

Association Between Sports Participation and Academic Self-Efficacy Among Medical Students of a Private Medical College, Malaysia, A Cross Sectional Study

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Abstract

Academic self-efficacy refers to a student's confidence in his or her abilities to successfully perform academic activities at a desired level. This research study the effect of sports participation on academic self-efficacy among medical students. A structured questionnaire was employed to collect data from medical students in private medical college, Malaysia campus where 185 students participated in the study. The outcome of the study supported our study's hypothesis, which revealed the significant association between sports participation and academic self-efficacy. Students participated in sports have higher academic self-efficacy. Our study also showed that there is significantly less sports participation among female compared to male. Only 43.6% of female participated in sports compared to the 62.7% of male who participated in sports. Although many studies have documented a link between sports participation and academic self-efficacy, more studies might want to explore this with varying samples, such as non-medical colleges.

Keywords

Self-Efficacy, Sports, Medical Students, Survey

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1. Introduction

Sports is defined as an activity involving physical exertion, skill and/or hand-eye coordination as the primary focus of the activity, with elements of competition where rules and patterns of behaviour governing the activity exist formally through organizations. [1] Sports play an important role in modern contemporary society. It is an integral part of life essential for the physical and mental well-being of individuals. [2] Competitive interest of sport focuses on further skill development within the context of coaching and frequent competitions where performance outcome is on show (e.g., winning a race, failing to improve on previous results). [3] Similar parallels can be drawn in medical school,

where the focus is on competency acquisition, with frequent assessments of students' knowledge and skills.

Sports offer equal opportunity to all students at high competitive level, these academic benefits extend to all area of the student population, including students that might be traditionally underserved. [4] Participation in sport has also been associated with completing more years of education and consistently higher grades in school. [5] Research aimed towards discovering the effects of sports participation on academic performance found that participation in inter-college sport and different team or individual sport, as well as other after-school physical activity programs, does not have a detrimental impact on students' academic performance [6] Research by the Canadian Fitness and Lifestyle Research

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Institute has shown that exercise causes short-term relaxation, accompanied by improved concentration, enhanced creativity and memory, improved mood, and enhanced problem-solving abilities. [7] The Trois Rivières findings recommends that if students in education receive an associate degree quantity of physical activity during class sessions, they may perform higher academically [8].

The term gender is a social construction used to assign a set of appropriate behaviours to the female or male sex, gender is a social construction that changes over time. Gender is a performed behaviour that aligns to how society expects men and women to act. The performance of gender can change over time, space, and discourse [9]. A simple example of how gender is “performed” in a sporting context is looking at what sports boys and girls are encouraged to play at a young age. Female being less physically active than male is always a persistent finding in various studies. [10] Research shows that female gender does participate in physical activities and sports as much as male gender, [11] girls were also shown to participate less in organized sport. [12] Studies show that girls generally perceive less enjoyment when participating in physical education [13]. According to research which studies exercise-related beliefs, girls were found to have weaker beliefs that exercise would be fun and may improve their health but seek the benefit looking better. On the other hand, boys perceive exercise as having fun. [14] Girls were found to doubt that the benefits of participating in physical activity outweigh its barriers. [15] Boys were reported to have higher support from parents are peer when participating in sports compared to girls. [16]

It is necessary to think about the influence that self-efficacy might have in sports, as there are various studies that have found self-efficacy to be absolutely associated with sports and athletic performance. [17-19] Much of the research on self-efficacy in sport continues to focus on individual athletes, primarily examining the relationship between self-efficacy and performance [20-22]. The contribution of self-efficacy to academic achievement is well developed in the literature [23-25]. Considerable evidence also exists for relations between sports participation and self-efficacy [26-27]. One variable that may relate to both sports participation and academic achievement is self-efficacy and determine the association between non sport extracurricular activity and academic self-efficacy.

