

## CORRELATIONS OF PHYSICAL FITNESS AND ACADEMIC ACHIEVEMENT IN UNDERGRADUATE STUDENTS

### CORRELACIONES ENTRE LA CONDICIÓN FÍSICA Y EL LOGRO ACADÉMICO EN ESTUDIANTES DE GRADO

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#### Abstract

**Introduction:** There are a few number of studies that have examined the effect of the level of physical fitness on academic success in university students. **Goals:** The purpose of the study is to determine the relationship between physical fitness and academic success in university students. **Material and methods:** The study included 183 university students. To determine physical fitness, Fitnessgram test battery was used. The students were grouped in respect of academic success status according to general academic marks. **Results:** Academic success was evaluated as low in 16.1% (n:15) of females, moderate in 38.7% (n:36) and high in 45.2%(n:42), and in male students a low level was determined in 18.9% (n:17), moderate in 52.2% (n:47) and high in 28.9% (n:26). Smoking cigarettes was seen to have created a difference in females with low academic success ( $p<.05$ ). A difference was determined between the low and high academic success groups of both genders in respect of physical fitness ( $p<.05$ ). In the physical fitness tests, a relationship was seen with the mean general academic points in all students, with exception of body mass index (BMI), a relationship was determined between

other parameters and academic success ( $p < .05$ ). **Conclusions:** High level of physical fitness provides positive contributions to academic success. No relationship was determined between BMI in females and mean general academic points. In females with a low level of academic success, the rate of cigarette smoking was higher.

**Key words:** Academic achievement, physical fitness, university student, gender, exercise, smoking.

## Resumen

**Introducción:** Hay pocos estudios que hayan examinado el efecto del nivel de aptitud física sobre el éxito académico en estudiantes universitarios. **Objetivos:** El propósito del estudio es determinar la relación entre la aptitud física y el éxito académico en estudiantes universitarios. **Material y método:** El estudio incluyó a 183 estudiantes universitarios. Para determinar la aptitud física se utilizó la batería Fitnessgram. Los estudiantes fueron agrupados respecto al estado de éxito académico de acuerdo con las calificaciones académicas generales. **Resultados:** El éxito académico se evaluó como bajo en 16.1% (n: 15) de las mujeres, moderado en 38.7% (n: 36) y alto en 45.2% (n: 42), y en los estudiantes varones se determinó un nivel bajo en 18.9% (n: 17), moderado en 52.2% (n: 47) y alto en 28.9% (n: 26). Se observó que fumar cigarrillos había creado una diferencia en las mujeres con bajo éxito académico ( $p < .05$ ). Se determinó una diferencia entre los grupos de éxito académico bajo y alto de ambos sexos con respecto a la aptitud física ( $p < .05$ ). En las pruebas de aptitud física, se observó una relación con los puntos académicos generales medios en todos los estudiantes, con excepción del índice de masa corporal (IMC), se determinó una relación entre otros parámetros y el éxito académico ( $p < .05$ ). **Conclusiones:** Un nivel alto de condición física contribuye positivamente al éxito académico. No se determinó ninguna relación entre el IMC en las mujeres y los puntos académicos generales promedio. En las mujeres con bajo nivel de éxito académico la tasa de tabaquismo fue mayor.

**Palabras clave:** Logro académico, condición físico, estudiante universitario, género, ejercicio, tabaquismo.

## INTRODUCTION

University students are individuals who have taken a step from adolescence towards adulthood, with adaptation to various changes in their surroundings, broadened their personal relationships and acquired some autonomy (Jeoung, Hong and Lee, 2013). The focus on university entrance in middle-school and high school years, the burden of schoolwork and unproductive use of free time have been given as reasons for the low levels of physical activity and physical fitness in university students (Jeoung et al., 2013). However, the children and students of today will become the middle-aged and elderly adults of tomorrow. The increasingly mechanised form of modern life, together with the absence of physical activity and low levels of physical fitness have engendered several chronic diseases and difficulties (Simpson, et al., 2002). For the individual to be healthy during the years at university, it is necessary for young adults to have the habits of a healthy lifestyle. Students who start unhealthy habits (smoking, excessive alcohol intake, physical inactivity) at an early age and continue these, will be at risk of early morbidity and mortality (Simpson et al., 2002).

