

**Research Article**

## The Impact of Physical Activities on the Academic Performance, and Burnout of Female Medical Students in India

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**ABSTRACT:**

**Background:** Lack of physical activities leads to many consequences such as obesity, anxiety, stress, weight gain, depression and burnout. Due to busy schedule of medical students majority of the students overlooked the participation in exercise and physical activities and prefer studies over health. This pattern has brought many issues not only in students but in the societies as well.

**Aim:** Purpose of this paper was to determine the impact of physical activities on academic performance and burnout of medical female students in India.

**Material and Methods:** Survey approach using self-administered closed ended scale was distributed among 250 female students. Non probability convenience sampling technique was used to select the sample size. SPSS and PLS-SEM were used for statistical analysis. It was found that there is significant effect on burnout and academic performance of students due to academic year, physical activities, time played, regularity maintained, no of hours played per week, family restrictions, non-availability of space and laziness.

**Findings/Results:** Measurement model was also found reliable and valid. All factor loadings, AVE and CR values met threshold criteria. It is concluded that taking part in games could reduce burnout, emotional exhaustion, and depersonalization and enhance personal achievement and academic performance.

**Conclusions:** From the findings it is revealed that taking part in any game such as football, baseball, hockey, cricket could bring positive outcomes such as good health, fitness, students become active and come up with new ideas, It is concluded that taking part in healthy activities help the students to develop skills, effectively handle stress, depression and anxiety.

**KEYWORDS**

Physical Activities, Burnout, Academic performance, SPSS, PLS-SEM..

## **1 | INTRODUCTION**

“Sports do not build the character, they reveal it.” – Heywood Broun. Medicine is highly competitive professional program; hence require competitive spirit and zeal which can be achieved through sports.<sup>1,2</sup> “Playing a sport will teach you how to win honorably, lose gracefully, respect authority, work with others, manage your time and stay out of trouble.” – it has been reported in past studies that students are found better on time management, tolerating stress, anxiety and depression if they regularly involved in sports, exercise and physical activities. In a general student population, for example, physical activity/sport involvement has been found to correlate positively with stress tolerance, good time management, and adaptive coping strategies.<sup>3, 4</sup> our body released a hormone whose name is “endoprine” which is useful for decreasing stress and this is released during game. We can attain several benefits by taking part in games. Games help us to develop out body in shape, decrease in heart related cardiovascular diseases, controlling diabetes. Moreover, other chronic diseases like blood pressure cholesterol osteoporosis can be controlled by games. Taking part in healthy games also helps students to develop more skills among them, they get more training how to keep yourself healthy and bring other positive results as well. Academic institutions must regularly established sports weeks each semester.<sup>5</sup> Playing sports can help students to achieve fitness goals related to weight loss, muscle development and fat reduction. It is also associated with hormone regulation and strengthening the immune system. Among women, sports can help prevent osteoporosis. If they play sports regularly, they will be physically active and develop cognitive skills, improve mental health, helping to prevent depression and increase self-esteem and body image. They can learn positive mental skills including accountability, leadership and dedication. Therefore, this study will be conducted to know how physical activity plays a significant role in developing healthy habits among medical students and the factors that hinder them from practicing. This study will be conducted through a semi structured anonymous self-reported questionnaire among female medical students. Due to huge academic competition and large number of assignments, presentations and back to back to examination in the institutions makes students so busy. Students are more inclined towards getting good grades and CGPA. Due to this competition students forget or had limited or no time for healthy activities such as games, exercise, gym etc. students must take part in physical activities so that they keep their selves fresh and energetic and able to have good quality of life during student life.<sup>6</sup>

### **1.1 | Objectives**

The objective of the study is to:

To investigate the influence of physical activities on female medical students’ performance and burnout in India.

## **2 | MATERIAL AND METHODS**

### **2.1 | Research Design**

This study is quantitative in nature and closed ended questionnaire was used to collect the primary data. The nature of the data was cross-section. Cross-sectional data means data collected at single point of time. Before the collection of data ethical approval was taken from the Institutional Ethics Committee of the college. Students were explained about aim of the study and they were made assured that they can withdraw any time and their identity would be kept confidential. Informed consent and signature were taken prior to distributing questionnaire from female medical students.