Self-efficacy is the individuals’ assessment of their capabilities to organize and execute actions required to achieve successful levels of performance. [28] A self-efficacious individual is alleged to be one who believes in “one’s capabilities to prepare and execute the courses of action needed to supply given attainments”. [29] Self-efficacy is classified into classes, one of that is educational

self-efficacy and states that it reflects a student’s perceived capability with relation to the tasks a student is anticipated to perform in educational domain. [30] Self-efficacy plays a very important role in students’ lives and future. The reduction and improvement of self-efficacy can contribute towards their action in life. Self-efficacy makes a distinction in however individuals feel, think and act. One of the factors influence college students’ performance and subsequent dropping-out of school is self-efficacy. Students who do well in college were found to have higher self-efficacy. [31] A person with high self-efficacy is willing to allow several challenges a go as they are willing to push themselves to the limit and stick with it with challenges whether or not the answer doesn’t come simply. Someone with low self-efficacy could believe that a task is not possible for them to accomplish, which is able to successively lead them to believe it’s a nerve-racking event that they cannot handle. [32] So, self-efficacy is viewed as a situational specific self-confidence.

Academic self-efficacy refers to a student’s confidence in his/her abilities to successfully perform academic activities at a desired level. Previous study has shown that academic self-efficacy is positively related to academic achievement. [33] A number of analyses have conferred self-efficacy as a reliable predictor of motivation and performance, one that does not alter in keeping with time, atmosphere and completely different communities. [34] It is additionally claimed in literature that it’s the psychological feature module of self-efficacy that apparently improves academic performance. [35-37]

Several studies report important variations on level of self-efficacy between genders, but there are no vital distinction between general self-efficacy of male and female. [38-39] A study was done to look at the operate of self-efficacy and gender variations as discovered within the IQ test. Results show important gender variations in intelligence, females have scored over their male counterparts. [40]

Current research also has expanded to examine the role of sports participation affecting self-efficacy among medical students. The work discussed in this section includes the relationships between self-efficacy and sports participation.

1.1. Research Question

Is there any association between gender, ethnicity, and sports participation with academic self-efficacy among medical students?

1.2. Research Objective

To determine the association between sports and academic self-efficacy.

To determine the association between gender and sports participation.

To determine the association between gender and academic self-efficacy.

To determine the association between ethnicity and sports participation.

To determine the association between ethnicity and academic self-efficacy.

To determine the association between non extracurricular activity and academic self-efficacy.

1.3. Research Hypothesis

Students who participate in sports have higher self-efficacy compared to students who do not participate in sports.

2. Methodology

2.1. Study Design

The study design selected was a cross-sectional study to determine the association between sports participation and academic self-efficacy.

2.2. Study Setting, Study Time and Study Population

This research includes the medical students from a private medical college, Malaysia. The research was conducted in a duration of six weeks, from May 2019 until June 2019. This study includes the medical students of a private medical college, Malaysia including Bachelor of Medicine, bachelor of Surgery (MBBS), Bachelor of Dental Surgery (BDS) and Foundation in Science (FIS). This includes semester 6, 7, 8, 9 and 10. The total population is 800.

2.3. Sample Size

The sample size for this research was calculated using the formula below:

Estimate a proportion in finite population

$$n \geq \frac{NZ_{1-\alpha/2}^2 p(1-P)}{d^2(N-1) + Z_{1-\alpha/2}^2 p(1-P)}$$

Where,

n=Sample size

N=Sample population

Z=1.96²

p=Estimated proportion

α=Constant, 0.05

Alpha (α) 0.05

Estimated proportion (p) 0.358 (student athletes involvement in sports) [41]

Estimated error (d) 0.07

Population size (N) 800

Minimum sample size needed: 148

The maximum percentage of attrition allowed in this research was 20%.

To allow for non-response, the final sample size was calculated using the formula below:

Non-response

$$n_{final} = \frac{n_{calculated}}{1 - non - response(\%)}$$

$$n_{final} = \frac{148}{1 - 0.2}$$

$$n_{final} = \frac{148}{0.8}$$

$$n_{final} = 185$$

The minimum sample size calculated was 148. The final calculation was done to include a non-response rate of 20% and the final sample size obtained for this study was 185 after rounding off.

2.4. Sampling

In this research, the sampling method conducted was a non-probability, purposive sampling method. We included MBBS students in a private medical college, Malaysia. A self-administered questionnaire was distributed among who were present on the day of data collection.

The inclusion criteria for the participation in this research is MBBS students of a private medical college, Malaysia. The exclusion criteria for the participation in the research were students who were absent on the day of data collection, who refused to participate, and whom did not provide informed consent. The students who did not complete the questionnaire were also excluded.

