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ASSESSMENT OF CORRELATION BETWEEN PHYSICAL ACTIVITY AND ACADEMIC PERFORMANCE AMONG THE STUDENTS OF GUJRANWALA MEDICAL COLLEGE, GUJRANWALA

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Abstract:

Introduction: *Physical Activity is defined as any bodily movement produced by skeletal a muscle that requires energy expenditure. Physical Activity is of 2 types Vigorous Physical Activity and Moderate Physical Activity. Physical Activity is very important for every person regardless of age, ethnicity, or present state of health, virtually all individuals will benefit from regular Physical Activity.*

Material & methods: *A Cross Sectional study was conducted at Gujranwala Medical College, Gujranwala from 20 May to 5 June, to assess the correlation between physical activity and academic performance among the students of Gujranwala Medical College, Gujranwala. In this regard I used Internal Physical Activity Quetionaire (IPAQ) was used to get responses from 100 students of GMC by simple random sampling. And then data was analyzed to check the correlation between these two parameters.*

Results: *There were 38% students in the GMC who performed vigorous physical activity And there percentage of Failure is 50%. 37% perform moderate physical activity and there Failure percentage is 37.84%. While 25% perform no physical activity and there percentage failure is 40%.*

Conclusion: *This study demonstrate that those students who perform moderate physical activity are performing good in the academic career and have low failure rate while those who perform vigorous or no physical activity have high failure rate.*

Keywords: *Physical Activity; IPAQ; Academic Performance; Exercise; student's health;*

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INTRODUCTION:

Physical Activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure**[1]**. Physical Activity is of 2 types Vigorous Physical Activity and Moderate Physical Activity. Virtually all individuals will benefit from regular Physical Activity regardless of age, ethnicity, or present state of health**[2]**. Healthy and active individuals are generally those with stronger immune systems and are less likely to catch colds and viruses**[3]**. In fact, the advantages of engaging in Regular Physical Activity with regards to Physical and Mental Health are tantamount**[4]**. Regular, Moderate Physical Activity is associated with a substantial decrease in all-cause Mortality and can improve a number of aspects of cognition and performance and lesser risk of. Morbidity **[5,6]**. Exercise might not only help to improve the physical health, but also improve the academic performance [**7]**, improve Muscle Function, Cardiovascular Functions. With Physical Activity there is also improvements in Self Esteem, mental health**[8]** and Depressive/Anxiety Symptoms**[9].**

Self-care Activities, including exercise, may be neglected by medical students in response to increasing academic demands. Many students indulge themselves in sedentary activities such as, watching TV, surfing the Internet, and playing video games[10]. The amount of time that college students spend on the Internet has been shown to relate to reduced academic performances. Moderate Physical Activity among medical students may have good effects on their academic performances. But the vigorous activities and long lasting physical activities have some bad impact on the academic performances. Because these students spend most of their time in their physical activity than in studies.

A large body of evidence suggests that physical activity is positively associated with cognitive ability**[11,12]**. Physiologic mechanisms that have been proposed to explain how aerobic exercise and good cardiorespiratory fitness may influence cognitive function include increases in cerebral blood flow, oxygen saturation, angiogenesis, neurotransmitter levels, and neurogenesis**[13]**. The increased Academic Achievement may be due to an increase in Neurotransmitters related to Exercise, such as Serotonin**[14]**. Other Potential Mechanisms which may Aid Learning include: Accelerated Psycho motor Development, Increased Cerebral Blood Flow, Heightened Arousal, Changes in Hormone Levels, Changes in Body Build, and Increased Self- Esteem**[6,15]**. It has also being found that physical activity was associated with selected advantages in cognitive function, specifically: math, acuity, and reaction time[16]. Whatever the mechanism is it is clear that regular moderate physical activity poses no harm and may be associated with better academic performance[4].

A study was conducted among Medical College Students by Senthil velou. M., Sivayogappa Teli, Deepika, Thendral, Rohini for the purpose of analyzing the effect of physical activities on the academic performance[**17]**.They classified physical activities of the students into exercise (that included walking, jogging, workout in gym, yoga), contact sports (like football, volley ball, cricket, tennis, etc.) non-contact sports (like chess, carom) and non-sports activities (like singing, dancing, drawing, painting etc.) . And the result of that study showed that the Students who perform any kind of Physical activity have a low Failure Rate as compare to those students who perform n Physical Activity.