Exercise not only increases physical well-being and reduces the risk of chronic diseases, but also increases physical fitness and makes a positive contribution to mental health (Jeoung et al., 2013). The relationship between physical fitness and cognitive functions can be explained by both physiological and psychological mechanisms. Cognitive functions are developed during exercise through increased cerebral blood flow, changes in hormone levels and the use of nutrients by cells (Scheuer and Mitchell, 2003). The results of animal experiments have shown that physical activity develops neuronal development by increasing neuronal synapse density and capillary volume (Chomitz et al., 2009). Physical activity has also been related to high self-confidence, and lower levels of anxiety, depressive moods and stress. Each of these conditions is associated with an increase in academic success (Jeoung et al., 2013; Chomitz et al., 2009).

Low physical fitness and decreased daily activities lead to stress and unhealthy lifestyle habits, which then reduce mental health and life satisfaction (Jeoung et al., 2013).

Physical fitness is an important health parameter which has been defined by the World Health Organisation as “the ability of muscles to work sufficiently” and by the Centre for Disease Control as “the ability that a person has or obtains to perform physical activity” (Gutin, et al., 1992). Various test batteries have been developed to be able to objectively determine physical fitness. The Fitnessgram comprises a combination of 6 independent physical fitness tests of aerobic capacity (1-mile run test or PACER test), body composition (skin fold thickness or BMI), abdominal strength and resistance (sit-ups), trunk extensor strength and flexibility (trunk lift), upper extremity strength and resistance (press-ups), and flexibility (shoulder stretch or sit and reach test) and these are reliably used in scientific studies and daily practice (Van Dusen et al., 2011). The aerobic capacity test, included in the Fitnessgram gives accurate results with an error margin of 10%-15% compared to the  $VO_{2max}$ , measurement, which is the gold standard. Muscle strength and flexibility measurements have shown consistency with electromyographic and anatomic evaluations (Van Dusen et al., 2011).

As academic success is seen as the route to facilitating future opportunities, factors affecting an increase in success that can be improved in this area, have been examined. There are many genetic and environmental factors that affect academic success. Of these factors, the level of physical fitness has been identified as a potential target for increasing academic success, as it can be changed and developed (Scott et al., 2017). In literature there are several studies that have evaluated the relationship between academic success and physical fitness in children and adolescents (Wenggaard et al., 2017; Wittberg, Northrup and Cottrel, 2009; Blom et al., 2011). However, there are a few number of studies that have examined the effect of the level of physical fitness on academic success in university students. Our hypothesis is that academic achievement and physical fitness will be positively correlated. The aim of this study was to determine the relationship between physical fitness and academic success in university students.

## **MATERIAL AND METHODS**

### **Participants**

The study included volunteer undergraduate students who were all receiving formal education from the same Faculty members in the Physiotherapy and Rehabilitation Department

of the Health Sciences Faculty, Suleyman Demirel University. Volunteers were excluded if they had any cardiovascular disease, felt chest pain during physical activity, had any complaints of dizziness, loss of balance or loss of consciousness, any musculo-skeletal system injury associated with a change in physical activity habits, were using medication for hypertension or heart disease, or any other condition that would prevent physical activity.

The participants were given full information about the test to be applied and informed consent was obtained 48 hours before the implementation of the physical fitness tests. Demographic data and smoking habits of participants were recorded. The tests to be applied were demonstrated. The study protocol was approved by the Ethics and Research Committee of Suleyman Demirel University. A record was made for each participant of age, gender and academic year. The participants were instructed not to undertake any tiring physical activities for 24 hours before the tests.

The physical fitness tests were applied by a physiotherapist experienced in the Fitnessgram test battery who was blinded to the mean general academic marks of the students.

## Measures

### *Physical Fitness Tests*

Physical fitness was measured with 6 independent fitness tests using the Fitnessgram test battery (Cooper Institute, Dallas, TX, USA), which is a method with proven validity and reliability. The tests included in the Fitnessgram test battery were the 1-mile run test, BMI measurement, curl-ups, trunk lift, push-ups and the sit and reach test.

- *1-Mile Run test* to evaluate aerobic capacity

Aerobic capacity was evaluated with the 1-mile run test (1600 m). The participants were given the necessary information before the test and were instructed to complete the distance of 1 mile in as short a time as possible. During the test, in which they could run, jog or walk, the students were given verbal encouragement. The time in which the 1 mile distance was completed was recorded in seconds.