2.5. Data Collection Method

Data collection was based on self-administered questionnaire which was adopted from previous study. [42-43]

Part A consists of demographic details such as age, gender, ethnicity of the participants.

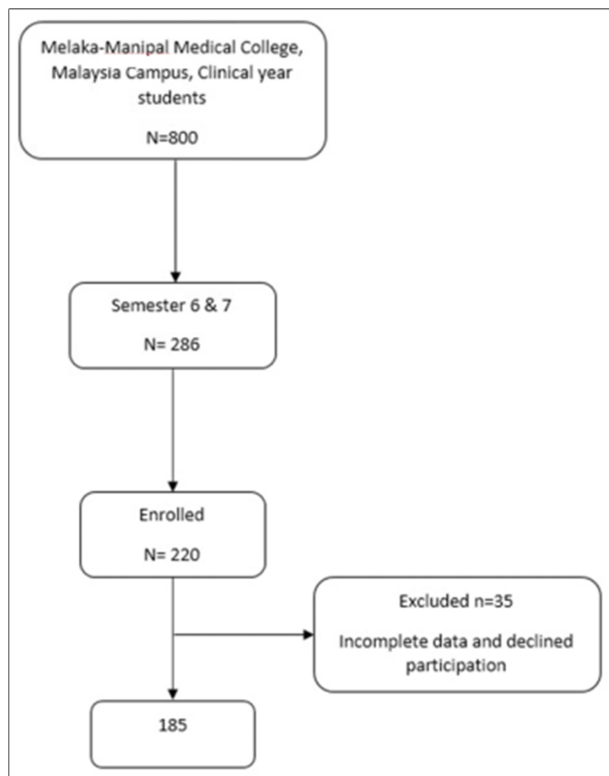


Figure 1. Participant flow chart.

Part B, the sports participation questionnaire [42] aims to identify the participation of organized sports and non-sport extracurricular activities among students of a private medical college, Malaysia. It also measures the degree of participation of the students.

Part C, the level of academic self-efficacy questionnaire [43] comprises 20 questions, utilizing a 5 points Likert scale with options of strongly disagree, disagree, neutral, agree and strongly agree. The scores that can be obtained from the scale range from 20 to 100, and higher scores indicates higher academic self-efficacy. Responses of students are also categorized into two categories: not confident (score of 1–3 on items) and confident (score of 4–5).

2.6. Data Processing and Analysis

Data processing was done using Microsoft Excel. Data analysis was done using Epi Info TM7. The mean, standard deviation, median, interquartile range and range of age and the level of academic self-efficacy were analysed. The frequency and percentage of gender, ethnicity and sports participation were analysed. The measure of association used is Odds Ratio. The level of significance is 0.05 and 95% Confidence Interval was calculated.

Table 1. Variable and statistical test used.

Independent Variable	Dependent Variable	Statistical Test
Gender	Self-Efficacy	Unpaired t test
Sports Participation	Self-Efficacy	Unpaired t test
Gender	Sports participation	Chi square
Ethnicity	Self-Efficacy	ANOVA
Ethnicity	Sports participation	Chi square
Non-sports extracurricular activity	Self-Efficacy	Unpaired t test

2.7. Ethics

The objectives of this study were briefed to the participants. Participants were given the freedom to decide if they want to voluntarily participate in this study. Participants who were willing to participate were given informed consent form. Participants were allowed to withdraw from the study at any time. Their confidentiality will be kept private hence no personal details will be exposed. The study protocol was reviewed and approved by the Research Ethics Committee, Faculty of Medicine, Melaka Manipal Medical College, Malaysia.

3. Results

Table 2. Socio-demographic characteristic among medical students.

Variables	n (%)
Gender	
Male	75 (40.54)
Female	110 (59.46)
Age	

Variables	n (%)
<22	32 (17.30)
22-24	137 (74.05)
>24	169 (8.65)
Mean (SD)	22.53 (1.379)
Minimum	20.0
Maximum	29.0
Ethnicity	
Malay	27 (14.59)
Chinese	50 (27.03)
Indian	75 (40.54)
Others	33 (17.84)
Semester	
6	81 (43.78)
7	104 (56.22)

In table 1, male consist of 75 (40.54%) and female consist of 110 (59.46%). Students below the age of 22 are 32 in number which is 17.3%, between 22-24 of age is 137 (74.05%) and above 24 of age is 169 (8.65%). The mean age is 22.53 and standard deviation of 1.379. In ethnicity, 27 (14.59%) of them are Malay students, 50 (27.03%) are Chinese students,

75 (40.54%) are Indian students and 33 (17.84%) are from other ethnicity which consist of Sri Lankans, Iban and Kadazan. Number of participants in semester 6 is 81 whereas in semester 7 is 104.

