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DO STUDENTS WHO ENGAGE IN REGULAR PHYSICAL ACTIVITY PERFORM BETTER IN SCHOOL? IMPLICATIONS FOR INSTRUCTION

A MASTER'S THESIS

BY

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THE PROGRAM OF CURRICULUM AND INSTRUCTION
İHSAN DOĞRAMACI BILKENT UNIVERSITY
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I dedicate this thesis to;

My parents and my brother; Zeynep Ünüvar, Erhan Ünüvar and Bartu Ünüvar, who were by my side in every part of my life.

My precious one, Aycan Güvenç, who encourages, supports and gives me strength in any challenges and difficulties I have to deal in my life.

Do students who engage in regular physical activity perform better in school? Implications for instruction

The Graduate School of Education

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İdil Ünüvar

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May 2018

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Curriculum and Instruction.

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ABSTRACT

DO STUDENTS WHO ENGAGE IN REGULAR PHYSICAL ACTIVITY PERFORM BETTER IN SCHOOL? IMPLICATIONS FOR INSTRUCTION

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M.A., Program of Curriculum and Instruction

Supervisor: Asst. Prof. Dr. Aikaterini Michou

May 2018

The present study aimed to investigate the role of physical activity on high school students' academic performance. To reach this aim, three groups of students compared in this study in terms of academic achievement (Grade Point Average and literature grades), academic motivation and academic procrastination; athletic students, students who do regular physical activity and students who do not do any physical activity. In addition, the correlation between academic motivation and exercise motivation was examined. The study was conducted in six private high schools in Ankara, İzmir and İstanbul, Turkey with the participation of 486 students and 3 teachers.

The results of MANOVA revealed that students who do not do any regular physical activity had significantly higher academic GPA (Grade Point Average) and Literature grades than athletic students. In addition, regression analysis revealed that physical activity negatively and academic autonomous motivation positively predicted academic GPA. Furthermore, physical activity and academic autonomous

motivation negatively predicted academic procrastination. Bivariate correlation revealed that there is a significant correlation between academic motivation and exercise motivation.

Key words: physical activity, academic achievement, academic motivation, academic procrastination, exercise motivation.

ÖZET

DÜZENLİ FİZİKSEL AKTİVİTE YAPAN ÖĞRENCİLER OKULDA DAHA İYİ PERFORMANS GÖSTERİR Mİ?: ÖĞRETİMSEL ÇIKARIMLAR

İdil Ünüvar

Yüksek Lisans, Eğitim Programları ve Öğretim

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Bu çalışmanın amacı fiziksel aktivitenin lise öğrencilerinin akademik başarısı üzerine etkisini araştırmaktır. Bu amaçla, sporcu öğrenciler, düzenli fiziksel aktivite yapan öğrenciler ve düzenli fiziksel aktivite yapmayan öğrenciler birbirleri ile akademik başarı (genel akademik not ortalaması ve Edebiyat ders notu), akademik motivasyon ve akademik erteleme alışkanlıkları açısından karşılaştırılmıştır; Buna ek olarak, akademik motivasyon ve egzersiz motivasyonu arasındaki ilişki araştırılmıştır. Bu araştırma, 6 farklı özel lisede, Ankara, İzmir ve İstanbul'da okuyan 486 öğrenci ve 3 öğretmenin katılımı ile gerçekleştirilmiştir.

MANOVA analizi sonucunda, düzenli fiziksel aktivite yapmayan öğrencilerin genel akademik not ortalamaları ve Edebiyat dersi başarılarının sporcu öğrencilerden daha yüksek olduğu görülmüştür. Buna ek olarak, regresyon analizleri, akademik başarıyı fiziksel aktivitenin negatif, akademik içsel motivasyonun pozitif yordadığını göstermiştir. Bu sonuca ek olarak ise, akademik erteleme alışkanlıklarını, fiziksel aktivitenin ve akademik motivasyonun negatif yordadığı görülmüştür.

İki değişkenli korelasyon testi, akademik motivasyon ve egzersiz motivasyonu arasında anlamlı bir ilişki olduğunu göstermiştir.

Anahtar Kelimeler: fiziksel aktivite, akademik başarı, akademik motivasyon, akademik erteleme alışkanlıkları, egzersiz motivasyonu.

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CHAPTER 1: INTRODUCTION

Introduction

Physical activity, when it is performed in a regular basis, brings many benefits not only to the brain but also to the whole body of young children and adolescents. Regular physical activity improves strength and endurance, reduces stress and brings healthy lifestyle by preventing several chronic diseases including cardiovascular disease, diabetes, cancer, hypertension, obesity and depression. Many studies showed also that physical activity is related with academic performance, academic motivation and procrastination among children and adolescents in different countries. In addition to its benefits to human health, the effect on school life cannot be, therefore, negligible.

Today in many private high schools in Turkey, students have lots of opportunities to participate in team sports, Physical Education (PE) lessons and also courts around urban areas that make it possible for them to do physical activity in a regular basis.

However, parents' concerns of their children are mostly related to their achievement in school and university entrance examinations, while the importance of their physical activity is underestimated. This apprehension brings stress and anxiety to adolescents and may confuse them regarding the importance of physical activity in their life.

Given the importance of physical activity in adolescents' mental and physical health and the fact that academic achievement plays a big role in Turkish adolescents' lives, this study investigated, in a first place, the extent to which three groups of students (athletic students, students with regular physical activity and students with no

physical activity) differ in terms of academic achievement (Grade Point Average; GPA), academic motivation and academic procrastination. Moreover, this study investigated, in a second place, the correlation between academic motivation and exercise motivation.

Background

Physical activity

Physical activity is considered any movement of the body that involves skeletal muscles and requires energy expenditure (World Health Organization, 2017). Physical activity in daily life can be classified into several activities; including occupational, sports, conditioning, household and other (Caspersen, Powell & Christenson, 1985).

Regular physical activity, as being the most important habit for children and adolescents, improves strength and endurance, helps control weight, build healthy muscles, reduces stress and controls the balance of blood pressure and cholesterol levels in body. The U.S. Department of Human and Health Services recommends adolescents to participate in at least 60 minutes of physical activity daily.

In addition, according to a nationally representative survey (in the U.S.), 77% of children aged 9-13 participated in free-time physical activity during a seven-day period before the survey (CDC, 2010). In addition to this finding, the Centers for Disease Control and Prevention (Kann et al, 2013) has findings that indicate differences between genders in terms of Physical Activity and Physical Education participation. The results showed that 17.7% of female students and 36.6% of male students are physically active at least 60 minutes per day. In addition, 24.0% of

female students and 34.9% of male students attend Physical Education classes. Regarding Turkey, research findings from the Turkish Ministry of Health indicate that almost 87% of women and 77% of men are inadequately active. Sedentary life style in Turkey has considerable consequences for health (Ünal & Ergör, 2013).

These results indicate that not all the children and adolescents are systematically engaged in physical activity; therefore, an investigation of possible different academic profile between physically active and physically non-active adolescents seems to be a worthy research goal. As physical activity contributes positively to adolescents' physical energy and well-being, does it also have any relation to students' academic functioning in terms of increasing their motivation and performance?

Motivation

"Motivated" means to be moved to do something intentionally. A person who is willing to do a task and is activated to finish that task is considered motivated. However, a person who is not concerned about making an effort and lacks energy to do a task is considered amotivated. Not only do people have different amounts of motivation, but they also have different qualities of motivation. Both the level and the quality of motivation varies in some ways (Ryan & Deci, 2000).

The quality of motivation concerns the different types of motives that regulate the behavior of an individual. For instance, a primary school child may eagerly do his or her homework, but not because he or she is curious. Instead, the motivation stems from an expected reward from his or her parents and gaining approval in his or her family. In this case, the quality and the amount of motivation vary.

According to the Self-Determination Theory (SDT; Ryan & Deci, 2000), motivation is divided into different types based on different goals and aims that give rise to an action. These two types of motivation are intrinsic motivation and extrinsic motivation. Intrinsic motivation refers to doing something because it is interesting or amusing. A person, who is intrinsically motivated to do a task, has no need for any external incentive such as pressures or rewards in order to keep being engaged in the task (Ryan & Deci, 2000). Intrinsic motivation was found to be as an indicator of students' academic performance, creativity and optimal development (Ryan & Deci, 2017).

Extrinsic motivation refers to doing something because it leads to an outcome. Extrinsic motivation is far more different than intrinsic motivation in terms of instigating behavior through external incentives. SDT claims that extrinsic motivation can vary in the degree to which it is autonomous. Extrinsic motivation can be classified into four categories: External regulation, introjection, identification and integration (Ryan & Deci, 2000).

External regulation is the least self-determined form of extrinsic motivation, as it regulates behavior through rewards or threats given by someone other than the individual. In the academic domain, a student is externally regulated when he or she is threatened by his or her parents to achieve his or her school tasks. Introjected regulation, as the second type of extrinsic motivation, means that a student does the tasks because of internal pressure such as guilty feelings or anxiety. The third type of extrinsic motivation is identified regulation, which is more self-determined. An identified regulation student memorizes the formulas in math class just because he or she will need them in exams (the aim of achieve his or her goal). The last type of extrinsic motivation, which is well internalized and self-determined, is integrated

regulation. Integrated regulation occurs when a student's values and identity indicate a self-endorsed engagement in an activity.

The intrinsic motivation and the two self-determined forms of extrinsic motivation (i.e., identified and integrated regulation) comprise good qualities of motivation and have been labelled autonomous motivation. The two less self-determined forms of extrinsic motivation (i.e., external and introjected regulation) are considered to be controlled motivation and less optimal. In this research, students' academic and exercise autonomous versus controlled motivation was investigated.

Procrastination

Procrastination refers to the act of unnecessarily delaying tasks as a result of a subjective discomfort (Solomon & Rothblum, 1984). Academic procrastination is the tendency of delaying an important task in the academic domain (Ferrari, 2001). Ellis and Knaus (1977) found out that 95% college students deal with procrastination. Evidence showed that procrastination results in impairing academic performance in school that causes low grades and course withdrawal (Ellis & Knaus, 1977). According to Özer and Ferrari (2011) academic procrastination does not differ between genders, whereas the excuses for academic procrastination showed a significant difference between boys and girls adolescents. Klassen and Kuzucu (2009) concur; they conducted research in selected secondary schools in central Turkey and found no significant difference in procrastination levels between boys and girls. They found that low self-efficacy is a predictor of girls' procrastination levels. Moreover, Turkish adolescent boys were found to spend more time on electronic devices while procrastinating; whereas girls read books, magazines and newspapers.

One study conducted with Israeli adolescents found that the anxiety preparing for the examinations in school increases the procrastination level (Milgram & Toubiana, 1999). In another study, Burnam, Komarraju, Hamel and Nadler (2014) learned that students who are more organized and self-determined in motivation are less likely procrastinate in academic life.

In the current study, Turkish high school students' academic procrastination was examined in relation to their engagement in physical activity, their motivation and academic performance.

Academic achievement

Academic achievement or academic performance is the outcome of education. It is the extent to which a student, teacher or institution has achieved their educational goals (Awan, Ghazala, & Anjum, 2011). Academic achievement is prevalently measured by examinations or continuous assessment. The result of this assessment can be summarized to students' grades.