- *Body Mass Index (BMI) measurement* for the evaluation of body composition

Each participant was weighed on scales sensitive to 0.2 kg and height was measured with a scale sensitive to 0.01 m. BMI was calculated with the formula,  $BMI = \text{bodyweight (kg)} / \text{height (m}^2\text{)}$ .

- *Back-Saver Sit and Reach test* to measure flexibility

Measurements of flexibility were made using the Back-saver Sit and Reach test. The test was applied using a sit and reach box 35 cm in length, 45 cm in width and 32 cm in height with an upper surface 55 cm long and 45 cm wide and with a 0-50 cm ruler over the upper surface which was 20 cm above where the feet rest. Before the measurements, the students were instructed how the test would be applied. The test was repeated 3 times for both legs and the highest measurement was recorded.

- *Push-Up test* for the evaluation of strength and resistance in the upper extremities

The participants were positioned prone with the arms at shoulder-width, open and in full extension to support the body weight, the head at the same level as the shoulders and the toes in contact with the floor. The students were instructed to lower the upper body towards the

floor, keeping the back straight, the elbows bent at 90° and the upper arms parallel to the floor, and then to slowly bring the arms up, returning to the starting position. This was repeated as many times as possible and the number of push-ups completed was recorded.

- *Curl-Up test* for the evaluation of abdominal strength and resistance

The participants were positioned supine with the legs slightly apart, the knees in 140° flexion and the feet flat on the floor.

They were instructed to reach the fingers towards the feet, to pass a 4.5 inch (11.5 cm) guide marker, keeping the heels in contact with the floor. Coloured marker papers of 4.5 inches (11.5 cm) and 30 inches (76 cm) were used during the curl-up test. The number of curl-ups completed was recorded.

- *Trunk Lift test* for the evaluation of trunk extensor strength and flexibility

The participants were positioned prone with the hands beneath the hips and they were instructed to raise the upper part of the body, raising the chin from the floor without breaking eye contact with a point at eye level and without raising the feet from the floor. The distance between the chin and the floor was measured and recorded in cm.

### *Academic Success*

For the evaluation of academic success, the students were asked about their average general marks (Calestine et al., 2017). Those with an average general mark of 0-1.99 were evaluated as low, those with 2-2.99 as moderate and those with 3-4 as high. The participants were grouped accordingly.

### *Statistical Analysis*

Data obtained in the study were analysed using SPSS vn 20 software (Statistical Package for the Social Sciences – SPSS, Chicago, IL, USA). Data were presented as mean± standard deviation, minimum, maximum, number (n) and percentage (%) values. Conformity to normal distribution was assessed with the Kolmogorov-Smirnov test. As the data were not of normal distribution, non-parametric tests were used. Chi-square analysis was used for categorical variables and Kruskal-Wallis variance analysis for continuous variables. Statistically significant data were compared with the Mann Whitney U-test with Bonferroni correction.

To examine the relationship between health-related physical fitness and academic success scores, Spearman correlation analysis was applied. In addition, compared to previous studies which have examined the relationship between physical fitness and academic success in respect of gender differences, the males and females were analysed separately in the current study. Statistical significance was accepted as an alpha level of  $p < .05$ .

## **RESULTS**

Evaluation was made of a total of 183 students, comprising 93 females and 90 males. Academic success was evaluated as low in 16.1% (n:15) of the females, moderate in 38.7% (n:36) and high in 45.2% (n:42), and in the male students a low level was determined in 18.9% (n:17), moderate in 52.2% (n:47) and high in 28.9% (n:26).

The average general academic marks were determined as  $1.7 \pm 0.1$  (range, 1.5-1.9) in females and  $1.6 \pm 0.2$  (range, 1.1-1.9) in males with low academic success. Those with a

moderate level of academic success were determined with mean general academic marks of  $2.6 \pm 0.2$  (range, 2.1-2.9) in females and  $2.5 \pm 0.3$  (range, 2-2.9) in males.

Students with a high level of academic success were determined with mean general academic marks of  $3.3 \pm 0.3$  (range, 3-3.9) in females and  $3.4 \pm 0.3$  (range, 3-4) in males.

When the smoking status and regular exercise habits of the participants were examined, smoking cigarettes was seen to have created a statistically significant difference in the females with low academic success ( $p < .05$ ), (Table 1).

