir yere giderken ve günlük yaşamda yapılan fiziksel aktivitelerle ilgili sorular içeriyor. Sonuçlar, bir haftalık belli fiziksel aktivitelere harcanan günler dikkate alınarak hesaplanıyor. Bir egzersize

harcanan belirli bir zaman hesaplanıyor ve MET'e dönüştürülüyor (Kamelska & Mazurek, 2015; Wang et al., 2015). Yani fiziksel aktivite seviyesini belirlemek için, bir fiziksel aktivite skoru, Metabolik Eşdeğer olarak hesaplanıyor (Hallal et al., 2014). Düşük fiziksel aktivite seviyesi 600'den az MET, orta fiziksel aktivite seviyesi 601 ve 3000 MET arası ve yüksek fiziksel aktivite seviyesi de 3001 MET ve üzeri olarak belirlenmiştir.

Terimlerin Açıklanması

Fiziksel Aktivite

Dinlenme halinden daha fazla enerji gerektiren ve kaslarınızı çalıştıran veya enerji harcaması gerektiren, iskelet kaslarıyla yapılan herhangi bir vücut hareketine fiziksel aktivite denir (Torbeyns et al., 2014).

Akademik Başarı

Başarı, proje, düşünce, iş veya isteğin, kişinin veya kurumun isteği doğrultusunda ve belirli bir zaman dilimi içerisinde düzgünce gerçekleştirilmesine denir (Akça, 2002). Ama bir öğrencinin, bütün derslerinden geçmek için, bütün bir yıl boyunca yaptığı işleri gösteren aritmetik ortalama skoruna akademik başarı denir. Bizim ülkemizde sınav projeleri ve öğrencilerin performanslarıyla ilgilenen çalışmalar tam puan üzerinden değerlendirilir (Açıkgöz, 2005; Elİöz, 2013).

Veri Analiz Planı

İstatistikleri analiz etmek için, Sosyal Bilimler için İstatistiksel Paket (SPSS, versiyon 23) kullanılmıştır.

Açıklayıcı bilgiler için, tanımlayıcı istatistikler uygulandı; ortalamalar ve standart sapmalar değerlendirildi. Her araştırma sorusu için, uygun test prosedürleriyle sayıltı kontrolü yapıldı.

Bütün analizler için, geçerli p değeri seviyesi $p < .05$ olarak belirlendi.

BULGULAR

Araştırma Sorusu 1: Lise öğrencilerinde fiziksel aktivite seviyesi ve akademik başarı arasındaki ilişki nedir?

Bağımlı değişkenler arasında Pearson Korelasyon Katsayısı uygulandı. Fiziksel aktivite seviyesi ve akademik başarı arasında istatistiksel olarak anlamlı bir ilişki yoktur (p= 0,07 > .05).

Araştırma Sorusu 2: Lise öğrencilerinde ailenin aylık gelirinin, akademik başarıya olan etkisi nedir?

MANOVA sonucu gösterdi ki ailenin aylık gelirinin, akademik başarıya istatistiksel olarak anlamlı bir etkisi yoktur (F (4, 1340) = 2.10, p> .05).

Araştırma Sorusu 3: Lise öğrencilerinde ebeveynlerin eğitim seviyelerinin, akademik başarı ve fiziksel aktiviteye olan etkisi nedir?

MANOVA sonucu gösterdi ki anne eğitim seviyesi, akademik başarı ve fiziksel aktivite seviyesi üzerinde istatistiksel olarak anlamlı bir etkiye sahiptir (F (4, 1514) = 2.28, p> .05).

Diğer taraftan, baba eğitim seviyesi, akademik başarı ve fiziksel aktivite seviyesi üzerinde istatistiksel olarak anlamlı bir etkiye sahip değildir (F (4, 1514) = 2.28, p> .05).

Araştırma Sorusu 4: Lise öğrencilerinde cinsiyetin, akademik başarıya olan etkisi nedir?

MANOVA sonucu gösterdi ki cinsiyetin, akademik başarı üzerinde istatistiksel olarak anlamlı bir etkisi vardır (F (2, 764) = 71.66, p< .05).

Araştırma Sorusu 5: Lise öğrencilerinde ders çalışmaya harcanan zamanın, akademik başarıya olan etkisi nedir?

MANOVA sonucu gösterdi ki ders çalışmaya harcanan zamanın, akademik başarı üzerinde istatistiksel olarak anlamlı bir etkisi vardır (F (6, 1524) = 21.14, p< .05).