Several factors affect students' academic achievement expressed by grades. According to Awan et al. (2011) and Sikhwari (2014), achievement motivation is significantly related with academic achievement in high school students. In contrast to the findings of these two studies, Emmanuel, Adom, Josephine and Solomon (2014) found that there is a positive correlation between achievement motivation and academic achievement (Mathematics achievement test), however this correlation is not significant. Vansteenkiste, Mouratidis and Lens (2010) suggested that the nonsignificant correlation between achievement motivation and academic achievement results from the autonomous and controlling reasons underlying the academic performance and it is related to different motivational correlates. An earlier

study also suggests that the reasons behind the achievement goals should be considered in terms of SDT (Self-Determination Theory) which distinguishes between autonomous and controlling reasons (Vansteenkiste, Lens, Elliot, Soenens & Mouratidis, 2014). In addition, Vansteenkiste, Smeets, et al. (2010) suggested that autonomous reasons endorse achievement goals because they are interesting and challenging, whereas an opposite pattern was found for controlling reasons that aim to achieve a goal because of attaining unexpected rewards and avoiding negative consequences. Thus, this nonsignificant relation may have different reasons if we consider it within the conception of SDT (Self-Determination Theory). That these three studies found one common result suggests that there is a significant correlation between self-concept and academic achievement.

Moreover, in a study conducted with German students, Suchert, Hanewinkel, and Isensee (2016) found that high fitness level is associated with higher subsequent academic achievement in adolescence. In addition to this study's findings, Donnelly and Lambourne (2011) found that physically active academic lessons improved students' overall performance on a standardized test of academic achievement, which supports the positive relation between classroom-based physical activity and academic achievement. However, there was a different finding which is in contrast with the studies that found a positive correlation between physical activity and adolescents. Research conducted in Netherlands showed that the association between physical activity and academic achievement in adolescence depends on the academic year, physical activity volume and intensity (Van Dijk, De Groot, Savelberg, Van Acker, & Kirschner, 2014).

As in many studies students' academic achievement defined by their academic grades, in the present study students' academic grades will represent their academic achievement.

Problem

Physical activity has gained an important place in students' lives in Turkey, but it remains unexplored whether Turkish students' physical activity is related to their functionality and academic performance in school. For this reason, the current research is proposed to shed light on the need for an extended curriculum in physical activity to strengthen students' academic outcomes.

Purpose

This research aimed to find out the extent to which athletic students, students with regular physical activity, and students with no physical activity (three groups in total) in ninth, tenth, eleventh and twelfth grades from selected Private High Schools in Turkey (Ankara, İzmir and İstanbul) differ in terms of their academic motivation and procrastination in school assignments, and performance. Furthermore, this research determined if there is a correlation between exercise motivation and academic motivation of athletic students and students who do regular physical activity. In addition to finding out possible differences among these three groups of students (athletes, those who exercise regularly, and those who do not exercise), this study aimed to discuss the implications of these differences for the Turkish High School Curriculum.

Research questions

This study addressed the following questions:

1. Do high school athletic students, students with regular physical activity, and students with no physical activity differ in their academic performance (academic Grade Point Average and Literature grade), academic motivations and academic procrastination?

2. Is there a correlation between the exercise motivation and academic motivation of athletic students and students who do regular physical activity?

Significance

After analyzing the results of this survey research, the implications for instruction were discussed. The largest consideration of teachers and parents is students' academic motivation and procrastination that affect students' academic performance in school, while students' physical activity and health are neglected. Therefore, this research investigated not only the effect of physical activity on students' academic performance, motivation, and procrastination; but also provided suggestions about possible ways that facilitate high school students to be engaged in physical activity and, at the same time, be functional and successful at school.

Definition of key terms

Academic achievement: The outcome of education, the extent to which a student, teacher or institution has achieved their educational goals, defined by examination grades (Awan et al., 2011).

Motivation (academic or exercise): What energizes and directs a person's behavior toward an end (SDT; Ryan & Deci, 2017).

Physical activity: Any bodily movement constituted by skeletal muscles and requires energy consumption (World Health Organization, 2017).

Procrastination: The act of unnecessarily delaying tasks as a result of a subjective discomfort (Solomon & Rothblum, 1984).

CHAPTER 2: REVIEW OF RELATED LITERATURE

Introduction

This study aimed to investigate the extent to which three groups of students (athletic students, students with regular physical activity, and students with no physical activity) in ninth, tenth, eleventh and twelfth grades from selected private high schools in Turkey (Ankara, İzmir and İstanbul) differ in terms of their academic motivation, academic procrastination in school assignments and academic performance. Furthermore, the correlation between exercise motivation and academic motivation of athletic students and students who do regular physical activity were explored. In this chapter, prior research that focuses on the relationship among different variables was examined to give the reader the required background information about this research.

Physical activity will be the focus of the first three sections of the chapter with a close look at its relationship with academic performance, academic motivation and academic procrastination among children and adolescents. After exploring these relationships, the possible relationship between academic motivation and motivation in other domains will be reviewed.

Research findings that support a positive relation between physical activity and academic achievement

Physical activity has become the most important habit for children and adolescents to avoid obesity and other health problems including physical and mental diseases.

There are considerable benefits of regular physical activity not only on the biological processes of the human brain but also on mental processes. To mention the role of physical activity on students' academic life, physical activity was found to be correlated with academic achievement in primary and secondary school students (Castelli, Hillman, Buck, & Erwin, 2007; Mullender-Winsjma et al., 2016; Correa-Burrows, Burrows, Ibaceta, Orellana,& Ivanovic, 2017; Haapala et al., 2017; Santana et al., 2017). In addition to this relation found in previous studies, Adsiz, Dorak, Ozsaker and Vurgun (2012) found out that engaging in regular physical activity positively affects primary school students' attention development. Adsiz et al. (2012) conducted an experimental research with pretest-posttest design on fourth and fifth grade students to find out the effect of different types of physical activity (volleyball and gymnastics) on students' attention. In order to attain this aim, researchers divided students into two groups; experimental group who went through an exercise program during 12 weeks and control group who did not do any physical activity. According to the results of a multiple regression analysis, students who did regular physical activity had higher points in "The Bourdon Attention Test", which reveals that students with regular physical activity had higher attention skills.

In the same vein, Castelli, Hillman, Buck, and Erwin, (2007) carried out a research in which third and fifth grade students were asked to complete five components of a physical activity test called Fitnessgram and to respond to multiple choice and extended response items related to mathematics and reading of the ISAT (International Student Admissions Test) test. As a result of the regression analyses, the researchers found that students who are academically successful got higher points in physical fitness tests. Aerobic capacity, involved in Fitnessgram physical activity

test, was found positively associated with academic achievement. However, (Body Mass Index) BMI was found to be conversely related with academic achievement. Nevertheless, the results of this research may indicate that academic achievement may be globally associated with physical fitness in adolescents.

In their study, Haapala et al. (2017) aimed to investigate the relation of Moderate-to-Vigorous Physical Activity (MVPA) and sedentary time (ST) with reading and arithmetic skills among primary school students. Researchers conducted two independent studies simultaneously (Physical Activity and Nutrition in Children Study and the First Steps Study) in Finland, City of Kuopio. Reading fluency was tested by a group-administered subtest of the nationally reading achievement test battery in Finnish, and arithmetic skills were tested by using a basic arithmetic test and students were given limited time for many calculations. Physical activity was assessed by using a combined heart rate and movement sensor. MVPA was defined as activities passing over the intensity of 4 metabolic equivalents (METs). The results indicated that higher levels of MVPA and lower levels of ST were related to better reading skills in Grade 2 and Grade 3 students. A few associations of physical activity and ST with academic skill in girls were found in this study. In conclusion, high levels of MVPA and low levels of ST were found to be positively related to particular academic skills in primary school students.

To attach physical activity in some lessons in order to see if physical activity improves students' academic achievement, Mullender-Winsjma et al. (2016) conducted a cluster randomized control trial in 12 elementary schools in Netherlands. The aim of this research was to find out to see the effect of F&V (Fit and Academically Proficient at School), a physically active academic intervention, on Mathematics and Language lessons. To examine it, academic tests, including

Mathematics tests and Language tests were distributed to 499 students from second and third grade before and intervention and one and two years after the intervention. The students were divided to control and intervention group. Mathematics tests consisted of general math questions and speed tests, Language tests consisted of reading and spelling parts. After 2 years' period, results showed that students in intervention group showed significantly greater mathematics speed test and general mathematics, and spelling test. Even though there was no significant difference in reading test between intervention group and control group, participation in physically active lessons improved elementary school students' academic achievement: mathematics and spelling skills. Thus, researchers in this study strongly suggest educators to adapt physical activity to school curriculum to improve students' important skills at school.

More recent evidence is found in the study by Santana et al., (2017) which reveals that it is important to maintain high fitness levels in primary school students in order to increase academic performance at school. It is commonly understood that obesity is associated with poor academic performance and this may somehow be related with regular physical activity. Thus, a cross-sectional study was conducted to elementary school students, between 10-13 ages in public schools in Recife, Brazil. Students' socio-economic status, academic performance, anthropometry, body composition and cardiorespiratory fitness (CRF) is examined. Academic performance is measured by an education specialist to assess students' knowledge of language (Portuguese) and mathematics. As a result, CRF was found to be positively correlated with academic performance in girls, except Body Mass Index (BMI), body fat and socio-economic status (SES). The results were not the same in boys; no correlation was found between CRF and academic performance.

Correa-Burrows, Burrows, Ibaceta, Orellana, and Ivanovic, (2017) examined the association between engagement in regular physical activity and academic performance in Chilean school kids and found a positive correlation between these two variables. In order to examine this positive relationship, Correa-Burrows et al. randomly chose school kids between the age of between 10-15 from Santiago Metropolitan Region and measured regular physical activity by accounting the hours of weekly scheduled exercise, includes school-based physical education and sport extracurricular activities. Researchers measured students' academic performance by students' national standardized test scores in Language and Mathematics. As a result, researchers found out that only 10% of students were engaged in physical activities where as 80% of them do not even do two hours per week physical activity as recommended. They found that there is a positive correlation between physical activity and academic achievement (Language and Mathematics). There are also some recommendations by these researchers on increasing physical activity classes at school to improve academic achievement.

Beyond the positive correlations between academic achievement and physical fitness among preadolescents, physical activity was also found to be significantly correlated with academic achievement in adolescents. Bradley, Keane, & Crawford, (2013) carried out a study in secondary school in Ireland sought to learn if Physical Education and School Sport (PESS), an integral part of the school curriculum in Ireland, has a role in improvement of Leaving Certificate points (the Irish State School Examination). Their findings revealed that boys who participate in rugby have the highest Leaving Certificate point with rowing and soccer coming next.

These above studies have investigated the relation of physical activity to academic performance provide some evidence about the positive role that sports can play on

students' academic performance at school. Other investigations have focused on the association between physical fitness, physical activity and academic performance at school. The results mostly show a positive association between these two variables among elementary school students and pre-adolescents.

Research findings supporting that physical activity and academic achievement are unrelated

Contrary to the findings reported above about the positive relation between physical activity and academic achievement, Canlı and Günay (2016) found no relation between engagement in playing basketball and academic achievement among middle school aged students (between 10-13 ages). Canlı and Günay (2016) conducted this research to basketball players (only boys) in three different sports clubs in order to investigate the relation between academic success and age, weekly hours of playing basketball, the average number of weekly trainings and motoric skills. The indicator of the students' academic achievement was their academic Grade Point Average at the end of the school year as it was reported in school records. As the results of a One-Way ANOVA test indicated, no correlation between students' time spent in training and academic Grade Point Average was found. Likewise, similar results obtained from another research conducted in Turkey to high school students (Iri, Ibis, & Aktug, 2017). Iri, Ibis and Aktug (2017) conducted this research to investigate the interaction among Physical Activity Levels (PAL), academic achievement, perceived academic competency and Motor Skills (MS) among adolescents between 14-17 ages, studying in an Anatolian High School in Niğde. To attain this aim, researchers used the "International Physical Activity Questionnaire" to assess students' physical activity levels and students' general academic averages as an indicator of their

academic achievement. As the results of independent t-test and bivariate correlation showed, there was no significant relation between academic achievement and Physical Activity Levels (PAL).