Table 1. Participants' habits

		Low		Moderate		High		x <sup>2</sup>	p value
		n	%	n	%	n	%		
Female	Smoking (Yes)	12	80	2	5.6	3	7.1	45.6	<.001*
	Regular Exercise (Yes)	3	20	14	38.8	17	40.5	2.1	.3
Male	Smoking (Yes)	3	17.6	16	34	3	11.5	5.1	.08
	Regular Exercise (Yes)	6	35.2	23	48.9	14	53.8	1.5	.5

A statistically significant difference was determined in the parameters of BMI, curl-up test, trunk lift test, push-up test, back-saver sit and reach test and the 1-mile run test between the academic success levels and physical fitness states of the females. This difference was observed to be between the low academic success group and the high academic success group ( $p < .05$ ). The physical fitness levels were determined as high in the females with high academic success (Table 2). A statistically significant difference was determined in similar parameters of the males in the low and high academic success groups ( $p < .05$ ), (Table 3).

Table 2. Differences between women's physical fitness status and academic achievement levels (mean±SD)

	Low (n=15)	Moderate (n=36)	High (n=42)	Overall	p value *		
					Moderate vs Low	High vs Low	High vs Moderate
Age (years)	19.5±1.1	20.3±1.2	20.3±1.3	.1			
BMI (kg/m <sup>2</sup> )	24.6±3.5	22.1±2.6	21.9±2.8	.01*	.02	.005 <sup>a</sup>	.6
Curl up #	8.2±6.2	11.4±10.1	12.6±11.3	.02*	.2	.007 <sup>a</sup>	.8
Trunk lift	20.5±9.7	23.4±4.7	26.3±5.3	.001*	.02	.001 <sup>a</sup>	.03
Push up	20.4±8.9	25.6±6.4	26.8±8.7	.02*	.08	.002 <sup>a</sup>	.02
BSSR-R (cm)	21.2±8.6	26.3±6.3	27.3±8.3	.03*	.02	.02 <sup>a</sup>	.6
BSSR-L (cm)	20.4±8.9	25.5±6.4	26.8±8.7	.02*	.02	.01 <sup>a</sup>	.6
1 mile run (sec)	829.7±134.8	781.8±110.9	727.9±105.1	.01*	.4	.008 <sup>a</sup>	.8

BMI: body mass index, BSSR-R: Back-Saver Sit and Reach test-right, BSSR-L: Back-Saver Sit and Reach test-left, #: completed, \*: statistically significant difference between all groups, <sup>a</sup>: statistically significant difference between the two groups.

Table 3. Differences between men's physical fitness and academic achievement levels (mean±SD)

	Low (n=17)	Moderate (n=47)	High (n=26)	Overall	p value *		
					Moderate vs Low	High vs Low	High vs Moderate
Age (years)	20.9±1.5	21.2±1.8	21.1±1.5	.9			
BMI (kg/m <sup>2</sup> )	23.9±3.3	23.4±3	21.8±3.2	.04*	.6	.01 <sup>a</sup>	.1
Curl up #	14.4±8.6	19.8±11.6	25.9±12.8	.009*	.2	.003 <sup>a</sup>	.03
Trunk lift	22.3±5.1	26.3±7.9	27.2±6.5	.04*	.05	.01 <sup>a</sup>	.4
Push up	15±5.9	17±9.9	20.9±6.3	.02*	.7	.005 <sup>a</sup>	.02
BSSR – R (cm)	20.1±6.4	22.1±5.8	24.9±4.2	.01*	.2	.008 <sup>a</sup>	.02
BSSR-L (cm)	19.6±7.7	20.8±6.9	23.6±5.4	.09			
1 mile run (sec)	655.1±161	588.1±106	556.9±103.2	.01*	.1	.004 <sup>a</sup>	.2

BMI: body mass index, BSSR-R: Back-Saver Sit and Reach test-right, BSSR-L: Back-Saver Sit and Reach test-left, #: completed, \*: statistically significant difference between all groups, <sup>a</sup>: statistically significant difference between the two groups.

In the physical fitness tests applied in the Fitnessgram test battery, a relationship was seen with the mean general academic points in all the male groups and in the female groups, with the exception of body mass index (BMI), a relationship was determined between the other parameters and academic success ( $p < .05$ ), (Table 4).