Araştırma Sorusu 6: Lise öğrencilerinde yaş ve akademik başarı ve fiziksel aktivite seviyesi arasındaki ilişki nedir?

Pearson Korelasyon Katsayısı Analizi sonuçları gösterdi ki yaş ile akademik başarı arasında istatistiksel olarak anlamlı bir ilişki vardır (F (1, 757) = 70.39, p< .05), ama yaş ile fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı bir ilişki yoktur (F (1, 757) = 0.75, p> .05).

Araştırma Sorusu 7: Lise öğrencilerinde bilgisayar başında harcanan zamanın, akademik başarıya olan etkisi nedir?

MANOVA sonucu gösterdi ki bilgisayar başında harcanan zamanın, akademik başarı üzerinde istatistiksel olarak anlamlı bir etkisi vardır (F (6, 1524) = 17.94, p< .05).

Araştırma Sorusu 8: Lise öğrencilerinde televizyon izlerken harcanan zamanın, akademik başarıya olan etkisi nedir?

MANOVA sonucu gösterdi ki televizyon izlerken harcanan zamanın, akademik başarı üzerinde istatistiksel olarak anlamlı bir etkisi vardır (F (6, 1524) = 14.22, p< .05).

TARTIŞMA VE SONUÇ

Bu çalışmanın ana amacı, lise öğrencilerinde fiziksel aktivite seviyesi ve akademik başarı arasındaki ilişkiyi incelemekti. Sonuçlarımız gösterdi ki fiziksel aktivite seviyesi ve akademik başarı arasında istatistiksel olarak anlamlı bir ilişki yoktur.

Çalışmaya 767 öğrenci katıldı (434 kız, 333 erkek). Kümülatif genel puan durumu ortalaması 73.7±10.49, yaş ortalaması 16.5±1.22 ve fiziksel aktivite katılım değeri ortalaması 156.1±54.61'dir.

Ayrıca, akademik başarı puanını etkileyebilecek olan, ailenin aylık geliri, ebeveynlerin eğitim seviyesi, cinsiyet, ders çalışmaya harcanan zaman, bilgisayar başında geçirilen zaman ve televizyon izlemeye harcanan zaman gibi bazı bağımsız değişkenlere de değinildi.

Bulgular gösterdi ki, lise öğrencilerinde, ailenin aylık geliri ile akademik başarı ve fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı bir ilişki yoktur. Ebeveynlerin eğitim seviyesini göz önüne aldığımızda, bulgular gösterdi ki lise öğrencilerinde, annenin eğitim seviyesi ile öğrencilerin fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı bir ilişki yok iken, annenin eğitim seviyesi ile akademik başarı arasında istatistiksel olarak anlamlı bir ilişki vardır. Tam tersine, lise öğrencilerinde, babanın eğitim seviyesi ile akademik başarı ve fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı bir ilişki yoktur. Diğer taraftan, lise öğrencilerinde, cinsiyet ile akademik başarı arasında istatistiksel olarak anlamlı bir ilişki vardır ama, cinsiyet ile fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı bir ilişki yoktur. Bundan başka, lise öğrencilerinde, ders çalışmaya harcanan zaman ile hem akademik başarı, hem de fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı bir ilişki vardır. Ayrıca, lise öğrencilerinde, yaş ile fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı bir ilişki yok iken, yaş ile akademik başarı arasında istatistiksel olarak anlamlı, olumsuz bir ilişki vardır. İlaveten, lise öğrencilerinde, bilgisayar başında geçirilen zaman ile hem akademik başarı, hem de fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı, olumsuz bir ilişki vardır. Ayrıca, lise öğrencilerinde, televizyon izlerken harcanan zaman ile hem akademik başarı, hem de fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı, olumsuz bir ilişki vardır.

Sonuç olarak, ailenin aylık geliri ve babanın eğitim seviyesi ile akademik başarı ve fiziksel aktivite seviyesi arasında istatistiksel olarak anlamlı bir ilişki yoktur. Ancak şunu diyebiliriz ki, bilgisayar başında harcanan zaman ve televizyon izlerken harcanan zaman arttığında, hem akademik başarı puanı ve hem de fiziksel aktivite seviyesi puanı düşmektedir. Benzer olarak, yaş yükseldikçe, akademik başarı puanı düşmektedir, ama yaşın fiziksel aktivite seviyesi puanıyla istatistiksel olarak anlamlı

bir ilişkisi yoktur. Tam tersine, ders çalışmaya harcanan zaman arttığında, hem akademik başarı puanı ve hem de fiziksel aktivite seviyesi puanı artmaktadır. İlaveten, annenin eğitim seviyesi arttığında, öğrencilerin akademik başarı puanı artmaktadır, ama annenin eğitim seviyesinin, fiziksel aktivite seviyesi puanıyla istatistiksel olarak anlamlı bir ilişkisi yoktur. Diğer taraftan, erkeklerle kızlar, fiziksel aktivite seviyesi puanı bakımından ayrışmazken, akademik başarı puanı bakımından kızlar, erkeklerden daha iyi performans göstermektedir.