Esteban-Cornejo et al., (2017) conducted an investigation with the aim of measuring physical activity during Physical Education and school recess and academic performance in adolescents. Their cross-sectional study focused on the association between physical education (PE) and recess with academic performance among Spanish adolescents and this study was called UP&DOWN study. The researchers used students' academic grades from school records as an indicator of students' academic performance in this study and measured students' physical activity in Physical Education and recess with the ActiGraph accelerometer. (ActiGraph TM, LLC, Pemsacola, FL, US). Furthermore, researchers analysed the data with linear regression and found no positive correlation between physical activity in Physical Education and recess with academic performance. Nevertheless, results also indicate that there is no negative correlation between those variables.

Likewise, Hattie and Clinton (2012) disproved the findings of a study which suggested that there was a significant positive correlation between physical activity and academic performance (Singh et al., 2012). Hattie and Clinton found no convincing evidence of any strong or significant relationship between physical activity and performance at school by converting their findings into effect sizes. Therefore, they concluded that according to the findings of this research, all students can participate and benefit from physical activity independent of their academic achievement.

As it can clearly be seen from previous studies conducted on investigating the relation between physical activity and academic achievement among pre-adolescents and high school students, the common finding among those studies is the positive significant correlation between these two variables. Physical activity has had much more importance in students' lives and it is quite well-known that physical activity does not only regulate body health and life quality, but also make considerable contributions in students' academic life. To take these previous studies into consideration, in this current research we also expect to find higher academic grades in students who do regular physical activity in contrast with who do not do any regular physical activity.

Physical activity and academic motivation

High academic performance is not only related to physical activity but to academic motivation as well (Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013; Sobral, 2004; Wilkinson, 2007). As previous studies suggest that higher regular physical activity or fitness level increase academic achievement, the students may also benefit from physical activity in their academic motivation. A few studies have investigated the correlation between regular physical activity and academic motivation. Sullivan et al. (2017) aimed to assess existing research articles about the relation between physical activity (PA) and academic behavior, and achievement. From a total of 218 journal articles that mainly worked on primary and secondary school students, the researchers chose 9 articles about the effect of PA on academic behavior and analyzed each of them. The findings showed that physical activity is significantly related with academic behavior (e.g. paying attention, concentrating, performing on task behavior), that improves academic achievement in school. Thus,

the researchers highlighted some implications of their findings for school improvement such as implementing an appropriate school form of physical activity and adjusting physical activity practices as needed to improve academic behavior. As academic motivation and its relation with physical activity has been previously investigated, Aung et al. (2016) made contributions on this relation by examining this relationship in medical school students in Thailand. The researchers aimed to find out the effect of regular physical activity on medical school students' motivation on academic work and also examined pre-medical students' levels of intrinsic and extrinsic motivation. For this aim, they chose 296 second year medical school students to participate in this cross-sectional study by completing the Academic Motivation Scale (AMS) and recording the time students engage in physical exercise. Besides, researchers examined students' lifestyle behaviours such as biometric measurements of BMI (Body Mass Index) and waist circumference. According to the results of multivariate regression analyses, researchers found a positive significant relation only between intrinsic motivation and the time spent on physical exercise per week. Thus, increased time engagement in physical exercise per week is correlated with increased intrinsic motivation.

Çaglar and Uluoz (2016) conducted a research in Turkey with the aim of investigating the relation between autonomous academic motivation and exercise levels among secondary school students in Kyrgyzstan and the Northern Cyprus. In this descriptive survey model, Academic Motivation Scale (AMS) was used in order to examine each student's motivation toward academic tasks. As a result of *t*-test, researchers found that there was no relationship between academic success and gender. Most important result suggested that there was a statistical relationship between students' exercise levels in their free time and academic success motivation.

As a result of this survey, students who exercise regularly were found to have higher academic motivation at school.

In addition to the benefits of physical activity on academic motivation in students, Martin and Murtagh (2017) also conducted a research with the aim of gathering teachers' and students' perspectives on "Active Classrooms", which is a program to encourage teachers to give active lessons during 8 weeks' period. The aim of this programme is to organize the lessons in a physically active way during a period (8 weeks' long) and to find out the consequences of these lessons on student enjoyment, academic motivation and health. This research was a cluster randomized controlled trial which was conducted to teachers of third and fifth grades and students between the age of 8-12. As a result, researchers found that "Active Classrooms" physical activity intervention programme brought enhancement in learning, higher academic performance and enjoyment during the class. Furthermore, the majority of the teachers participated in this study was very happy to be involved in this programme and support the idea of the mixture of physical activity and their own subject area lessons. Especially math lessons were found to be more enjoyable and the programme provided some new teaching ideas to teachers. To mention the sustainability of this program, teachers participated in this study also supported the idea of continuing using this program throughout the year. As is it can be understood from this study, physical activity has a considerable place in people's lives and carry important benefits for children and adolescents in academic life. Since academic motivation is important in learning process, it is a good way to adapt physical activity in many subject areas in order to improve the quality of students' motivation.

Physical activity and procrastination

Physical activity does not only regulate academic behavior and performance at school but also provide more benefits for adolescents and adults optimal functioning. According to a previous research (Oaten & Cheng, 2006), adults who exercise regularly were found to be healthier, well-organized and have good healthy daily habits. This research was conducted to twenty-four sedentary undergraduates across Macquarie University and the age range of the participants was between 18 and 50. Participants were randomly assigned to one of three cohorts in which some participants entered the exercise programme for two-month period while others did not. After getting results from self-report measures including general health questionnaire, perceived stress scale, general self-efficacy scale and self-regulatory behavior questionnaire (by concerning individuals' exercise dairies), a significant correlation was found between daily physical activity and "put off until later" and "missing appointments" habits among adults. According to this result, it can be said that regular exercise reduces individual's procrastination in daily activities and regulates healthy daily habits. However, little research has been done to check to what extent adolescents' physical activity relates to academic procrastination.

As it has been already mentioned in the previous sections, physical activity is related to academic performance and academic motivation and, as it is reviewed below, several studies support the idea that both high academic achievement and autonomous motivation are negatively correlated to academic procrastination. Thus, a relation between physical activity and procrastination can be assumed.

Procrastination and academic performance

Regarding the relationship between academic performance and procrastination, Lakshminarayan, Potdar and Reddy (2013) conducted a survey with undergraduate dental students in Bapuji Dental College and Hospital, India. Researchers conducted this cross-sectional survey by using Procrastination Questionnaire and asking students' academic grades. As the results indicated, high procrastinators had lower academic grades compared to low procrastinators. According to Spearman's correlation coefficient test, a negative significant correlation was found between academic performance and procrastination score. As an overall result, academic procrastination was positively correlated with below average and average academic performance.

A recent study on this topic conducted in Turkey (Balkıs & Duru, 2017) found that academic achievement is significantly and negatively correlated with academic procrastination among undergraduate students in a Faculty of Education. The aim of this study was to find out the gender differences in relation to academic life satisfaction, academic achievement and academic procrastination. To reach this aim, researchers distributed questionnaires including Demographic Information Form, Academic Procrastination (API), Academic Life Satisfaction (ASS), and asked students' GPA. As it concerns the results of this study that correspond to the relationship of procrastination to academic achievement, descriptive statistics and bivariate correlation analysis showed that academic procrastination was negatively correlated with academic performance and academic satisfaction. In addition to Lakshminarayan et al. (2013)'s results, this more recent study showed a negative correlation between academic achievement and academic procrastination. In terms of

gender differences, Balkıs and Duru found that male students had higher academic procrastination whereas lower academic achievement and academic satisfaction.

Procrastination and academic motivation

Besides the negative correlation between academic achievement and academic procrastination, intrinsic academic motivation has been also found to be negatively correlated with academic procrastination in adolescents between the age of 17 and 19 (Vij & Lomash, 2014). Vij and Lomash's (2014) research aimed to find out the motivational differences among two groups of students: high procrastinators and low procrastinators studying in technical universities in India. In a simple random sampling, after administrating PASS (Procrastination Assessment Scale-Students), AMS (Academic Motivation Scale) and asking students' CGPA (Current Grade Point Average), and through independent samples t-test, high procrastinators and low procrastinators were found to be significantly different in "intrinsic motivation to know" that shows a lack of curiosity and prospecting in lessons for high procrastinator students. This indicates lower motivation in academic tasks for high procrastinators compared to low procrastinators. Furthermore, researchers found a significant difference between high and low procrastinator students in "intrinsic motivation to experience stimulation" that means low procrastinator students tend to experience excitement in academic tasks such as preparing for the lesson in advance or willing to participate in the lesson. These results suggest that intrinsic motivation in academic tasks is significantly and negatively correlated with academic procrastination. Regarding extrinsic motivation, the researchers found that low procrastinators and high procrastinators significantly differed in identified regulation, an autonomous form of extrinsic motivation, indicating that low procrastinators have

the feeling of doing an academic task because it is valued to a higher extent compared to high procrastinators. Researchers could not find any significant difference in other extrinsic motivation types in these two groups of students. According to the above results, academic motivation is correlated with academic procrastination and as academic motivation is related to physical activity, it can be assumed that academic procrastination is also correlated with regular physical activity in adolescents.

In conclusion, several studies support the idea of a relation of academic procrastination to academic motivation and academic achievement. Thus, a relation may also exist between physical activity and academic procrastination. As previous studies suggest that regular physical activity relates to high academic performance in children and adolescents, this relation may also exist between physical activity and academic procrastination. Therefore, the current research was expected the students who do regular physical activity to have lower academic procrastination besides having higher academic performance and motivation at school.

Academic motivation: Is it related to motivation in other domains?

Academic motivation, an indicator of academic performance at school, has also been found to be correlated with motivation in other domains. Denault and Guay (2017) suggest that motivation towards extracurricular activities predicts high school students' school motivation. The researchers conducted this research with high school students from disadvantaged neighborhoods in the province of Quebec and Canada. The percentage of the extracurricular activities asked students to report was 69% sports activities, 19% performing arts, 10% school clubs and 2% other types such as cooking classes and religious activities. Results of this research indicated that

autonomy support of "extracurricular activity leader" promote high school students' activity based intrinsic motivation and identified regulation. In addition, autonomy support of extracurricular activity leader predicted students' school based intrinsic and identified regulations. From this study, as physical activity is the most preferred extracurricular activity type, it can be assumed that motivation towards physical activity may predict academic motivation in school.

To argue about the possible correlation between academic motivation and exercise motivation, the positive correlation between physical activity and academic achievement can be also taken into consideration. As physical activity requires motivation, students involved in physical activity with high academic achievement may also exhibit a similar type of motivation in the academic domain. However, little research has been done about this issue and the present research aimed to contribute in the exploration of the relationship between academic and exercise motivation. Based on Denault and Guay (2017), a positive correlation between academic and exercise motivation among physically active high school students was expected.

CHAPTER 3: METHOD

Introduction

This study aimed to find out the extent to which three groups of students (athletic students, students with regular physical activity, and students with no physical activity) in ninth, tenth, eleventh and twelfth grades from selected private high schools in Turkey (Ankara, İzmir and İstanbul) differ in terms of their academic motivation, academic procrastination in school assignments and academic performance. Furthermore, this research examined the existence of a correlation between exercise motivation and academic motivation of athletic students and students who do regular physical activity. In addition to learning possible differences among these three groups of students (athletes, those who exercise regularly, and those who do not exercise), this study highlighted the implications for the Turkish High School Curriculum.

Research design

This research is a correlational study with a cross-sectional design and therefore no causal relationships were explored. Three groups of students (athletic students, students who do regular physical activity, and students who do not do any physical activity) were compared in terms of academic performance, academic procrastination and academic motivation. Moreover, the correlation between academic motivation and exercise motivation was examined in two groups of students (athletic students and students who do regular physical activity). The results of the study were

triangulated by three teachers' perceptions of athletic students' academic functioning as they were reported in semi-structured interviews.

Cross-sectional correlational research

Cross-sectional design aims to measure the differences among a variety of people, subjects or phenomena rather than change. Thus, the data was collected at one time from all six high schools in our study. Three different features are important in cross-sectional design: no existence of time dimension, reliance on the differences rather than changes and groups selected based on existing differences. In this research, the existing differences between three groups of students are as follows: being athletic, physically active or physically non-active.