A study was conducted at Riphah International University, Islamabad to assess the Relationship between the physical Activity and Academic Performance among the students of Physiotherapy it was a descriptive cross sectional study in which a sample of 190 students were taken from First Year and Final Year by using systemic probability sampling**[18]**. Assessment of Physical Activity (RAPA) was used to collect data. And for Academic performance the Result of last exam were taken which is divided in to different ranges include 60% or below, 61%-65%, 66%-70%, 71%-75%, 76%-80% and 81% or above so after data analysis the result was that there are 9 out of 190 (4.7%) Students have no Physical Activity and from those nine just 2 out of 9 (22%) students got marks more than 70%. 49 out 190 (26%) Students perform Moderate physical Activity but not every week and from those 10 (20%) got marks more than 70%. 124 out of 190 (65%) Students perform Moderate physical Activity every week and 74 out of 124 (60%) Students got marks more than 70%. 8 students out of 190 (4%) perform Vigorous Physical Activity and all 8 (100%) students got marks more than 70%. This shows that the Physical Activity has a great positive impact on Academic performance.

Behrens and Dinger (5) reported that university students were more active during weekdays than weekend days and there was no significant difference in PA patterns among the sexes.[**19]**

Physical Inactivity has been identified as the fourth leading risk factor for global mortality causing an estimated 3.2 million deaths globally[1].

The rate of inactivity has been reported to be 60-85% in adults worldwide. Considering the importance of physical activity among youth, the aim of this study was to evaluate the physical activity among university students[20].

The purpose of my study is that there is no study conducted ever before on the Medical Students of Gujranwala and Pakistan and we do not have any data regarding the effect of physical activity on Academic Performances among the Medical Students of Gujranwala and Pakistan.

MATERIAL AND METHOD:

General: A study was conducted at Gujranwala Medical College, Gujranwala from 20 May to 5 June 2015. To Assess the Correlation Between Physical Activity And Academic Performance Among The Students. Of Gujranwala Medical College, Gujranwala. In this regard I used Internal Physical Activity Quetionaire (IPAQ) was used to get responses from 100 students of GMC by simple random sampling. And then data was analyzed to check the correlation between these two parameters.
study design: Cross Sectional study design.
Place of Study: The study was conducted at Gujranwala Medical College, Gujranwala.
Study Population: Population was the Medical Students of Gujranwala Medical College, Gujranwala.
Sampling Technique: Random Sampling.
Sample Size: A total of 100 students were chosen.
Sample Selection: All the students who were willing to answer the questions were included in the study group. Those students who were not willing to answer or were physical Abnormal were excluded from the study.
Duration of Study: 20 May to 5 June 2015
Data Collection: For the Assessment of Physical Activity I used Internal Physical Activity Quetionaire (IPAQ) short form.
For Assessment of Academic Performance an anonymous, self-administered questionnaire was used in which I asked the students about the marks they scored in Last Professional/M CAT/Fsc, in the last Term or Stage. How many times they got highest marks, passing marks or how many times they Failed. And the data was collected.
Data Analysis: Data was analyzed through SPSS version 21
Ethical Issues: Proper Consent was taken from all the students and then the performas were distributed among the students and proper instructions were given to them face to face and then asked them to fill the performas.

RESULTS:

A Cross Sectional study was conducted at Gujranwala Medical College, Gujranwala from 20 May to 5 June. To Assess the Correlation Between Physical Activity And Academic Performance Among The Students. Of Gujranwala Medical College, Gujranwala. In this regard I used Internal Physical Activity Quetionaire (IPAQ) was used to get responses from 100 students of GMC by simple random sampling. And then data was analyzed to check the correlation between these two parameters.

Table 1: Distribution demographic characters for 100 students.

Sr. No.	VARIABLES	NUMBER	PERCENTAGE
1	Sex		
	Male	32	32.00%
	Female	68	68.00%
2	Age		
	19 Years	14	14.00%
	20 Years	33	33.00%
	21 Years	26	26.00%
	22 Years	21	21.00%
	23 Years	6	6.00%

There were 100 students in the study group in which 32% were male students and 68% were female students. From these 100 students 14% were 19 years old, 33% were 20 years, 26% were 21 years, 21% were 22 years old and 6% were 23 years old.