Table 4. Relation of Grade Point Average to Physical Fitness Tests

			BMI	Curl up	Trunk Lift	Push Up	BSSR-R	BSSR-L	1 mile run
Female (n=93)	GPA	r	-.2	.2*	.3**	.2**	.2*	.2*	-.4**
		p	.2	.02	.002	.03	.03	.04	.008
Male (n=90)	GPA	r	-.3*	.4**	.3**	.3**	.3**	.2*	-.6**
		p	.02	<.001	.006	.003	.002	.03	<.001

BMI: body mass index, GPA: grade point average, BSSR-R: Back-Saver Sit and Reach test-right, BSSR-L: Back-Saver Sit and Reach test- left, p: statistical significance, r: correlation value. \* Correlations significant at the .05 level, \*\* Correlations significant at the .01 level

## DISCUSSION

According to the results of this study, a high level of physical fitness makes positive contributions to academic success. These contributions are evident in both males and females. The BMI of females did not show a relationship with average general academic marks. Cigarette smoking was observed at a higher rate in females with low academic success. The other parameters evaluated produced similar results in both genders.

Pathologies which have a deep effect on public health, such as obesity in particular, are often seen from childhood onwards and have led to examinations of the physical activity and nutritional habits in the academic environments of children. In this context, it has been recommended that the daily physical activity of school-age children is increased by 50%. However, despite these recommendations, academic success has been observed to decrease in students with decreased periods of physical activity (Chomitz et al., 2009). To confirm this observation, many studies have been conducted on different age groups to be able to understand the relationship between physical activity, physical fitness and academic success (Chomitz et al., 2009; Wittberg et al., 2009).

In studies that have evaluated physical activity and academic success, it has been reported that physically active students have higher levels of attention and all these positive interactions contribute to learning and cognitive developmen (Chomitz et al., 2009). A previous study stated that the selective attention of male students aged 17.9±0.9 years was affected by the amount of aerobic capacity, but there was no association between attention and muscle mass or the duration of weekly physical training. It was concluded that high aerobic capacity will increase attention, and increased attention will be positively reflected in academic success (Wengard et al., 2017). In the current study, the difference in the time results of the 1-mile run

test in both genders reached a level of statistical significance between the low and high academic success groups, which supported these previous findings.

In a cross-sectional study of students aged  $11.73 \pm 1.58$  years, Chomitz et al. determined that students with a high level of physical fitness were more successful in English and Mathematics lessons and the relationship with physical fitness was seen to be stronger particularly with mathematics capability (2009). Blom et al. reported that there was a positive correlation between physical fitness and language skills and mathematics success and that absence from school had a negative effect on this success (2011). In a study by Van Dusen et al., there was reported to be a positive relationship between academic success and all the parameters of physical fitness except BMI. The Texas Assessment of Knowledge and Skills (TAKS) score was most affected by the level of cardiovascular fitness followed by the curl-up test results (2011).

In the current study, the most significant differences and strongest relationships with mean general academic marks for the males were seen in the 1-mile run test and the curl-up test. In the female participants, the 1-mile run test and trunk lift test results created the most significant difference and strongest relationship with academic success.

In another study which examined the physical fitness of children using the Fitnessgram test battery, it was reported that the academic success test points were higher in those who achieved “healthy physical fitness” in the aerobic capacity and abdominal strength tests. The children who achieved a level of “healthy physical fitness” in upper body strength were successful in mathematics and those with greater flexibility were highly successful in both mathematics and science. The trunk lift test results were not determined to make any difference in respect of academic success (Wittberg et al., 2009). In the current study, all the tests in the Fitnessgram test battery were determined to have an effect on the mean academic marks.