Correlational research is a quantitative method of research in which two or more variables are examined in the same group of individuals. The aim of correlational research is to find out whether there is a relationship between different variables in one group of individuals by exploring the similarities and differences. The validity of this research is based on the number of the participants (Fraenkel & Wallen, 2008). In the present study, explored the extent to which three groups of students (athletic students, students who do regular physical activity and students who do not do any physical activity) differed in academic performance, academic motivation and academic procrastination. In addition, this study examined the correlation between academic motivation and exercise motivation in two groups of students (athletic students and students who do regular physical activity).

Context

The study was conducted in six different private high schools in the three largest urban areas of Turkey: Ankara, İzmir and İstanbul. The sample for the study was from ninth, tenth, eleventh and twelfth grade students that follow the National curriculum, four of the schools follow an international curriculum such as IB DP (International Baccalaureate Diploma Programme) and IGCSE (International General Certificate of Secondary Education) curriculum as well. The socio-economic status of the families was kept mainly equal by conducting the research only in private high schools. Thus, socio-economic status was not a focus of this study. Furthermore, as written above, Ankara, İzmir and İstanbul were chosen to be included in this study which are the largest cities in Turkey and have similar cultures and living conditions.

Participants

Three female high school biology teachers from a private high school in Ankara and 530 high school students from six different private high schools in İzmir, İstanbul and Ankara participated in the study. Among the high school students, 112 students were from one school in İstanbul, 100 students from one school in İzmir and 318 students from four schools in Ankara. Inspection of the completed surveys revealed that some of the students used a pattern to answer the questions (e.g. they scored all questions with the highest score) and therefore those students were excluded from the final sample that was used for the analysis.

The final sample, therefore, was consisted of 486 students, who were 9th (*N*=229; 47.5%), 10th (*N*=184; 38.2%), 11th (*N*=34; 7.1%) and 12th (*N*=35; 7.3%) graders from six schools in Ankara, İzmir, İstanbul. While 214 (44.2%) of the students were male, 270 (55.8%) of them were female.

Instrumentation

For this current research, a battery of questionnaires consisted of Demographic Questionnaire, Academic Self-Regulation Questionnaire (SRQ-A) (Ryan & Connel, 1989), Academic Procrastination Questionnaire (Lay, 1986) and Exercise Self-Regulation Questionnaire (SRQ-E) were prepared. Details about each of these questionnaires are provided below. Demographic Questionnaire was prepared by the researcher. For each Self-Regulation Questionnaire and Academic Procrastination Questionnaire, permission from the person adapted it into Turkish concept was taken before conducting our survey. In addition, interview questions were prepared by the researcher in order to gather information about teachers' perceptions of athletic students' academic functioning.

Student questionnaires

A Demographic Questionnaire was set up to get some information about students' gender, age, type of curriculum they follow, current academic grade (last semester's academic grade) and Literature grade (the course that is taken by all study areas in high schools in Turkey) (see Appendix A, p. 82). Students in one of the private high schools indicated their English Literature grades as their literature grades, while the rest of the students in other private high schools indicated their Literature grades. Moreover, two questions were asked about whether the students do any physical

activity (e.g., “A coach systematically trains me two [or more] times per week in a sport and I participate in races occasionally”) and the length of time they have been doing that physical activity (e.g., “I have just started”).

The *Academic Self-Regulation Questionnaire* (SRQ-A), consisted of 32 items, was used to examine the extent to which three groups of students (athletic students, students who regularly do physical activity and students who do not do any physical activity) are motivated in academic tasks (see Appendix A, p. 83). This instrument was adapted from Ryan and Connel (1989) and the permission for using it was taken from Dr. Yeliz Kındap, who adapted the questionnaire into Turkish (Mouratidis, Sayıl, & Michou, 2015). The answers were given in a five Likert-type scale which starts with 1 (Strongly Disagree) and ends with 5 (Strongly Agree). The questions in this questionnaire mostly asked the reason why the students work on homework and why do they try to answer hard questions in class (e.g., “Why do I try to do well at school?”, “Because that’s what I am supposed to do”). Under each of these questions different reasons are listed which are classified in four subscales: external regulation (9 items; “Because I’ll get in trouble if I don’t”), introjected regulation (9 items; “Because I want the teacher to think I’m a good student”), identified regulation (7 items; “Because I want to understand the subject”) and intrinsic motivation (7 items; “Because it’s fun”). A composite score for autonomous motivation was computed by the subscale of intrinsic and identified regulation. The internal consistency of this composite score represented by Cronbach alpha was $\alpha = .89$. A composite score for controlled motivation was computed by the subscale of external and introjected regulation. The internal consistency of this composite score represented by Cronbach alpha which was $\alpha = .88$.

The *Academic Procrastination Questionnaire,* consisted of 11 items, was used to assess students' approach to school assignments and tasks (see Appendix A, p. 85). This instrument was obtained from Lay (1986) and was adapted in Turkish by Mouratidis, Sayıl and Michou (2015) and the permission was taken from Dr. Mouratidis. The answers were given in a five Likert-type scale which starts with 1 (Strongly Disagree) and ends with 5 (Strongly Agree). This questionnaire consisted of questions that ask students how regular they do their school tasks and whether they postpone the assignment or submit them on time (e.g., "I often find myself performing tasks that I had intended to do days before"). The internal consistency of the *academic procrastination questionnaire* represented by Cronbach alpha was α = .90.

The *Exercise Self-Regulation Questionnaire* (SRQ-E), which consisted of 16 items, asked students' exercise motivation and it is especially prepared for athletic students and students who do regular physical activity (see Appendix A, p. 86). SRQ-E was adapted from the Academic Self-Regulation Questionnaire (SRQ-A; Ryan & Connel, 1989) into the context of physical activity. The answers again were given in a five Likert-type scale which starts with 1 (Strongly Disagree) and ends with 5 (Strongly Agree). This questionnaire consisted of questions that ask the reason why students' exercise regularly (e.g., "I try to exercise on a regular basis because …"). Under each of these questions different reasons are listed which are classified in four subscales: external regulation (4 items; "Because others would be angry at me if I did not"), introjected regulation (4 items; "Because I would feel bad about myself if I did not"), identified regulation (4items; "Because I feel like it's the best way to help myself") and intrinsic motivation (4 items; "Because I enjoy exercising"). A composite score

for autonomous motivation was computed by the subscale of intrinsic and identified regulation. The internal consistency of this composite score represented by Cronbach alpha was $\alpha = .83$. A composite score for controlled motivation was computed by the subscale of external and introjected regulation. The internal consistency of this composite score represented by Cronbach alpha which was $\alpha = .77$.

Teacher interview questions

The following two questions about athletic students' academic functioning were prepared to be answered by the three high school biology teachers who participated in short interviews:

Question 1: How do you find athletic students in academic tasks involvement, academic achievement expressed by GPA, class participation and taking responsibilities?

Question 2: How would you compare athletic students to the other students in terms of engagement or commitment to assignments/class work?

Data collection

Permission from the Turkish Ministry of National Education was obtained in March 2017. The data collection lasted from April to June 2017. Before conducting this survey research, all high school principals as well as students and their parents were informed about the aim of the research. The survey was completed anonymously and the students voluntarily participated. The questionnaires were distributed by the subject area teachers during a class session. After giving the necessary time to students to answer all the questions, the questionnaires were collected by the teachers and handed to the researcher. The interviews were made with three high school

biology teachers in the Biology Department of one private high school in Ankara, during the school time. The interviews conducted in December 2017. Each interview lasted approximately 10 minutes. Teachers' responses to the interview questions were written down by the researcher.

Data analysis

SPSS (Statistical Package for the Social Sciences)19 program was used to analyze the data in this study. The mean differences among three groups of students (athletic students, students with regular physical activity and students with no physical activity) in terms of three different variables (academic achievement, academic motivation and academic procrastination) were analyzed by using MANOVA (Multivariate Analysis of Variance). Internal consistency was checked through Cronbach alphas for each questionnaire that was used in the study. Regression analyses were used to check if students' academic Grade Point Average (GPA) and academic procrastination could be predicted by different variables. To explore gender differences in different variables independent *t*-test was applied. Bivariate correlation analysis was used in order to explore the relationship among all the variables. Analyses of the interviews with three teachers were made based on the content of each interview question.

CHAPTER 4: RESULTS

Introduction

The aim of the present study was to find out the extent to which three groups of students (athletic students, students with regular physical activity, and students with no physical activity) in ninth, tenth, eleventh and twelfth grades from selected private high schools in Turkey (Ankara, İzmir and İstanbul) differ in terms of their academic motivation, academic procrastination in school assignments and academic performance. In addition, this research examined whether exercise motivation relates to academic motivation of athletic students and students who do regular physical activity.

To achieve these aims, the following analyses were performed. As preliminary analyses, descriptive and bivariate correlations of the background and the measured variables were examined. In addition to that, independent *t*-tests were applied in order to explore gender difference in the measured variables.

The main analyses included MANOVA to study the differences between the three groups of students (athletic students, students with regular physical activity, and students with no physical activity). In the main analyses, hierarchal regression models were also conducted to check whether students' academic GPA and academic procrastination were predicted by students' gender, physical activity, academic motivation and academic procrastination.

Since unexpected results have been found in terms of the differences in academic achievement, academic motivation and academic procrastination among three groups

of students, analysis of short interviews with three biology teachers had been made as a supplementary analysis.

Preliminary analysis

The bivariate correlations among the measured variables are presented in Table 1. Regarding the gender difference, results showed that physical activity was negatively correlated with gender (r = -.13, p < .01). As gender is a dummy variable scored 0 for females and 1 for males and as physical activity was coded from 1 to 3 (1 = athletic students, 2 = students with regular physical activity, 3=students with no physical activity), this negative relation shows that boys were involved in regular physical activity to a high extent. Furthermore, GPA and Literature grade were also found to be negatively correlated with gender (r = -.16, p < .01 and r = -.17, p < .01, respectively) showing that girls had higher performance. Finally, gender was positively related to exercise controlled motivation (r = .12, p < .05) indicating that boys were more likely to be engaged in sport activities instigated by controlled motivation.

Regarding physical activity, results showed that autonomous exercise motivation and controlled exercise motivation were negatively correlated with physical activity (r = -.22, p < .01 and r=-.*12*, p<.*05*, respectively*)*. Moreover, physical activity was found to be positively correlated with academic Grade Point Average (GPA) (r = .15, p < .01) and Literature grade (r = .15, p < .01). Since physical activity was coded from 1 to 3 (1=athletic students, 2=students with regular physical activity, 3=students with no physical activity), it can be concluded that students with no physical activity had

higher academic Grade Point Average (GPA) and Literature grades than other students.

Regarding students' academic motivation, results showed that controlled motivation was positively associated with autonomous motivation ($r = .51$, $p < .01$). In addition to that, academic autonomous motivation was positively related to exercise autonomous and controlled motivation ($r = .22$, $p < .01$ and $r = .15$, $p < .01$, respectively), and the same was true for academic controlled motivation that were also positively related to exercise autonomous and controlled motivation ($r = .25$, $p < .01$ and $r = .33$, $p < .01$, respectively) .Finally, controlled exercise motivation was found to be positively associated with autonomous exercise motivation ($r = .23$, $p < .01$).

Regarding the academic procrastination, as it is shown in Table 1, it was negatively correlated with academic autonomous motivation ($r = -.43$, $p < .01$) and negatively correlated with academic controlled motivation ($r = -.19$, $p < .01$).