Table 3. Sports participation among medical students.

Variables	n (%)
Sports participation	
Yes	95 (51.35)
No	90 (48.65)
Non-sports extracurricular activities	
Yes	73 (39.46)
No	112 (60.54)

Table 2 shows the frequency of sports participation among medical students. There are 95 medical students with 51.35% who participates in sports while 90 medical students with 48.65% who do not participates in sports. Meanwhile, there are 73 medical students with 39.46% who participate in non-sports extracurricular activities while 112 medical students with 60.54% who do not participates in non-sports extracurricular activities.

Table 4. Types of sports participated among medical students.

Sports participation	n (%)
Football	13 (7.03)
Futsal	8 (4.32)
Netball	13 (7.03)
Badminton	14 (7.57)
Dancing	7 (3.78)
Table Tennis	3 (1.62)
Gym	5 (2.70)
Swimming	10 (5.41)
Running	21 (11.35)
Volleyball	8 (4.32)
Basketball	11 (5.95)
Cricket	4 (2.16)
Frisbee	7 (3.78)

Table 5. Types of non-sports extracurricular activity participated.

Non-sports extracurricular activity	n (%)
Musical instruments	31 (16.76)
Chess	6 (3.24)
Yoga	8 (4.32)
Arts	12 (8.49)
Photography	8 (4.32)

Table 6. Academic self-efficacy among medical students.

Variable	Mean (SD)	Confident n (%)	Not confident n (%)
I ask questions in lectures	2.52 (0.94)	21 (11.35)	164 (88.65)
I respond to questions asked in lectures	3.09 (0.90)	62 (33.51)	123 (66.49)
I draw up a study plan	2.86 (1.05)	54 (29.91)	131 (70.81)
I ask for help from my lecturers	3.08 (0.94)	62 (33.51)	123 (66.49)
I write up additional notes	3.51 (0.91)	107 (57.84)	78 (42.16)
I plan my time for examinations	3.49 (0.97)	107 (57.84)	78 (42.16)
I ask for help from my friends when I have issues in studies	3.90 (0.79)	144 (77.84)	41 (22.16)
I produce my best work in exams	3.29 (0.84)	77 (41.62)	108 (58.38)
I engage in academic discussions with my friends	3.50 (0.91)	108 (58.38)	77 (41.62)
I make sense of feedback on my assignments	3.30 (0.83)	76 (41.08)	109 (48.92)
I explain subject matters to my friends	3.51 (0.80)	97 (52.43)	88 (47.57)
I make a good attempt to answer questions in advance	3.18 (0.89)	69 (37.30)	116 (62.70)
I meet the deadlines for my assignments	3.64 (0.99)	116 (62.70)	69 (37.70)
I make an attempt to meet the deadline for group assignments	3.81 (0.90)	128 (69.19)	57 (30.81)
I pay attention during every lecture	2.82 (0.95)	36 (19.46)	149 (80.54)
I express my opinion when I do not understand the lectures	2.88 (0.87)	41 (22.16)	144 (77.84)
I feel nervous when I am doing presentations	3.41 (1.45)	94 (50.81)	91 (49.19)
I come forward to do presentations in group assignments	3.01 (0.86)	51 (27.57)	134 (72.43)
I feel confident that I can complete the degree within 4 year	3.64 (0.95)	102 (55.14)	83 (44.86)
I make sense of feedback on my examinations	3.48 (0.77)	93 (50.27)	92 (49.73)

According to table 3, we found that over 50% of the students were not confident about asking questions in lecture, drawing up a study plan, paying attention during every lecture, expressing their opinion when they do not understand the

lectures and coming forward to do presentations in group assignment. The rest of the variables shows that the medical students are confident.

Table 7. Association between gender, ethnicity, sports participations, non-sports extracurricular activity and academic self-efficacy.