Sonuçlarımızın ışığında diyebiliriz ki, televizyon izlemek ve bilgisayar başında zaman geçirmek, öğrenciler için sedanter ve sağlıksız bir hayata sebep olan ve akademik başarılarını olumsuz yönde etkileyen, onların çok değerli olan zamanlarını tüketen alışkanlıklardır. Beklendiği gibi, ders çalışmaya harcanan zaman, akademik başarıyı arttırmaktadır, fakat beklenmedik şekilde, ders çalışmaya harcanan zaman, aynı zamanda fiziksel aktivite seviyesini de arttırmaktadır. Bunun sebebi, öğrencilerin kapalı ve sabit bir ortamdan sıkılmaları ve dışarı çıkıp aktif olmak ve stres atmak ihtiyacı hissetmeleri olabilir. Çalışmanın diğer bir önemli bulgusu da, babanın eğitim seviyesi etkili değil iken, annenin eğitim seviyesinin akademik başarı puanı üzerinde etkili olmasıdır. Bunun sebebi de babanın, çoğunlukla evin dışında vakit geçirmesi ve daha çok annenin çocuklarla ilgilenmesi olabilir.

Sonuçlarımız, fiziksel aktivite seviyesini arttırmanın akademik başarıyı düşürmediğini belirlemek suretiyle, geçmiş literatürü desteklemektedir (Ardoy et al., 2014). Ayrıca, akademik başarıyı etkileyen bundan başka diğer faktörler de vardır. Örneğin, ders çalışma zamanı, akademik başarı üzerinde en güçlü etkiye sahip olan faktördür, fakat şu unutulmamalıdır ki öğrenciler makine değil, insandırlar. Onların da rahatlamak, stres atmak gibi bazı ihtiyaçları vardır. Ayrıca ders çalışmak için de bir eşik seviyesi vardır. Bu eşik seviyesine ulaşıldıktan sonra, ekstra ders çalışma zamanı, akademik başarıya katkıda bulunmamaktadır. Coe'nun çalışmasında (Coe, Pivarnik, Womack, Reeves, & Malina, 2006), öğrenciler iki gruba bölündüler. Bir grup günlük olarak ekstra bir saat beden eğitimi dersi gördü ve diğer grup ekstra bir saat akademik eğitim gördü. Sonuçlar gösterdi ki beden eğitimi dersi gören sınıf, akademik eğitim

gören sınıfla kıyaslandığında, akademik başarı açısından bir düşüş göstermemiştir. Dolayısıyla, öğrencilerin hayatlarında bir denge olmalıdır. Sağlıklı bir vücut ve sağlıklı bir zihin yapısı için, fiziksel aktivite vazgeçilmezdir. Artan konsantrasyona ve dikkate yol açan, artan canlılık ve azalan sıkıntıyı içeren, arttırılmış fiziksel aktivitenin, akademik başarıyı arttırabileceği iddia edilmektedir. Ayrıca arttırılmış fiziksel aktivite, sınıf içi olumlu davranışları arttıran, artan özsaygı ile de ilişkilendirilebilir (Allison et al., 1999; Chomitz et al., 2009; Coe et al., 2006; Donnelly & Lambourne, 2011; Käll, Nilsson, & Lindén, 2014; Lodewyk, 2009; J. A. Reed et al., 2010; Strong et al., 2005; Taras, 2005; Tremblay et al., 2000). Daha önceki çalışmaların verileri, okul müfredatındaki beden eğitimine ayrılan zamanın arttırılmasının, gençlerdeki fiziksel ve zihinsel yararların artmasını sağlayabileceğini önermiştir (Ardoy et al., 2014).