Regarding the academic Grade Point Average (GPA) of the students, it was found to be positively correlated with academic autonomous motivation ($r = .19$, $p < .01$) and academic controlled motivation ($r = .17$, $p < .01$). Similarly, literature grades were found to be positively correlated with academic autonomous motivation ($r = .14$, $p < .01$), academic controlled motivation ($r = .11$, $p < .05$) but negatively correlated with exercise controlled motivation ($r = -.17$, $p < .01$). As expected, literature grades were found to be strongly and positively correlated with academic GPA ($r = .71$, $p < .01$).

Table 1

Descriptive, cronbach alphas and bivariate correlations of the measured variables

	1	2	3	4	5	6	7	8	9
Background variables			-						
1.Gender									
2.Physical activity	-.13**		-						
Academic motivation									
3.Autonomous motivation	-.02	.01							
4.Controlled motivation	-.07	.03	.51**	-					
Exercise motivation									
5.Autonomous motivation	.05	-.22**	.22**	.25**	-				
6.Controlled motivation	.12*	-.12*	.15**	.33**	.23**	-			
Procrastination									
7.Academic procrastination	.06	.08	-.43**	-.19**	-.04	.01	-		
Academic grade									
8.GPA	-.16**	.15**	.19**	.17**	.04	-.04	-.10	-	
9. Literature grade	-.17**	.15**	.14**	.11*	-.00	-.17**	-.04	.71**	-
MS	-	-	3.02	3.19	4.10	2.35	3.27	85.53	82.88
SD	-	-	0.76	0.74	0.72	0.76	0.87	9.61	14.66
α	-	-	0.89	0.88	0.83	0.77	0.90	-	-

Note. * p < .05. **<.01. Gender was dummy-coded (0= females; 1 = males); physical activity coded 1-3 (1=athletic students, 2=students with regular physical activity, 3=students with no physical activity)

According to the independent t-test examining differences in the measured variables between genders (see Table 2 below), girls (*M=86.94, SD=9.08, N=231*) were found to have a significantly higher academic GPA than boys (*M = 83.80, SD = 10.03, N= 182*), t = 3.34, $p < .01$. Furthermore, girls (*M = 85.09, SD = 14.83, N = 247*) were found to have a significantly higher Literature grades than boys (*M=80.02, SD=14.03, N=194*), t=3.65, $p < .01$.

In addition, boys (*M=2.44, SD= 0.76, N=162*) were found to have a significantly higher exercise controlled motivation than girls (*M=2.26, SD=0.76, N=167*), t=-2.17, $p < .05$.

Table 2
Results of t-test for gender differences

	Gender						
	Boys		**Girls**		**95% CI for Mean Difference**		
	M	SD	M	SD		t	df
Academic GPA	83.80	10.03	86.94	9.08	1.29, 5.00	3.34**	411
Literature grade	80.02	14.03	85.09	14.83	2,34, 7.81	3.65**	439
Ac autonomous	3.00	0.66	3.03	0.72	-0.10, 0.17	0.53	482
Ac controlled	3.13	0.76	3.24	0.72	-0.02, 0.24	1.63	482
Ex autonomous	4.14	0.66	3.98	0.75	-0.23, 0.09	-0.86	327
Ex controlled	2.44	0.76	2.26	0.76	-0.35, -0.02	-2.17*	327
Procrastination	3.34	0.84	3.23	0.89	-0.27, 0.04	-1.41	475

Note. * p < .05. **<.01; GPA= Grade Point Average; Ac = academic; Ex = exercise

Main analysis

This study aimed to find out the extent to which three groups of students (athletic students, students with regular physical activity, and students with no physical activity) in ninth, tenth, eleventh and twelfth grades from selected private high schools in Turkey (Ankara, İzmir and İstanbul) differ in terms of their academic motivation, academic procrastination in school assignments and academic performance. To achieve this aim, MANOVA was conducted to find out the extent to which three groups of students differ in terms of three dependent variables. In addition to MANOVA, hierarchal regression models were applied to check (a) to what extent students' academic GPA was predicted by students' gender, physical activity (as expressed by the categorical variable represented the three groups of students), academic motivation and academic procrastination; (b) to what extent students' academic procrastination was predicted by students' gender, physical activity and academic motivation.

The extent to which three groups of students differ in terms of academic achievement (academic GPA and Literature grade), academic motivation and academic procrastination

As a result of MANOVA, significant differences were found among the three groups (Wilk's $\Lambda = .949$, F [10, 776] = 2.04, $p < .05$, multivariate $\eta^2 = .026$) regarding the dependent variables academic Grade Point Average (GPA) and Literature grade. A follow-up analysis of variance (ANOVA) presented in Table 3 and Tukey post hoc analysis revealed that students who do not do any physical activity (*M=87.13, SD=8.47, N=118*) have significantly higher academic GPAs than athletic students

(*M=83.34, SD=10.84, N=116*), $p < .01$. (F [2, 392] =4.956, p<.01, multivariate η^2 = .025).

In addition to this result, students who do not do any physical activity (*M=86.68, SD=14.17, N=118*) were found to have higher Literature grades than athletic students (*M=80.08, SD=13.47, N=116*) $p < .01$. **(***F* [2, 392] =6.687, p<.01, multivariate η^2 = .033). There was no significant difference for other variables between the three groups of students.

Table 3
The statistically significant effects of the groups on different variables indicated by ANOVA

					Athletic		Regular PA		No PA	
	F	*df*	*p*	η^2	*M*	*SD*	*M*	*SD*	*M*	*SD*
Academic GPA	4.96	2,395	.01	.03	83.34	10.84	85.99	9.12	87.13	8.47
Literature grade	6.69	2,395	.00	.03	80.09	13.47	83.23	13.71	86.68	14.17
Academic aut. motivation	0.53	2,395	.59	.00	2.97	0.77	3.05	0.76	2.97	0.76
Academic cntr. motivation	0.07	2,395	.93	.00	3.20	0.66	3.18	0.77	3.22	0.76
Academic procrastination	1.71	2,395	.18	.01	3.28	0.86	3.24	0.87	3.43	0.89

Note. GPA=Grade Point Average; aut. = autonomous; cntr. = controlled; PA=physical activity; physical activity coded 1-3 (1=athletic students, 2=students with regular physical activity, 3=students with no physical activity)

The extent to which physical activity predicts academic grade point average and academic procrastination

Firstly, one two-step hierarchal regression analysis model was tested for students' gender, physical activity, academic autonomous motivation, academic controlled motivation and academic procrastination, as predictors of academic GPA. Secondly, one two-step hierarchal regression model was tested for students' gender, physical activity, academic autonomous motivation and academic controlled motivation, as predictors of Academic Procrastination.

The hierarchal regression models for students' academic GPA was found to be statistically significant in both steps: step 1 (F [2, 406] =9.893, $p < .01$, adjusted R^2 =.042), step 2 (F [5, 406] =7.521, $p < .01$, adjusted R^2 =.074). As presented in table 4, in the first step gender negatively and physical activity (whether students do any physical activity or not) positively predicted students' GPA indicating that being a student in the group of students with no physical activity was related to high grades. In the second step, when three more variables were added, gender still significantly predicted GPA, while the predictive value of the physical activity remained almost the same. Regarding the types of academic motivation and academic procrastination, academic autonomous motivation positively predicted the academic GPA.

The hierarchal regression models for students' academic procrastination was found to be statistically significant in the second step: step 2 (F [4, 472] =27.725, $p < .01$, adjusted R^2 =.185). As presented in table 5, in the first step neither gender nor physical activity (whether students do any physical activity or not) predicted the academic procrastination of the students. Regarding the types of academic motivation, academic autonomous motivation negatively predicted the students' academic procrastination

Table 4
The hierarchal regression model for academic grade point average (GPA)

Predictors	Academic Grade Point Average					
	Step 1			Step2		
	B	SE	β	*B*	SE	β
Gender	-2.83	(0.95)	-.15**	-2.46	(0.95)	-.13**
Physical activity	1.72	(0.61)	.14**	1.76	(0.61)	.14**
Academic autonomous motivation	-	-	-	1.58	(0.75)	.12*
Academic controlled motivation	-	-	-	1.22	(0.73)	.09
Academic procrastination	-	-	-	0.59	(0.59)	-.03
F change (3,401)					5.71**	

Note. * $p < .05$. ** $p < .01$. Gender was dummy-coded (0 = females; 1 = males). Physical activity coded 1-3 (1=athletic students, 2=students with regular physical activity, 3=students with no physical activity)

Table 5
The hierarchal regression model for academic procrastination

Predictors	Academic Procrastination					
	Step 1			Step2		
	B	SE	β	*B*	SE	β
Gender	0.13	(0.08)	.08	0.11	(0.07)	.06
Physical activity	0.10	(0.05)	.09	0.10	(0.05)	.09*
Academic autonomous motivation	-	-	-	-0.51	(0.06)	-.44**
Academic controlled motivation	-	-	-	0.04	(0.06)	.03
F change (2,468)					52.14**	

Note. * $p < .05$. ** $p < .01$. Gender was dummy-coded (0 = females; 1 = males). Physical activity coded 1-3 (1=athletic students, 2=students with regular physical activity, 3=students with no physical activity)

Supplementary analysis

As contrary to the assumptions, the students who were not engaged in physical activity found to have higher GPA compared to the athletic students, short interviews with three biology teachers had been additionally made. The purpose of the interviews was to gain insight about teachers' perception of athletic students' academic functioning. Two questions were posed to each teacher and the analyses of the teachers' responses to these questions are presented below.

Question 1: How do you find athletic students in terms of academic achievement, class participation and taking responsibilities?

According to Teacher 1, athletic students are generally successful in academic tasks and well-engaged in class activities, however, their commitment to training and participation to races may increase their absenteeism. Teacher 1, however, believes that athletic students compensate their absenteeism with hard work. According to Teacher 2, athletic students are, in general, respectful and responsible. However, Teacher 2 indicated that athletic students who are engaged to sport activities for social approval, they may exhibit unacceptable manners. What Teacher 2 point out for those students, however, it is more related to their social life and less related to their academic functioning. Regarding Teacher 3, who had the less experience for athletic students as she has very few of them in her class, athletic students are very respectful and hard workers. Like Teacher 2, Teacher 3 also supported the idea that minority of athletic students who are engaged in sports only for social approval, they may be disruptive and badly behaved. These athletic students, according to Teacher 3, could also have low academic GPA.

More specifically, the three teachers replied as following to the first question:

Teacher 1: "Athletic students are generally successful in my own lesson. They are good listeners and participative. Sometimes they may have races to attend that cause them to be absent in the class and they have to train regularly. However, still they work hard."

Teacher 2: "Athletic students have good manners and have a sense of responsibility in academic tasks. They are respectful to their teachers. Minority of them have bad manners since they are the ones who do sports just for reputation."

Teacher 3:" I cannot make a generalization about athletic students since I do not have that much in my classes. However, my colleagues support the idea that the students who play in the school team are very respectful and hardworking students. By the way, minority of them have very bad manners in corridors and also during lessons that interrupt other students. In addition, these students have lower academic GPA than others."

Question 2: How would you compare athletic students to the other students in terms of engagement or commitment to assignments/class work?

According to Teacher 1, athletic students are more engaged in class activity and motivated to learn compared to other students. However, their commitment to sports and absenteeism may affect their academic performance. Teacher 2 reported athletic students are usually successful to the same extent as the other students. However, she believes that, when athletic students' motivation to participate in sports is controlled (i.e., social approval), low academic achievement can be resulted. Teacher 3, as she explained in question 1 as well, she doesn't really see any difference between athletic and non-athletic students except of the case, as Teacher 2 also claimed, of controlled

motivated athletic students. When students are instigated to sports out of social approval, academic achievement can be low.

The responses reported from each teacher are given below:

Teacher 1: "Athletic students are more participative and willing to learn. They ask more questions and raise their hands during the lesson. However, if they have lower GPAs than other students, this may because of their absence in the class because of races. Since they have to attend training regularly, they may do not have enough time to study for exams."