Castelli et al. found a relationship between physical fitness and academic success in children aged  $9.5 \pm 0.74$  years. This relationship was positive with aerobic capacity in particular, and negative with BMI. Physical fitness is associated with success in mathematics and reading, and with total academic success. In the light of these findings, it has been emphasised that there should be sufficient time allocated to physical activities within education policies to be able to increase academic performance (2007). In a study of a similar age group, Eveland-Sayers et al. determined a negative correlation between the 1-mile run test and mathematics scores and a positive correlation with muscle condition. According to gender differences, the 1-mile run test time was related to reading and language skills and mathematics success at a statistically significant level in females, whereas this significant relationship was not found in males (2009). Another study also showed a correlation between physical fitness and mathematics and English language skills and this correlation was greater in females. However, the basic effect on academic success was not from BMI but from the level of physical fitness (London and Castrechini, 2011). Sociodemographic data and information related to television/computer use obtained from female high school students has shown that lifestyle habits, self-confidence and obesity or being overweight are related to low academic success (Scott et al., 2017). In the current study, a negative relationship was seen between the average general academic marks and the 1-mile run test time and BMI, but the correlation of BMI with academic success in females did not reach a statistically significant level. This could have arisen because in this study body composition was only evaluated with BMI. It is possible that interactions between

hormones and mediators, fat tissue and the percentage of fat ratio could have created an effect on academic success at a higher rate.

The level of physical fitness and various conditions created by gender or the intensity and level of physical activity affect academic success. According to the findings of a cross-sectional study that examined adolescent students, high academic success in females was affected by high intensity exercise, whereas the academic success of male students was affected by physical fitness and the pubertal phase. That the effect on academic success of moderate severity exercise could not be determined in females could have been because they could only reach the physical fitness level with high intensity exercise (Kwak et al., 2009). However, it has also been shown that while high intensity exercise (70-300 mins/week) provided an increase in academic success for females, there was neither a positive nor a negative effect for males (Carlson et al., 2008). In a systematic review that examined the relationship between physical activity and academic success, this relationship was seen to be 50.5% positive and 1.5% negative. No relationship has been reported between physical activity and academic success in 48% of studies (Rasberry et al., 2011).

Data obtained in the current study demonstrated that especially those with a high level of physical fitness were more academically successful than those with a low level of physical fitness. The level and intensity of exercise undertaken by the study participants was not determined. However, particularly in females with low academic performance there were seen to be unhealthy habits such as cigarette smoking and not taking regular exercise. With the exception of there being no relationship between BMI and the average general academic marks, there was found to be a relationship between all the other physical fitness tests and academic success.

In literature, there is a few amount of research that has examined the relationship between physical fitness and academic success in university students. In a study that examined physical fitness and mental health status related to the health of university students, it was shown that the male students had better mental health and the female students experienced greater levels of anxiety, obsessive compulsive behaviours, and feelings of hostility. A relationship was determined between cardiopulmonary resistance and obsessive compulsive behaviours and feelings of hostility, between push-up test results and somatisation and interpersonal sensitivity, between sit-up test results and somatisation and feelings of hostility, between hand grip strength and somatisation, paranoia, feelings of hostility and obsessive compulsive behaviours, and between BMI and somatisation (Jeoung et al., 2013). Although that study did not examine the relationship with academic success, the association between physical fitness and mental health was demonstrated.

Of the university students who participated in the current study, 42% stated that they participated in regular physical activities, and 18% of females and 24% of males reported that they smoked. In a prospective study of the habits of university students, it was reported that 13% smoked at the beginning of the study and after 2 years, this rate had increased to 16%-19% of females and 17%-18% of males (Simpson et al., 2002). In another study, it was determined that 76% of university students participated in physical activities. A relationship has been found between body fat ratio and the duration of desk working and social media use. There is a negative association between the duration of desk working and cardiovascular resistance and a positive association between hip flexibility and sedentary behaviour. Physical

activity has been shown to be lower in those with a high number of lesson credits and higher BMI in those with average or higher general academic marks (Calestine et al., 2017). These findings show that the relationship between physical fitness and academic success could be different in university students from that seen in children and adolescents. In the education of university students, there is a need for applications to develop the health of students in addition to focussing on academic success and for programs to be implemented to protect them from negative habits.

Although this study determined a relationship between the physical fitness of university students and their academic success, there were some limitations to the study. First, the cross-sectional design of the study could have affected the power of the effect of the results. Whether or not regular physical activity was undertaken was determined according to the statements of the participants and no objective measurement was made of the level of physical activity. Sociodemographic characteristics, level of nutrition and diseases such as iron deficiency anaemia, which could affect academic success, were not examined. Despite these limitations, the study can be considered of value as an examination of the relationship between physical fitness and academic success in university students.

## CONCLUSIONS

In conclusion, for university students to be more successful in the academic area, physical fitness levels should be raised, there should be regular exercise programs and physical activities should be undertaken in their free time.

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