### **2.2 | Instruments/Measures**

Questionnaire was adopted from (Baranik, et al.).<sup>1</sup> The current research extended the three-factor (mastery, performance-approach, and performance-avoidance) measure of achievement goals in a work domain to the four-factor conceptualization (in a 2 × 2 framework) by adding items to represent mastery-avoidance goals. Confirmatory factor analysis was conducted on two independent samples to evaluate the dimensionality of scores. Regarding

burnout it was adapted from (OLBI-S).<sup>2</sup>It was measured on four point scale. Reliability of the scale was reported in past studies above >0.70. Higher the score means higher is the level of burnout.

### 2.3 | Population Sample & Inclusion Criteria

Non probability convenience sampling was used to select the sample size. Total numbers of female students were 410 out of which 200 were selected as sample size using Krejcie and Morgan.<sup>9</sup>The population selected for the study was all undergraduate students in medical college.

### 2.4 | Data Collection & Analysis Techniques

Primary data was entered in SPSS 26 version. Frequencies, percentages, chi square test were applied. Measurement model i.e. confirmatory factor analysis (CFA) was also run to investigate the reliability and validity of the questionnaires

## 3 | RESULTS

Data was collected from 200 medical students. Table 1 presented the demographic information of the medical students. Majority of the students participated belong to first year of medical studies 56(28%) of the sample size followed by those medical students who are in fourth year 45(22.5%). While only 20 students from fifth year participated in survey i.e. 10% of the sample size. Respondents were asked about their involvement in sports and physical activities. Majority of the students go to gym for exercise 51(25.55) followed by 50 (25%) played table tennis, lowest number of participants played baseball 19 (9.5%). Majority of the medical students are involved in physical activities since 6 months very few respondents i.e. 48(24%) are consistent since one year in physical games. Most of the respondents said they are not able to maintain regularity in physical activities 154(77%) while 129(64.5%) said that they do physical exercise 6 hours per week while only 71 (35.55) played 10 hours per week. Further chi square test have been applied and it was found that on the basis of academic year, involvement in physical activities, period of time played, regularity maintained hours per week played there is significant difference all chi square values are highly significance. It implies that the entire demographic factor played significant role in reducing burnout and improving academic performance of the medical students.

TABLE 1 Demographic Information and Chi Square test

Variables	Characteristics	n	%	$\chi^2$ p value BO	$\chi^2$ p value AP
MBBS Year	First Year	56	28%	188.91, p<0.01	124.70, p<0.01
	Second Year	44	22%		
	Third Year	35	17.5%		
	Fourth Year	45	22.5%		
	Fifth Year	20	10%		
Physical Activities	Football	30	15%	165.100,p<0.01	110.9,p<0.01
	Gym	51	25.5%		
	Baseball	19	9.5%		
	Badminton	23	11.5%		
	Squash	27	13.5%		
Period of time played	6 months	152	76%	77.19, p<0.01	86.11, p<0.01
	1year	48	24%		
	Regularity Maintained	Yes	46		
No	154	77%			
Hours/week played	6 Hours	129	64.5%	71.14, p<0.01	49.10, p<0.01
	10 Hours	71	35.5%		

Further analyses of results are revealed in the Table 2. Respondents were inquired about family restriction for exercise majority of them said no while 89(44.5%) said yes. Moreover 101 (50.5%) said there is no availability of space followed by 99(49.5%) said there is no problem of space moreover majority of the respondents were found to be lazy 136(68%) while 64(32%) said no there is no issue of laziness. Further analysis of findings revealed that family restrictions, non-availability of space and laziness also played significant role in burnout and academic performance.

**TABLE 2** Factors Affecting Physical Activity

Variables	Characteristics	n	%	X <sup>2</sup> p Value BO	X <sup>2</sup> p AP
Family Restriction	Yes	89	4.5%	65.12, p<0.05	50.34, p<0.05
	No	119	9.5%		
Non Availability of Space	Yes	101	0.5%	94.71, p<0.05	62.12, p<0.05
	No	99	9.5%		
Laziness	Yes	136	68%	81.72, p<0.05	70.44, p<0.05
	No	64	32%		

Measurement model in PLS-SEM was developed to investigate the convergent validity and reliability of the scales. Criteria for loadings is given by Hair et al <sup>7</sup>>0.70 for AVE must be >0.50 and composite reliability >0.70. From the Tale 3 it is evident that all items have loadings higher than 0.70 AVE>0.50 and CR >0.70 therefore it is assumed that scales of burnout and academic performance are found reliable and valid.