Teacher 2: "Majority of athletic students are successful but some other students may also have high GPAs. It may depend on the student profile. Some athletic students may do sports just for reputation or because they give importance to their physical appearance too much. So these ones have lower academic GPA and sense of responsibility."

Teacher 3: "As I said that I do not have many athletic students in my class but as far as I heard that majority of them have higher academic success. However, the profile of athletic students may change. Thus, if an athletic student does the sports just for reputation, it will cause disruptive behaviors not only in class but also in school corridors. In addition, those students are not successful in academic tasks."

CHAPTER 5: DISCUSSION

Introduction

The purpose of the current study was to explore the extent to which three groups of students (athletic students, students with regular physical activity, and students with no physical activity) in ninth, tenth, eleventh and twelfth grades from selected private high schools in Turkey (Ankara, İzmir and İstanbul) differ in terms of their academic motivation, academic procrastination in school assignments and academic performance. In addition, this research examined whether exercise motivation relates to academic motivation of athletic students and students who do regular physical activity.

This chapter starts with an overview of the whole research project and then focuses particularly on the major findings of the study. Following the discussion of the important findings, implications for practice are presented while suggestions for further research are also provided. Finally, limitations of the study are shared with the reader.

Overview of the study

To achieve the aims of the present study, the following research questions were investigated:

1. Do high school athletic students, students with regular physical activity, and students with no physical activity differ in their academic performance (grades), academic motivations and academic procrastination?

2. Is there a correlation between the exercise motivation and academic motivation of athletic students and students who do regular physical activity?

In this study, a cross sectional design and correlational method were selected to investigate the extent to which three groups of students (athletic students, students with regular physical activity and students with no physical activity) differed in academic performance, academic motivation and academic procrastination. In addition, this study examined the correlation between academic motivation and exercise motivation in two groups of students (athletic students and students with regular physical activity). The study was conducted in six different private high schools in Ankara, İzmir and İstanbul following either the National curriculum or both the National and an international curriculum such as IB DP and IGCSE. Totally 3 high school biology teachers, and 530 high school students participated voluntarily in this research.

During the data collection process, the survey questions consisted of Demographic Questionnaire, Academic Self-Regulation Questionnaire (SRQ-A) (Ryan & Connel, 1989), Academic Procrastination Questionnaire (Lay, 1986) and Exercise Self-Regulation Questionnaire (SRQ-E) (adapted from Ryan & Connel, 1989) were distributed by subject area teachers in each classroom. The students answered the questions by following the instructions they were given on the survey papers.

The data analysis included except of the bivariate correlations as a preliminary analysis, a MANOVA to answer the research questions under investigation. In addition to these analysis, short interviews with three high school biology teachers were also analyzed to get insight about athletic students' academic functioning.

Major findings

Building on the results of the analyses and the hypotheses grounded on the literature review, major findings related to each research question will be explained and discussed below:

1. Do high school athletic students, students with regular physical activity, and students with no physical activity differ in their academic performance (grades), academic motivations and academic procrastination?

Contrary to the assumptions, the study findings showed that students with no physical activity had significantly higher academic Grade Point Average (GPA) and Literature grade than athletic students, while they did not differ with the students with regular physical activity. This finding was partially against previous studies that found a positive correlation between physical activity and academic achievement in preadolescents and adolescents. For example, Castelli, Hillman, Buck and Erwin (2007) found in a sample of elementary students in US that field tests of physical fitness are positively related with academic achievement. In Castelli et al., (2007), however, except of the young age of the participants, Physical activity was assessed by the Fitnessgram physical fitness tests which is an objective measure of physical health and not a self-report related to the type of physical activity that was used in the present study.

In Haapala et al. (2017) the results were in a less discrepancy to the results of the present study as they found, on the one hand, low levels of objectively measured moderate-to-vigorous physical activity (MVPA) and high levels of sedentary time (ST) to be related with poorer reading skills in boys, while, on the other hand, they found high levels of ST to be related to better academic skills among girls. Haapala et al. (2017), however, conducted their research to younger students ages between 6

to 8 years in Finland and used nationally normed reading and mathematics achievement test instead of grades that were used in the present study as indicators of achievement.

In another study, Mullender-Winsjma et al. (2016) conducted an experimental research to second and third grade students studying at mainstream schools in Netherlands and explored the consequences of physical activity in mathematics and spelling lessons (F&V lessons; Fit vaadig op school; a manual of physically active mathematics and language lessons) on students' academic performance. They found that children in the intervention group had significantly greater gains in mathematics speed test, general mathematics and spelling scores. However, in the current research, students' performance was assessed through self-reports of the academic Grade Point Average (GPA) and literature grades and not through assessment of students' actual skills and therefore the results of the two studies are not totally comparable.

A more recent study (Santana et al., 2017) found that Cardiorespiratory Fitness (CRF) was associated with higher academic achievement in mathematics and language (Portuguese) tests in female students among fifth and sixth graders in Brazil. Again, the sample of Santana et al.'s (2017) study was female middle school students in a different country (Brazil) whereas the current study carried out in both male and female high school students in Turkey. Moreover, Santana et al. (2017) used students' Cardiorespiratory Fitness by testing a 20 meters shuttle run test as a measurement of physical activity and students' standardized mathematics and Portuguese test scores as a measurement of academic achievement. Like other previous studies that found somehow contrary results from this current research, the research design, method, sample and instrumentation of Santana et al. (2017) were

different than the current research and therefore the results are not totally comparable.

To the same direction, Correa-Burrows, Burrows, Ibaceta, Orellana and Ivanovic (2017) conducted a similar research and found out that devoting more than four hours per week to scheduled exercise significantly increased the discretionary sufficiency in Language and Mathematics among Chilean students. The researchers conducted this research to students enrolled in fifth and ninth grades from public, partially subsidized and private schools from urban areas in Santiago Metropolitan Region. However, Correa-Burrows et al., (2017) used students' standardized national tests scores in Mathematics and Language as indicators of students' academic achievement and accounted for hours of weekly scheduled exercise for each student as an indicator of regular physical activity. Since the nationality of students (the sample) and instrumentation were different, the results again may not be comparable to the current research.

Lastly, the findings of Bradley, Keane and Crawford (2013) were contrary to the findings of the current research, showing that involvement in a particular sport during the Leaving Certificate (Irish State School Examination) years bestowed a 25.4 point benefit to students' Leaving Certificate scores. Differently from the current research, Bradley, Keane and Crawford (2013) investigated the effect of an integral part of a curriculum (PESS; Physical Education and School Sport) on students' Leaving Certificate points scores in an Irish Secondary School. The age range of sample was similar to the current research (aged 17-18) whereas the sample was only consisted of male students (in the current research, both male and female students participated). Moreover, while the current research investigated the differences between three groups of students (athletic students, students with regular

physical activity and students with no physical activity) in terms of academic achievement, Bradley et al., (2013) focused on the effect of participation in different sport types on students' academic achievement. In terms of instrumentation, the current research used self-reported academic Grade Point Average (GPA) and literature grades as indicators of students' academic achievement. However, Bradley et al. (2013) used students' Leaving Certificate Points as an indicator of students' academic achievement, which indicates students' grade points in Irish State School Examination. Since the gender type, the nationality of the sample and instrumentation were different the results can vary from the present study.

On the other hand, the findings of the present study are somehow in accord to the findings of Canlı and Günay (2016), Iri et al. (2017), Esteban-Cornejo et al. (2017) and Hattie and Clinton (2012) who reported that physical activity is not related to performance at school. Specifically, Canlı and Günay (2016) exploring the relationship between engagement in basketball training and academic grade points among middle school aged athletes, found no relationship between training hours and academic achievement. Likewise, Iri et al. (2017) found no correlation between high school students' physical activity levels and academic Grade Point Averages. In the same vein, Esteban-Cornejo et al. (2012) found in a sample of students aged between 6 to 18 years old that the intensity of physical activity in Physical Education class was not associated with academic performance as it expressed by students' school records.

More importantly, Hattie and Clinton (2012) explored the effect size of a study (Singh et al., 2012), which made a systematic review of the literature and methodological quality assessment of studies that found strong evidence of a significant positive relationship between physical activity and academic

performance. According to Hattie and Clinton (2012) the average effect size of the studies reported in Singh et al. (2012) was only .13, which was considerably low and showed that there is hardly strong evidence of a relationship between academic activity and performance.

Regarding procrastination of school assignments, no differences were found among the three groups of students which was contrary to predictions. What was expected in terms of procrastination was students who do not do any physical activity to have higher academic procrastination levels than other students, since athletic students are thought to have limited time to study and so that have better time management skills. Nevertheless, regression analysis revealed that being a student who is not engaged in physical activity predicted academic procrastination showing that despite the significantly higher academic GPA and Literature grades, no physically active students do not function always optimally regarding their school assignments. Similar to the findings of regression analysis, Oaten and Cheng (2006) found out that regular exercise reduces students' failures to attend commitments and procrastination in daily activities including watching television and spending time with friends instead of studying. These findings show that students who do not do any regular physical activity, despite their high grades, might not be more functional in schooling than athletic students.

After finding unexpected results in terms of differences in academic achievement, academic motivation and academic procrastination among the three groups of students, analysis of interviews with three biology teachers in a private high school in Ankara was made. Among them, two teachers perceived athletic students as well-engaged, responsible and successful in terms of grades, while one teacher offered an explanation about possible occasionally reduced achievement of athletic students.

She suggested that absenteeism of athletic students because of commitments to their sport could cause occasionally low grades. The two teachers also reported that while athletic students are generally successful to the same extent as the other students, if they are motivated to physical activity by controlled reasons (i.e. seek of social approval), they may exhibit disruptive behaviors and low academic achievement. Taking together the results of the quantitative data of the present study and teachers' interviews that showed, on the one hand, non-athletic students to have higher grades compared to athletic students and on the other hand that teachers perceived athletic students as being well-engaged in school, one could offer explanations related to Turkish educational system and culture. More specifically, in Turkey academic achievement is highly appreciated and valued and more important than participation to extracurricular activities. Thus, students may tend to avoid physical activity in order to have more time to work hard on their assignments and get high grades as a means for social approval. At the same time, students who might feel less competent for high grades, they may turn to sport engagement to achieve the social approval as some of the teachers stated.

Regarding the gender differences in terms of academic performance, significant differences were found between male and female students. According to t-test, girls were found to have significantly higher academic Grade Point Average (GPA) and Literature grades than boys. Regression analysis also revealed that gender negatively predicted academic Grade Point Average that shows that girls had higher academic Grade Point Average than boys.

2. Is there a correlation between the exercise motivation and academic motivation of athletic students and students who do regular physical activity?

According to bivariate correlations, academic autonomous motivation was found to be positively correlated with exercise autonomous motivation. Likewise, academic controlled motivation was found to be positively correlated with exercise controlled motivation. This shows that when students enjoy doing their assignments or do them for personally important reasons, they also enjoy doing sports and identify themselves with the sport activities. In contrast when students do their assignments to avoid troubles or to be awarded a prize, they also feel themselves involved in sports for the same pressuring reasons.

According to the findings of Denault and Guay (2017), autonomy support of "extracurricular activity leader" promote high school students' intrinsic motivation in these activities which, one year later, predicted their academic autonomous motivation. Thus, the motivation towards physical activity predicted students' motivation towards academic tasks, which is similar to the results of the current study that found a positive correlation between academic autonomous motivation and exercise autonomous motivation.

In addition to the positive correlation between academic and exercise motivation of the same type (e.g., autonomous academic with autonomous exercise motivation), it is worthy to mention that autonomous motivation was also positively related to controlled motivation for both the academic and sport domain. This could be because, a student can be motivated by multiple reasons that differ in terms of internalization. If a student does his assignment for important personal reasons (autonomous motivation), this do not exclude the case to do also his assignment to please his teacher (controlled motivation). This is because in most of the studies,

autonomous and controlled motivation are positively related. For example, an athletic student may attend training regularly because he enjoys doing that particular sports (autonomous motivation), while, at the same time, he also may attend training to please his coach (controlled motivation).