Türkiye'de, fiziksel aktivitenin gereksiz olduğu ve bir zaman kaybı olduğuna dair bir önyargı vardır. İnsanların birçoğu, eğer fiziksel aktivitelere katılırlarsa, öğrencilerin derslerinde başarısız olacaklarını düşünmektedirler. Bu çalışmayla, fiziksel aktivite hakkındaki bu önyargıyı kırmaya katkıda bulunmak hedeflenmiştir. Hem eğitim sisteminin içinde, hem de sosyal hayatın içinde fiziksel aktivite için yeterince zaman ayrılmamıştır. Fiziksel aktivite hakkında yeni politikalar geliştirilmelidir.

Daha önce de bahsedildiği gibi, modern toplumun en önemli sağlık problemlerinden biri obezitedir. Fiziksel aktivitenin, obeziteye ve diğer kronik hastalıklara karşı koruyucu etkisi iyi bilinmektedir (Bassett et al., 2015; Cauderay & Cachat, 2015; Kopczynski et al., 2014; Landolfi, 2014; Laurson, Welk, & Eisenmann, 2015; Malkogeorgos et al., 2010; Mereish & Poteat, 2015; Nemet, 2015; Yoon & So, 2015). Ayrıca şu da bilinmektedir ki; obez gençler, obez yetişkinler olma eğilimindedirler (Malkogeorgos et al., 2010; Mereish & Poteat, 2015). Dolayısıyla, öğrenciler de dahil olmak üzere, toplumun bütün üyeleri için fiziksel olarak aktif olmak hayati derecede önemlidir.

ÖNERİLER

Öneriler için, akrabalar, öğrenciler ve kanun yapıcılar, fiziksel olarak aktif bir yaşam stilinin yararları ve fiziksel olarak aktif olmayan bir yaşam stilinin zararlı etkileri hakkında bilgilendirilmelidirler. Daha önce de bahsettiğimiz gibi, akademik başarı puanını düşüren şeyler, bilgisayar başında harcanan zaman ve televizyon izlerken harcanan zamandır. Lise öğrencilerinde akademik başarı ve fiziksel aktivite seviyesini arttırmak için öğrenciler, bilgisayar başında harcadıkları zamanı ve televizyon izlerken harcadıkları zamanı azaltmalıdırlar. Sonuç olarak, bilgisayar ve televizyondan tasarruf ettikleri zaman ile fiziksel aktivite yapmak ve ders çalışmak için daha fazla zamana sahip olacaklardır.

Daha önce de bahsettiğimiz gibi, fiziksel olarak aktif olmak toplumun her üyesi için çok önemlidir. Bu yüzden insanlar, otobüs veya araba ile yolculuk yapmak yerine, bir yerden bir yere yürüyerek veya bisikletle gitmeye teşvik edilmelidir. Şehirlerde herkesin spor tesislerine kolayca ulaşabileceği şekilde yaşam çevreleri, fiziksel aktiviteler için yeniden düzenlenmelidir. Ayrıca okulların çevresi de sağlıklı bölgeler olarak dizayn edilmelidir.

Fiziksel aktivite, toplumun her yaş kategorisindeki insanlar için önemli olduğu için ve yaşam boyunca devam eden şiddetli fiziksel aktivite alışkanlıkları genç yaşlarda kazanıldığı için, daha genç bireylerle çalışmak önemlidir. Bu yüzden gelecek çalışmalar daha küçük yaş gruplarıyla yapılabilir.

Kastamonu, Türkiye'nin kuzey bölgesindeki küçük bir şehirdir. Bu, çalışma için bir sınırlılıktır. Gelecek çalışmalar Türkiye'nin değişik bölgelerindeki değişik şehirlerde yapılabilir.

Appendix H

TEZ FOTOKOPİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ☐

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı :
.....
Adı : .....
Bölümü :
.....

TEZİN ADI (İngilizce) :
.....
.....
.....
.....
.....
.....

TEZİN TÜRÜ : Yüksek Lisans ☐ Doktora ☐

1. Tezimin tamamı dünya çapında erişime açılsın ve kaynak gösterilmek şartıyla tezimin bir kısmı veya tamamının fotokopisi alınsın. ☐

2. Tezimin tamamı yalnızca Orta Doğu Teknik Üniversitesi kullanıcılarının erişimine açılsın. (Bu seçenekle tezinizin fotokopisi ya da elektronik kopyası Kütüphane aracılığı ile ODTÜ dışına dağıtılmayacaktır.) ☐

3. Tezim bir (1) yıl süreyle erişime kapalı olsun. (Bu seçenekle tezinizin fotokopisi ya da elektronik kopyası Kütüphane aracılığı ile ODTÜ dışına dağıtılmayacaktır.) ☐

Yazarın imzası ..... Tarih .....