**TABLE 3** Confirmatory Factor Analysis Burnout Inventory

Variables	Items	loadings	CR	AVE
EE	BOI1	0.78	0.904	0.574
	BOI2	0.73		
	BOI3	0.71		
	BOI4	0.76		
	BOI5	0.79		
	BOI6	0.74		
DP	BOI7	0.79	0.934	0.669
	BOI8	0.85		
	BOI9	0.88		
	BOI10	0.86		
	BOI11	0.82		
	BOI12	0.70		
PA	BOI13	0.83	0.932	0.697
	BOI14	0.77		
	BOI15	0.88		
	BOI16	0.82		
	BOI17	0.81		
	BOI18	0.89		
Mastery Approach	BOI19	0.75	0.936	0.785
	BOI20	0.85		
	MAP1	0.84		
	MAP2	0.86		
Performance Approach	MAP3	0.91	0.926	0.758
	MAP4	0.93		
	PAP1	0.92		
	PAP2	0.83		
Performance Avoidance	PAP3	0.84		
	PAP4	0.89		
	PAV1	0.76		

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PAV2	0.74	0.874	0.634
PAV3	0.83		
PAV4	0.85		

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#### **4 | DISCUSSION**

There are number of studies conducted in the past on school students but this study is unique in the way that it is conducted in medical female students in which participation is self driven and exclusively optional.<sup>10, 11</sup> The students have to voluntarily participate there is no strict rule to take part in physical activities as mandatory. Students due to tight and busy schedule, short time for their quiz, presentations, midterm and final term exams students prefer their studies and ignored their health which increase their depression and stress and burnout in turn it decrease their academic performance. The students cannot focus well on the studies and result in low grades. It was found that on the basis of demographic variables i.e. academic year, involvement in physical activities, time played per week, regularity maintained, period of time played, restriction from family, non-availability of space and laziness has significant effect on burnout and academic performance. Moreover scales of burnout and academic performance are found reliable and valid. As discussed above huge competition makes student busy it is imperative for all stakeholders like parents, students and medical college administration to raise awareness about healthy activities, physical activities, exercise and its importance and significance so that student may get involved in these activities. Healthy games and competitions must be arranged and followed by certificates and prizes to encourage students to participate in these activities.<sup>12</sup> The findings of the current study are in line with past studies of Baker and Casteli<sup>13</sup> also found positive impact of physical activities in their study. Moreover the findings of Di Cesare<sup>14</sup> also reported positive impact of physical activities on students' performance. Moreover they also argued that physical activities not only increase the students' academic performance but also reduce burnout, obesity, stress, anxiety, and depression. Similarly Sanchez Oliver et al<sup>12</sup> claimed that lack of physical in activities may lead to cardiovascular diseases which in turn increase health cost. Likewise, Singh et al<sup>13, 16</sup> provide guidelines on physical activities for students and students may take benefits from the findings of the Singh et al and increase their academic performance and perform well in their studies. In the same way study was conducted study on youth and children and rising issues of obesity, burnout among them. In their study they have provided policies to overcome these issues. Further the study findings got support from findings of past studies.<sup>17-19</sup>

#### **5 | IMPLICATIONS**

Unhealthy habits picked during college life though considered temporary, usually persist throughout adult life. College and university arenas, therefore, represent an important opportunity for nutritional and health education and involvement in sports offers invaluable opportunities for an individual to develop self-discipline, resilience and motivations that may subsequently influence their functioning in high-stress environments in medical college and eventual medical practice. As maximum female students does not get exposure to physical activities or sports due to many factors hindering them to go out of the house or having more social and mental pressure even if the cross the barrier. Hence if the Medical Council of India provide separate period in schedule on daily basis for sports along with a coach and make it compulsory for every student to participate at least in one sport, for example, yoga or any other safe physical activity in the college premises which therefore leads to increase in involvement of female medical students in sports and gaining the advantages of playing sports which will lead to upliftment of female medical students who are more physically and mentally fit.

#### **6 | LIMITATIONS AND FUTURE DIRECTIONS**

This study offered contributions but it is essential to highlight few limitations as well. First limitation is it is only conducted on female medical students therefore one should be careful while generalizing these findings to other medical colleges where they have co-education. Second limitation is that it has used only one source of data collection it might be a source of biasness therefore it would be better if future studies may sue mix methods

followed by qualitative or longitudinal data might be helpful to have better understanding of subject matter. Third, sports-related variables may not be accurately measured. Fourth participants may not put in their full effort in answering the questionnaires. Besides, this study was only conducted at a single institution which makes it difficult to extrapolate results to medical students in other institutions.

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