It is worthy also to be discussed the positive relation between autonomous motivation and academic achievement (GPA), despite that it is out of the scope of the present study. As the results showed, students' engagement in class activities for autonomous reasons predicted higher grades. This is in line with previous studies mostly worked with samples of medical students (Sobral, 2004; Wilkinson, 2007; Kusurkar, Ten Cate, Vos, Westers & Croisers, 2013)**.** According, for example, to the results of Sobral (2014), autonomous motivation was significantly correlated with intentions to continue the studies and academic achievement among medical students in University of Brazil.

Likewise, Kusurkar et al. (2013) found a positive association between relative autonomous motivation (RAM; a measure of the balance between autonomous and controlled motivation) and the use of a good study strategy, which was also positively associated with high study effort and higher academic GPA (Grade Point Average) among students from second and sixth year in VU University Medical Center in Amsterdam.

Regarding the relationship of motivation to academic procrastination, academic procrastination was found to be negatively predicted by academic autonomous motivation. This shows that, when students do their homework because they find it fun, enjoyable or personally important they are less likely to postpone their assignments. Autonomous motivation, therefore is a predictive factor of low achievement and procrastination.

Implications for practice

The findings of the study revealed that Turkish high school students who do not do any regular physical activity are more successful in academic tasks than athletic students whereas they tend to procrastinate more in academic tasks. Thus, interventions (e.g. guidance programs) are suggested to be applied to develop students' academic skills such as time management. In this way, students who are involved professionally in sports will be able to work effectively on their school assignments and students who are not physically active will be able to combine some physical activity with studying for school since regular physical activity is important for health and well-being.

Moreover, as autonomous motivation was positively and negatively related to academic achievement and academic procrastination, respectively, teachers and coaches should adapt motivating strategies in their lessons so that students' autonomous motivation could be enhanced and controlled motivation could be reduced. According to Self-determination Theory (Ryan & Deci, 2000), when the social environment satisfies people need for autonomy (a sense of agency), need for competence (a sense of self-efficacy) and need for relatedness (a sense of belongingness), people are more likely to be autonomous motivated. In line with this argument, should provide opportunities to students to participate in decision making or provide choices to them during a class activity to satisfy their need for autonomy. As a strategy for satisfying students' need for relatedness, teachers should show empathy and provide warmth and caring class environment, so that students may feel comfortable and free to consult the teacher for any cases. As a strategy for satisfying students' need for competence, the teachers should provide a rational and

informational feedback to students. In these ways, students can be autonomously motivated in lessons.

Likewise, coaches can encourage students to participate and succeed in a sports branch only if they enjoy it and find it personally important and without using tangible rewards, such as medals, as incentives to motivate them (need for autonomy). It is also important coaches to show interest in each student's performance (need for relatedness) and provide informational feedback (need for competence) to encourage students to get motivated into any kind of physical activity.

Implications for further research

The current study was conducted in six private high schools in Ankara, İzmir and İstanbul. To get a clearer and more generalizable picture of education in Turkey, similar studies can be conducted in private and state schools as well in different cities in Turkey.

The results in the current research revealed that athletic students had significantly lower academic GPAs and Literature grades than students with no physical activity. However, it is not clear how much each athletic student is involved in training and whether those students are more successful in other subject areas. Thus, other subject area grades and the time athletic students attend trainings can be explored in further studies.

The findings that revealed the positive relation between academic and exercise motivation can be further explored in terms of environmental factors (team coach, etc.) affecting students' motivation towards physical activity.

Moreover, the present study was conducted by using questionnaires which may cause some unclear or inconsistent answers. Thus, an experimental research design may be applied in order to explore the effect of regular physical activity on students' academic achievement and academic behavior. In addition, different types of physical activity may be applied in order to explore whether different type of physical activity do predict academic achievement.

Furthermore, as the present study investigated students' physical activity, motivation and procrastination through surveys which do not permit a deep understanding of the phenomenon of low in physical activity students to have high grades. Interviews with students could further clarify what impede students with high academic achievement to be involved in physical activity or what are the reasons that athletic students have lower grades compare to no physically active students or to students who participate in informal sport context. To the same direction, extensive interviews with more than three teachers could further illuminate their perception about the relation and the value of physical activity and academic achievement. Finally, parents can be important informants to shed light to the academic functioning of the three types of students; athletic, physically active and no physically active.

Limitations

Despite the fact that this study aimed to shed light unto the situation in Turkey in terms of the importance of physical activity on students' academic achievement, it is limited in capturing the general picture of the Turkish educational reality. This is because the sample selected for the study was only consisted of private high school students in three big urban cities; Ankara, İzmir and İstanbul. Thus, results of the study should be confined to Turkish private high school context of urban areas.

Moreover, only three and the same subject area teachers were interviewed about athletic students' academic functioning and therefore their perception could not represent the whole picture of athletic students at school. More importantly, the present study used self-reports to assess students' physical activity and achievement and therefore, it is not excluded the case of a less accurate picture of the reality. Further research with objective measures of physical activity and academic skills and grades could more accurately depict the relation of physical activity and academic achievement in Turkey.

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APPENDICES

APPENDIX A: Student Questionnaires (English)

Dear Students,

The aim of this survey is to depict high school students experience at school and physical activities. The survey consists, therefore, of questions related to your sport and academic life. The survey takes about 15-20 minutes and your participation is voluntary and anonymous. We will be grateful if you could take some time to complete the questionnaires below.

In case you have any questions or comments, please contact İdil Ünüvar, master student in Bilkent University Graduate School of Education.

Contact information: 0533 088 64 25

e-mail: idil.unuvar@bilkent.edu.tr

In this part, there are questions aim to ask in which grade you are, which curriculum you follow and if you do any physical activity or not. Please fill in the blanks and choose the best option for you.

1) Your gender: F ( ) M ( )

2) Your age/date of born:_____

3) Your grade:_____

4) Please choose the type of curriculum/curricula you follow.

a) International Baccalaureate Program (IB DP)/IGCSE Certificate Program and Ministry of National Education (MoNE) Curriculum

b) Only Ministry of National Education (MoNE) Curriculum

5) Please choose the most appropriate option for you below.

a) A coach systematically trains me 2 (or more) times per week in a sport (e.g. basketball, tennis, running etc.) and I participate in races occasionally.

b) I do systematically physical activity/exercise with my friends 2 (or more) times per week.

c) I don't do any regular physical activity[1].

6) How long have you been doing this physical activity/exercise?

a) I have just started/Approximately for one year

b) Between 2 and 5 years period

c) For at least 5 years

7) Your Turkish/English Literature Grade: _____

(Please indicate out of what number your grade is.)

8) Your current academic grade: _____

(Please indicate out of what number your grade is.)

[1] If you chose "c" for the 5th question, you do not need to answer the 6th question and Part 3 of this survey.

PART 1

The questions below are about your academic life. There is no right or wrong answer for any questions. Please choose the most appropriate option for you.

	A. Why do I do my homework?	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly Agree
1.	Because I want the teacher to think I'm a good student.	1	2	3	4	5
2.	Because I'll get in trouble if I don't.	1	2	3	4	5
3.	Because it's fun.	1	2	3	4	5
4.	Because I will feel bad about myself if I don't do it.	1	2	3	4	5
5.	Because I want to understand the subject.	1	2	3	4	5
6.	Because that's what I'm supposed to do.	1	2	3	4	5
7.	Because I enjoy doing my homework.	1	2	3	4	5
8.	Because it's important to me to do my homework.	1	2	3	4	5
	B. Why do I work on my classwork?	Strongly disagree	Not Agree	Neither agree, nor disagree	Agree	Strongly Agree
9.	So that the teacher won't yell at me.	1	2	3	4	5
10.	Because I want the teacher to think I'm a good student.	1	2	3	4	5
11.	Because I want to learn new things.	1	2	3	4	5
12.	Because I'll be ashamed of myself if it didn't get done.	1	2	3	4	5
13.	Because it's fun.	1	2	3	4	5
14.	Because that's the rule.	1	2	3	4	5
15.	Because I enjoy doing my classwork.	1	2	3	4	5
16.	Because it's important to me to work on my classwork.	1	2	3	4	5

C. Why do I try to answer hard questions in class?	Strongly Disagree	Disagree	Neither agree, nor disagree	Agree	Strongly Agree
17. Because I want the other students to think I'm smart.	1	2	3	4	5
18. Because I feel ashamed of myself when I don't try.	1	2	3	4	5
19. Because I enjoy answering hard questions.	1	2	3	4	5
20. Because that's what I'm supposed to do.	1	2	3	4	5
21. To find out if I'm right or wrong.	1	2	3	4	5
22. Because it's fun to answer hard questions.	1	2	3	4	5
23. Because it's important to me to try to answer hard questions in the class.	1	2	3	4	5
24. Because I want the teacher to say nice things about me.	1	2	3	4	5

D. Why do I try to do well in school?	Strongly Disagree	Disagree	Neither disagree	Agree	Strongly Agree
25. Because that's what I'm supposed to do.	1	2	3	4	5
26. So my teachers will think I'm a good student.	1	2	3	4	5
27. Because I enjoy doing my schools work well.	1	2	3	4	5
28. Because I will get in trouble if I don't do well.	1	2	3	4	5
29. Because I'll feel really bad about myself if I don't do well.	1	2	3	4	5
30. Because it's important to me to try to do well in school.	1	2	3	4	5
31. Because I feel really proud of myself if I do well.	1	2	3	4	5
32. Because I might get a reward if I do well.	1	2	3	4	5

PART 2

There are questions about your approach to the school assignments and tasks. There is no right or wrong answer for any questions. Please choose the most appropriate option for you.

	Strongly Disagree	Disagree	Neither agree, nor disagree	Agree	Strongly Agree
1. I often find myself performing tasks that I had intended to do days before.	1	2	3	4	5
2. I do not do assignments until just before they are to be handed in.	1	2	3	4	5
3. Even with jobs/tasks that require little else except sitting down and doing them, I find they seldom get done on time.	1	2	3	4	5
4. I generally delay before starting on doing my homework and assignments I have to do.	1	2	3	4	5
5. I usually have to rush to complete a task on time.	1	2	3	4	5
6. In preparing for some deadline in homework and assingments, I often waste time by doing other things.	1	2	3	4	5
7. I usually strart doing my assignments shortly after it they are assigned.	1	2	3	4	5
8. I often have a task/assignment finished sooner than necessary.	1	2	3	4	5
9. I usually accomplish all the homework and assignments I plan to do in a day.	1	2	3	4	5
10. When it comes to homework and assignment, I am continually saying “I will do it tomorrow”.	1	2	3	4	5
11. I usually take care of all the homework and assignments I have to do before I settle down and relax for the evening.	1	2	3	4	5

PART 3

If you chose "c" for the 5th question, you do not need to fill the Table below. In this table, there are questions about the physical activity/exercise you regularly do. There is no right or wrong answer for any question. Please choose the most appropriate option for you.

I try to exercise on a regular basis;	Strongly Disagree	Disagree	Neither agree, nor disagree	Agree	Strongly Agree
1. Because I would feel bad about myself if I did not.	1	2	3	4	5
2. Because others would be angry at me If I did not.	1	2	3	4	5
3. Because I enjoy exercising.	1	2	3	4	5
4. Because I would feel like a failure if I did not.	1	2	3	4	5
5. Because I feel like it's the best way to help myself.	1	2	3	4	5
6. Because people would think I'm a weak person if I did not.	1	2	3	4	5
7. Because I feel like I have no choice about exercising; others make me do it.	1	2	3	4	5
8. Because it's a challenge to accomplish my goal.	1	2	3	4	5
9. Because I believe exercise helps me feel better.	1	2	3	4	5
10. Because it's fun.	1	2	3	4	5
11. Because I worry that I would get in trouble with others if I did not.	1	2	3	4	5
12. Because it feels important to me personally to accomplish this goal.	1	2	3	4	5
13. Because I feel guilty if I do not exercise regularly.	1	2	3	4	5
14. Because I want others to acknowledge that I am doing what I have been told I should do.	1	2	3	4	5
15. Because it's interesting to see my own improvement.	1	2	3	4	5
16. Because feeling healthier is an important value for me.	1	2	3	4	5

Thank you for your participation.