Variables	ASE Mean (SD)	Mean difference (95% CI)	T (df)/F (df ₁ , df ₂)	P value
Gender				
Female	66.50 (9.572)	1.43		
Male	65.05 (8.572)	(-1.28 to 4.14)	1.04 (183)	0.300
Ethnicity				
Chinese	63.34 (9.495)	-		
Indian	66.60 (10.001)		1.86 (3, 181)	0.138
Malay	67.41 (6.635)			

Variables	ASE Mean (SD)	Mean difference (95% CI)	T (df)/F (df ₁ , df ₂)	P value
Others	66.97 (8.080)			
Sports participation				
No	63.82	-4.05		
Yes	67.87	(-6.66 to -1.45)	-3.07 (183)	0.003
Non-sports extracurricular activity				
No	65.56	-0.86		
Yes	66.4	(-3.59 to 1.87)	-0.62 (183)	0.534

In table 4, unpaired t test was used for the analysis and we found that female students achieved a mean of 66.50 with standard deviation (SD) of 9.572 for academic self-efficacy while male students achieved a mean of 65.05 with SD of 8.572. This results is not significant as the P value is 0.300 and the 95% confidence interval (CI) is -1.28 to 4.41. The mean value for Chinese is 63.34 with SD of 9.495, Indians 66.60 with SD of 10.001, Malays 67.41 with SD of 6.635 and others 66.97 with SD of 8.080. There is no association between ethnicity and academic self-efficacy since the P

value is 0.138. The mean value for sports participation is 67.87 while no participation is 63.82. There is association between sports participation and academic self-efficacy as the P value is 0.003 and 95% CI is -6.66 to -1.45 which is significant. Based on non-sports extracurricular activity, the mean value of students doing non-sports extracurricular activity is 65.56 and not doing is 66.4. There is no association with academic self-efficacy as the P value (0.534) and 95% CI (-3.59 to 1.87) is not significant.

Table 8. Association between gender, ethnicity and sports participation among medical students.

Variables	Sports Participation		Odds Ratio (95% CI)	Chi-Square	P-Value
	Yes n (%)	No n (%)			
Gender					
Male	47 (62.7)	28 (37.3)	2.168 (1.19-3.95)	6.465	0.011
Female	48 (43.6)	62 (56.4)	1 (Reference)		
Ethnicity					
Malay	17 (63.0)	10 (37.0)	1 (Reference)	0.180	0.672
Chinese	29 (58.0)	21 (42.0)	0.81 (0.31-2.13)	2.4681	0.116
Indian	34 (45.3)	41 (54.7)	0.49 (0.20-1.20)	1.829	0.176
Others	15 (45.5)	18 (54.5)	0.49 (0.17-1.39)		

Chi square test was used to determine the association between gender, ethnicity and sports participation among medical students. There is significant association between gender and sports participation. The number of male participating in sports are 47 (62.7%) and female are 48 (63.6). The number of male who do not participate in sports are 28 (37.3%) while female are 62 (56.4). Males are 2.168 times more likely to participate in sports than females [OR=2.168, 95% C. I=(1.189-3.954), p value=0.011]. The number of Malay who participate in sports are 17 (63%), Chinese 29 (58%), Indian 34 (45.3%) and others 15 (45.5%). The number who Malay who do not participate in sports are 10 (37%), Chinese 21 (42%), Indian 41 (54.7%) and others 18 (54.5%). There is no significant association among ethnicity as shown Chinese [OR=0.812, 95% C. I=(0.310-2.126), p value=0.672], Indian [OR=0.488, 95% C. I=(0.198-1.204), p value=0.116] and others [OR=0.490, 95% C. I=(0.173-1.386), p value=0.176], with Malay as the reference group.

4. Discussion

This study is about the association between sports participation and academic self-efficacy among medical

students in a private medical college, Malaysia. The objective of this study is to determine the association between gender and sports participation, gender and academic self-efficacy, ethnicity and sports participation, ethnicity and academic self-efficacy and non-sports extracurricular activity and academic self-efficacy. The main objective of our study is to analyse the association between sports participation and academic self-efficacy.