TABLE 2: Effect of Physical Activities on Academic Performance of Medical Students

Sr. No.	TYPE OF PHYSICAL ACTIVITIES	NO. OF STUDENTS (n= 100)	No of Students (n=100) Passed	No. of Students (n=100) Failed	Percentage failure
1	Vigorous Physical Activity	38	19	19	50%
2	Moderate Physical Activity	37	23	14	37.84%
3	No Physical Activity	25	15	10	40%

There were 100 students under study in which 38% perform Vigorous Physical Activity and have 50% failure rate, 37% perform Moderate Physical Activity and have 38% failure rate and 25% perform no Physical Activity and have 40% failure rate.

Table 3:Distribution of days for Students performing Vigorous Physical Activity

Sr. No.	Days	No. of Students
1	1 day	7
2	2 days	5
3	3 days	6
4	4 days	7
5	5 days	5
6	6 days	5
7	7 days	3

There were total 38 out 100 students who perform Vigorous Physical Activity from these students 7 students were those who perform this activity for 1 day, 5 perform for 2 days, 6 students perform activity for 3 days, 7 students for 4 days, 5 for 5 days, 5 students for 6 days and just 3 students perform Vigorous Activity for 7 days.

Table no. 4: Distribution of time duration for Students performing Vigorous Physical Activity

Sr. No.	Time Duration	No. of Students
1	30 minutes	10
2	1 hour	16
3	1 hour and 30 minutes	3
4	2 hours	5
5	Do not know	4

There were total 38 out 100 students who perform Vigorous Physical Activity. From these 38 students 10 students perform Activity for 30 minutes, 16 students for 1 hour, 3 students perform activity for 1 hour and 30 minutes, 5 perform for 2 hours and 4 students are those who do not know for how much time they perform Physical Activity.

Table no. 5: Distribution of days for Students performing Moderate Physical Activity

Sr. No.	Days	No. of Students
1	1 day	2
2	2 days	7
3	3 days	6
4	4 days	10
5	5 days	5
6	6 days	4
7	7 days	3

There were total 37 out 100 students who perform Vigorous Physical Activity from these students 2 students were those who perform this activity for 1 day, 7 perform for 2 days, 6 students perform activity for 3 days, 10 students for 4 days, 5 students for 5 days, 4 students for 6 days and just 3 students perform Vigorous Activity for 7 days.

Table 6: Distribution of time duration for Students performing Moderate Physical Activity

Sr. No.	Time Duration	No. of Students
1	30 minutes	14
2	1 hour	10
3	1 hour and 30 minutes	3
4	2 hours	4
5	Do not know	6

There were total 37 out 100 students who perform Vigorous Physical Activity. From these 37 students 14 students perform Activity for 30 minutes, 10 students for 1 hour, 3 students perform activity for 1 hour and 30 minutes, 4 perform for 2 hours and 6 students are those who do not know for how much time they perform Physical Activity.

DISCUSSION:

Medical student stress is a growing concern within Pakistani medical education. This concern is justified not only from a psychological perspective but also an academic one as students with higher levels of stress are more likely to develop academic deficiencies, which may ultimately have negative consequences on patient care**[21]**. Previous work has also suggested that personal health habits, such as physical exercise, tend to be compromised as the academic year progresses and as stress continues to mount**[21]**. And many a studies have investigated the relationship between academic performance and Physical activity**[21]**. A study was conducted by Alexander N. Slade and Susan M. Kies At University of Illinois at Urbana-Champaign, Urbana, USA **[21]** to assess the relationship between academic performance and recreation use among first-year medical students from 2006 to 2010. The Study shows that the Exam performance was relatively constant throughout the year, with the average exam score for M-1 students falling between 76% and 84% throughout the year however the mild use of CR Almost 2 to 3 visits in 21 day span before examinations improve the exam score by 0.16 percentage points.

In my study I found that those students who perform moderate physical activity have a good effect on there academic performance and have a 37.84% failure rate as compare to those students who perform vigorous physical activity or no physical activity are not performing good in their academic career and have a failure rate of 50% and 40% respectively.