APPENDIX B: Student Questionnaires (Turkish)

Sevgili Öğrenciler,

Bu anketin amacı lise öğrencilerinin akademik hayatı ve fiziksel aktivite deneyimleri hakkında bilgi edinmektir. Bu nedenle anket, spor ve akademik yaşamınızla ilgili sorular içermektedir. Anket yaklaşık 15-20 dakika sürmektedir ve katılım isteğe bağlıdır.

Cevaplarınız gizli tutulacaktır. Lütfen tüm soruları cevaplayınız. Herhangi bir sorunuz veya yorumunuz var ise Bilkent Üniversitesi, Eğitim Bilimleri Enstitüsü yüksek lisans öğrencisi İdil Ünüvar ile iletişime geçiniz.

İletişim bilgileri:

Tel: 0533 088 64 25

e-posta: idil.unuvar@bilkent.edu.tr

Bu bölümde cinsiyetiniz, yaşınız, kaçıncı sınıfta bulunduğunuz, takip ettiğiniz müfredat ve herhangi bir fiziksel aktivite yapıp yapmadığınız ile ilgili sorular bulunmaktadır. Lütfen uygun boşluklara sizin için doğru olanı yazınız ve sizin için uygun olan cevabı işaretleyiniz.

1) Cinsiyetiniz: K ( ) E ( )

2) Yaşınız/doğum tarihiniz:_____

3) Sınıfınız (kaçıncı sınıfta bulunduğunuz):_____

4) Lütfen takip ettiğiniz müfredatı işaretleyiniz.

a) Uluslararası Bakalorya Diploma Programı (UBDP)/IGCSE Sertifika Programı ve Milli Eğitim Bakanlığı (MEB) Müfredatı

b) Yalnızca Milli Eğitim Bakanlığı (MEB) Müfredatı

5) Lütfen aşağıdaki seçeneklerden sizin için en uygun olanını işaretleyiniz.

a) Bir antrenör haftada 2 kez (veya daha fazla) beni herhangi bir sporda (örneğin basketbol, tenis, koşu, golf, voleybol, yüzme vb.) antrenmanlara sokar/eğitir ve yarışlara/maçlara düzenli olarak katılırım.

b) Haftada 2 (veya daha fazla) kez arkadaşlarımla ve kendim sistemli bir şekilde fiziksel aktivite/egzersiz yaparım.

c) Düzenli olarak fiziksel aktivite/egzersiz yapmam[2].

6) Ne kadar süredir bu sporu/egzersizi yapmaktasınız?

a) Henüz yeni başladım/Yaklaşık bir yıldır

b) 2 ile 5 yıl arasında bir zamandır

c) En az 5 yıldır

7) Türk Dili ve Edebiyatı ders notunuz : _____

(Lütfen notunuzun kaç üzerinden olduğunu da belirtiniz.)

8) Şu anki genel akademik not ortalamanız: _____

(Lütfen notunuzun kaç üzerinden olduğunu da belirtiniz.)

[2] 5. Soruda c seçeneğini işaretledi iseniz, 6. soruyu ve Bölüm 3'te bulunan soruları çözmeniz gerekmemektedir.

BÖLÜM 1

Aşağıdaki sorular, akademik hayatınız ile ilgili sorular içermektedir. Hiçbir sorunun doğru veya yanlış yanıtı bulunmamaktadır. Lütfen kendiniz için en uygun olan yanıtı işaretleyiniz.

Aşağıda harflerle belirtilen ve koyu renkle basılmış soruları dikkatle okuyunuz ve her sorunun altında yer alan olası yanıtları <u>hiçbirini atlamayacak şekilde,</u> her biri için kendinize en uygun bulduğunuz sayıyı daire içine alarak belirtiniz.						
A.	**Ev ödevimi niçin yaparım?**	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen katılıyorum
17.	Çünkü öğretmenimin benim iyi bir öğrenci olduğumu düşünmesini isterim.	1	2	3	4	5
18.	Çünkü ev ödevimi yapmazsam başım derde girer, sorun yaşarım.	1	2	3	4	5
19.	Çünkü zevklidir.	1	2	3	4	5
20.	Çünkü ev ödevimi yapmazsam kendimi kötü hissederim.	1	2	3	4	5
21.	Çünkü konuyu anlamak isterim.	1	2	3	4	5
22.	Çünkü (ev ödevi) benden yapmam istenen şeydir.	1	2	3	4	5
23.	Çünkü ev ödevimi yapmaktan hoşlanırım.	1	2	3	4	5
24.	Çünkü ev ödevimi yapmak benim için önemlidir.	1	2	3	4	5
B. Öğretmenin sınıfta verdiği alıştırmaları niçin yaparım?		Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen katılıyorum
25.	Öğretmenin bana bağırmaması için yaparım.	1	2	3	4	5
26.	Çünkü öğretmenin benim iyi bir öğrenci olduğumu düşünmesini isterim.	1	2	3	4	5
27.	Çünkü yeni şeyler öğrenmek isterim.	1	2	3	4	5
28.	Çünkü alıştırmaları yapmamış olmaktan dolayı utanırım.	1	2	3	4	5
29.	Çünkü eğlencelidir.	1	2	3	4	5
30.	Çünkü bu bir kuraldır.	1	2	3	4	5
31.	Çünkü sınıfta alıştırma yapmaktan zevk alırım.	1	2	3	4	5
32.	Çünkü sınıfta alıştırma yapmak benim için önemlidir	1	2	3	4	5

C. Sınıfta zor soruları yanıtlamak için niçin çabalarım?	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen katılıyorum
17. Çünkü diğer öğrencilerin benim akıllı biri olduğumu düşünmelerini isterim.	1	2	3	4	5
18. Çünkü çabalamadığım zaman kendimden utanırım.	1	2	3	4	5
19. Çünkü zor soruları yanıtlamaktan zevk alırım.	1	2	3	4	5
20. Çünkü benden beklenen budur.	1	2	3	4	5
21. Bildiğimin doğru mu yoksa yanlış mı olduğunu anlamak için	1	2	3	4	5
22. Çünkü zor soruları yanıtlamak eğlencelidir.	1	2	3	4	5
23. Çünkü sınıfta sorulan zor soruları yanıtlamaya çalışmak benim için önemlidir.	1	2	3	4	5
24. Çünkü öğretmenin benim hakkımda hoş şeyler söylemesini isterim.	1	2	3	4	5

D. Okulda iyi olmak için neden çabalarım?

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen katılıyorum
25. Çünkü benden beklenen şey budur.	1	2	3	4	5
26. Çünkü böylece öğretmenlerim benim iyi bir öğrenci olduğumu düşüneceklerdir.	1	2	3	4	5
27. Çünkü okuldaki çalışmaları en iyi şekilde yapmaktan zevk alırım.	1	2	3	4	5
28. Çünkü okulda iyi olmazsam başımı derde sokarım	1	2	3	4	5
29. Çünkü okulda iyi olmazsam kendimi gerçekten kötü hissederim.	1	2	3	4	5
30. Çünkü okulda iyi olmaya çabalamak benim için önemlidir.	1	2	3	4	5
31. Çünkü okulda iyi olursam kendimle gerçekten gurur duyarım.	1	2	3	4	5
32. Çünkü okulda iyi olursam karşılığında bir ödül alabilirim.	1	2	3	4	5

BÖLÜM 2

Aşağıdaki tabloda okul ödevlerine/sorumluluklarına karşı tavır ve tutumlarınızı ölçen sorular bulunmaktadır. Hiçbir sorunun doğru veya yanlış bir yanıtı bulunmamaktadır. Lütfen sizin için en doğru olanını işaretleyiniz.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen katılıyorum
1. Genelde kendimi günler öncesinden yapmaya niyetlendiğim ödevleri son anda yaparken bulurum.	1	2	3	4	5
2. Ödevleri teslim tarihinden hemen öncesine kadar yapmam.	1	2	3	4	5
3. Masa başında az bir çaba ile yapılabilecek görevleri bile nadiren zamanında yaparım.	1	2	3	4	5
4. Yapmak zorunda olduğum ödeve yada göreve başlamadan önce genellikle ertelerim.	1	2	3	4	5
5. Genellikle herhangi bir ödevi ya da görevi zamanında tamamlamak için acele etmek zorunda kalırım.	1	2	3	4	5
6. Herhangi bir dersin ödevini ya da görevini zamanında tamamlamak için acele etmek zorunda kalırım.	1	2	3	4	5
7. Genellikle herhangi bir ödev verildikten kısa bir süre sonra onu yapmaya başlarım.	1	2	3	4	5
8. Sıklıkla ödevlerimi ya da görevlerimi gerekenden önce bitiririm.	1	2	3	4	5
9. O gün için yapmayı planladığım ödevimi ya da görevimi genellikle başarıyla tamamlarım.	1	2	3	4	5
10. Herhangi bir ödevim ya da görevim olduğu zaman, sürekli "yarın yapacağım" derim.	1	2	3	4	5
11. Genellikle, önce yapmam gereken ödevleri ve görevleri yapar sonra rahatıma bakarım.	1	2	3	4	5

BÖLÜM 3

Aşağıdaki tabloyu, 5. soruda c şıkkını işaretledi iseniz doldurmanıza gerek yoktur. Bu tabloda, yaptığınız fiziksel aktivite/egzersiz hakkında sorular bulunmaktadır. Hiçbir sorunun doğru veya yanlış yanıtı bulunmamaktadır. Lütfen sizin için en uygun seçeneği işaretleyiniz.

Düzenli olarak fiziksel aktivite/egzersiz yaparım;	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen katılıyorum
1. Çünkü egzersiz yapmazsam kendimi kötü hissederim.	1	2	3	4	5
2. Çünkü eğer yapmazsam diğer insanlar bana sinirlenir.	1	2	3	4	5
3. Çünkü egzersiz yapmaktan zevk alırım.	1	2	3	4	5
4. Çünkü eğer egzersiz yapmazsam utanç duyarım.	1	2	3	4	5
5. Çünkü egzersiz yapmanın, kendimi geliştirebilmenin en iyi yolu olduğunu düşünürüm.	1	2	3	4	5
6. Çünkü egzersiz yapmazsam, insanlar beni güçsüz görür.	1	2	3	4	5
7. Çünkü benden beklenen budur.	1	2	3	4	5
8. Çünkü egzersiz yapmak benim için üstesinden gelmem gereken bir başarıdır.	1	2	3	4	5
9. Çünkü inanıyorum ki egzersiz yapmak kendimi daha iyi hissetmeme yardımcı olur.	1	2	3	4	5
10. Çünkü keyiflidir.	1	2	3	4	5
11. Çünkü eğer egzersiz yapmazsam başım derde girer, sorun yaşarım.	1	2	3	4	5
12. Çünkü egzersiz yapmak kişisel olarak başarmak istediğim bir goldür/hedeftir.	1	2	3	4	5
13. Çünkü egzersiz yapmazsam kendimi suçlu hissederim.	1	2	3	4	5
14. Çünkü insanların hakkımda, yapmak zorunda olduğum bir işi başardığımı düşünmelerini isterim.	1	2	3	4	5
15. Çünkü kendimi geliştirmiş olabilmek bana ilginç gelir (ilgimi çeker).	1	2	3	4	5
16. Çünkü sağlıklı olmak benim için önemlidir.	1	2	3	4	5

Ankete katılmış olduğunuz için teşekkür ederim.