Academic self-efficacy refers to a student's confidence in his/her skills to perform educational activities at a desired level with success. [33] Based on our study, over 50% of the students were not confident about asking question in lecture, drawing up a study plan, paying attention during every lecture, expressing their opinion when they do not understand the lectures and coming forward to do presentations in group assignment. Previous study have shown respondents were not confident about asking questions and responding to question in lecture, drawing up a study plan, asking help from lecturers, writing additional notes, engaging in academic discussions with friends, expressing an opinion and speaking in front of their peers. [43] We found out that the results were similar for a few variable in the questionnaire such as asking questions in the lecture, drawing up a study plan and expressing an opinion

when they do not understand the lectures. Fortunately, 77.84% were confident in asking help from friends when they issues in studies. In our study, 58.38% engage in academic discussion with friends whereas in previous studies only 24.7% were confident in this.

Sports offer equal opportunity to all students at high competitive level, these academic benefits extend to all area of the student population. [4] Previous study showed that lack of time and studies overload are the most important barriers among medical colleges students which prevented them from participating in sports. [45] Based on our study, there is a significant association between sports participation and academic self-efficacy. 51.35% of students participated in sports, while 48.65% of students do not participate in sports. In previous study, it was found that there is an indirect relationship between sports participation and academic achievement through the influence of academic self-efficacy. [42] Studies also showed that students who do sports often have higher academic self-efficacy than the scholars who don't do sports regularly. [44] A survey which was conducted, reported that there is a significant association between athletics and academic performance. Those that are athletics have higher share of passing their academic performance compared to those who are non-athletics. [41] Our study results also shows that female attained a higher academic self-efficacy than males, rather there is no significant association between gender and academic self-efficacy. Literature has reported similar findings in terms of level of self-efficacy on the basis of gender. [43] Female being less physically active than male is always a persistent finding in various studies. [10] Research shows that female gender does participate in physical activities and sports as much as male gender, [11] girls were also shown to participate less in organized sport. [12] In our study, results showed that the participation of female students in sports is lesser than male students. There were no significant association in ethnicity and non-sports extracurricular activity. From our study, limitation may have occurred during the collection of data. All data were collected in the duration of two days during class sessions with students answering the questionnaires simultaneously, participants sat in close proximity to one another and were not prohibited from talking while filling out the surveys. So, it is possible that participants may been influenced by their peers' answers to the survey questions, reducing the number of individual differences in the sample. Our study was only focused on year 3 clinical phase students as they were easily accessible and approachable. This is due to students from senior years are currently in their clinical rotations where they are posted to various other states in Malaysia, thus it is not practical to approach them individually due to our time constrain. While

the survey is just conducted in a private medical college, Malaysia, it does limit the sample size available. It is still very important to see if results from the other medical colleges, who will likely differ in terms of sports participation and academic self-efficacy. Apart from that, it is also prone to bias as it is a cross-sectional study, it can cause underestimated or overestimated association between independent and dependent variables.

Our study have a good response rate of 84%, 185 out of 220 questionnaire distributed were answered by the students. This research brings up the topic of sports participation among undergraduate students, so as to remind the students of the benefits of sports participation. The positive correlation of sports participation with academic self-efficacy obtained from our research may provide a different perspective for medical students seeking to improve their academic performances.

Medical students should have good time management skills in order to participate in sports. Students who do participate in sports should continue, while students especially female students who do not are encouraged make their first step towards sports participation. School authorities, friends and families should help in changing attitudes of female gender towards sports participation. Barriers which prevent female students from participating in sports can be identified in order to help them turn their attitude around.

Future research should ensure that larger sample size is used in the study which is inclusive of other clinical years. Our study focuses mainly on the association of sports participation and academic self-efficacy. Insufficient study was done for the association of non-sports extracurricular activity and academic self-efficacy. Although many studies have documented a link between sports participation and academic self-efficacy, more studies might want to explore this with varying samples, such as non-medical colleges.

5. Conclusion

The present study was consistent with previous research documenting a positive relation between sports participation and academic self-efficacy. Moreover, the present study showed that female students have lower participation in sports compared to males. We found that over 50% of the students were not confident about asking questions in lecture, drawing up a study plan, paying attention during every lecture, expressing their opinion when they do not understand the lectures and coming forward to do presentations in group assignment. This study has many implications, it brings up the topic of sports participation among medical students which was often neglected due to lack of time and heavy

workload. Additionally, the value of participation in organised sports program might extend beyond the opportunity for exercise. The positive correlation of sports participation with academic self-efficacy obtained from our research may provide a different perspective for all students seeking to improve their academic performances.

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