A study conducted among Chinese and American students by DJ Irwin in Finland, estimated that women were significantly more active (52.7%) than males (35.7 %)**[22]**.

Another study conducted in Spain to determine the association of physical fitness and obesity with academic achievement among school-aged children between the ages of 9 and 11 years in 2010.[23]. For boys and girls, good cardiorespiratory and speed/agility fitness levels were each positively associated with high academic achievement after controlling for con founders (OR = 3.06; 95% CI, 1.35–6.91 and OR = 4.25; 95% CI, 1.91–9.44, respectively). The effect sizes were greater for boys than girls.

In my study I found that Boys who perform Moderate Physical Activity have low failure rate as compare to the Girls of same age who also perform as the effect of Moderate Activity is more pronounced in boys in which Failure rate drop from 50% to 32% while in girls it drop from 45 to 38%.

Another study conducted at U.S college to see the effect of Exercise on Academic Performance among Nursing and Kinesiology Students by using Leisure and Physical Activity (LPA) to assess a college student's sedentary/non-sedentary activity, class rank, gender, and grade point average. The result showed that the students with higher levels of aerobic activity being associated with higher grade point averages. Those with higher weightlifting activity being associated with lower grade point averages.
My study result is very much similar to these previous researches in which i found that the students who perform moderate physical activity have a good effect on there academic performance and have a low failure rate as compare to those

students who perform vigorous physical activity or no physical activity.

Another cross-sectional study was conducted among 399 medical and public health students of Isfahan University of Medical Sciences, Iran. Their Physical activity was evaluated by standard questionnaire in four fields containing job, transport, work, and leisure time at home.Regarding moderate physical activity, 48.6% of students were active and the rest were inactive. Regarding severe physical activity, 32.6% were active and the rest were inactive. Mean number of hours for moderate activity per day was 1.96 ± 0.19 h/day in the last 7 days. There was a significant relationship between physical activity and sex and students' course of study.[24]

In my study I found that those students who perform Moderate Physical Activity 60 minutes per day for 7 days have a high Academic Score and have a low Failure rate as compare to those who perform less than 60 min or 3 to 4 days per week.

Our study has certain limitation While we believe that most medical students use CR for exercise, it is possible that some students utilize the facilities for other purposes. Additionally, even though the fees required to use Exercise facilities are required of all students, individuals may choose to exercise in other settings, including private fitness clubs or at home. We also only collected our data from a single state medical institution in Gujranwala; that is, our findings might not reflect the relationship between academic performance and recreation use among medical students in different geographical locations and in private settings. Additionally, there are slight changes to the overall makeup of the students and curriculum (e.g., faculty turnover and testing schedule changes) that change annually, and our findings may have differed were the data collected more recently. Finally, given different training models and exam schedules across different institutions and training programs, it is difficult to generalize these findings to other types of students (including those in other health professions).

While the research literature cannot yet fully explain why fit students may perform better on standardized tests, there are potential mechanisms that may help explain this relationship. First, a relationship between fitness and academic achievement may reflect the achievement orientation of motivated students. That is, motivated students may strive for achievement in both academics and physical fitness or athletics. Second, a student's physical fitness may reflect better overall health—better nutrition, physical activity, and/or weight status—and good health may contribute positively to academic achievement.**[25]**

CONCLUSION:

Physical activity is beneficial to the students, especially in their academic performance. Thus medical college authorities should recognize the positive aspects of physical activity on students and encourage them to participate in various extra-curricular activities. But these activities should be at a moderate level and not at the expense of their studies.

RECOMMENDATIONS:

Physical activity is beneficial to the students, especially in their academic performance. Thus medical college authorities should recognize the positive aspects of physical activity on students and encourage them to participate in various extra-curricular activities. But these activities should be at a moderate level and not at the expense of their studies.

1. Improve awareness of and access to non-gym-based physical activity opportunities. Living an active lifestyle by integrating physical activity into an individual's daily routine can be an effective way to increase personal fitness.
2. The use of peer support and interactive social groups, such as classes and clubs, can increase engagement in physical activity by giving students the opportunity to be connected to other students and staff members, thereby enabling them to monitor their progress and encouraging them to continue their activities.
3. Encourage community design and development that increase the capacity for walking, bicycling, and other self-powered transportation.

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