

## **A Study on the Relationship of Health Related Fitness to Academic Achievement of College Students of Jammu District**

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### **Abstract**

The purpose of this study was to identify the relationship between physical fitness level and academic achievement in the Govt. Degree colleges of Jammu District. A total of sixty students were selected for the collection of data 150 students aged 18–25 years from two colleges namely Govt. Degree College Paloura and G.G.M. Science College Jammu were selected using a random sampling method. The in respect of health related fitness variables were in numerical form. There were significant difference in the mean value of BMI and academic achievement. There were no significant differences in the mean value of academic achievement of Degree College of boys at Jammu District. The statistical analysis of data revealed that there were significance difference between health, fitness and academic achievement of degree college boys of Jammu District.

**Keywords:** Health related fitness, Physical fitness and Academic achievement.

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### **Introduction**

Health is wealth; health is real strength and bliss. This is pivot upon which the well-being of the individual rotates, health is the base upon which the integrated personality with physical, mental, intellectual, moral, social and spiritual aspects stands. This is a means to spiritual development. According to Kamalesh, today's education is not mentally a vast area of mental acrobatics but also a source of physical activity that leads to all round perfection of an individual, modern thinker in education now a days, emphasis that the best individual is one who is physically fit, mentally sound and sharp, emotionally balanced and socially well adjusted.

Man is primarily distinguished from the lower forms of life because of his educable ability, he is gifted with intelligence and he always wants to improve, this improvement is possible through education. Education is necessary for social and national development, this is because education is the process of human resources development, cultural transfer and wisdom establishment from the society. In educational process students should be provided only general knowledge but they should also be promoted to grow physically, emotionally, socially and intelligently. Education in health can be traced to the dawn of civilization, there is interdependence of various dimensions of health, physical, mental and social, physical fitness is one of the aspects upon which the whole personality rotates. The ailing and aching body saps the zest of life; the ill feeling of sensations lessens the zest of activity, economic development and spiritual uplift.

According to World Health Organization health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. The fact is that health cannot be defined, it can only be described and even that is often wasteful, so we shall be brief, the rich man's blessing, the poor man's wealth is a description of health that has come down from the seventeenth century, and again, it will serve as a prototype for all the rest. A person can have a healthy attitude towards life despite pain and physical handicaps, health and disease are not complete opposites as anatomy. There are degrees of each, there is no such thing as perfect health and it is not a valid or useful ideal towards which to work. Some existing or incipient physical or emotional flaws. The world's greatest thinkers have stressed upon the importance of physical fitness in living beings to ensure a procedure and meaningful life.

### **Review of Literature**

**Adebayo (2008)** recently, continued this research by surveying 147 students who were accepted to a public university's conditional acceptance program. Similar to previous findings, the results indicated that high school grade point average was one of the best predictors of first semester college grade point average ( $r = 0.36$ ,  $p < 0.01$ ). Students who performed well in high school were more likely to perform well in college.

**Hannon, et.al., (2005)** conducted a study on physical conditions associated with an increased body mass index (BMI) such as sleep apnea, gastrointestinal disorders, musculoskeletal

problems, metabolic syndrome, asthma and type II diabetes. Two of the most prevalent conditions related to weight are type II diabetes and asthma. Type II diabetes has been previously considered an adult illness, but due to higher obesity levels in children, diabetes occurrences are increasing for this group as well. There is a lack of clarity on how obesity and asthma are related, but higher rates of asthma are associated with higher BMIs. In a study done on asthmatic symptoms, school-girls were more likely to develop wheezing if they were obese by the age of eleven. These disorders associated with obesity can reduce the general functioning of students and have implications for students' achievement and attendance. Physical concerns due to obesity can cause absence from a class or from school. Students learn more when they are in class receiving instruction. Absence can result in students learning less content which can negatively impact their academic performance.

**Holttinen (2013)** says that wind and solar generation may consequently be difficult to predict over some time scales. Large penetrations of variable generation (VG) lead to increases in the variability and uncertainty in the system's generation output, driving a need for greater flexibility. This flexibility will need to come either from flexible generation technologies or from alternative sources of flexibility such as flexible demand and storage. This article will discuss the additional flexibility needs introduced by variable generation from wind and solar power and will describe general approaches to analyzing the need for and provision of additional flexibility in the power system in both the operational and planning time frames.

**Camara, et.al., (2000)** tells that academic factors, specifically prior academic achievement, can help predict the future academic success of a student in higher education. There have been several studies that discuss the effect that high school grade point average has on academic success in higher education. The consensus of this literature is that students with high aptitude in high school have higher grade-point averages in college.

**Granello (1999)** stated that the college campuses wellness is increasingly used to describe programs that promote student health and well-being. These programs promote the concept that an individual's wellness goes beyond the physical to encompass multiple factors that all contribute to overall functioning. In concept, students who have a high level of overall functioning are more likely to have success in the classroom.

## **Objectives**

1. To study the relationship of health related fitness to academic achievement of Govt. Degree College Boys of Jammu district.

## **Hypothesis**

1. There may be significant relationship between health related fitness to academic achievement of college students of Jammu district.

## **Methodology**

The purpose of the study was to survey the relationship of health related fitness to academic achievement of the degree college students. To pursue this study the investigator adopted the following procedures. In order to find out the minimal level of physical fitness of the college students he adopted the following tests.

### **Cardiovascular strength**

#### **Muscular strength**

1. Upper body – pull ups
2. Abdominal – Sit ups

#### **Muscular flexibility**

#### **BMI (Body mass index)**

At the initial stage the researcher made a visit to the colleges, principles and took permission to collect data from the students. Then the researcher made personal visits to all those colleges selected as randomly in colleges. The researcher checked the physical fitness of the college students in a systematic manner and then he collected the information from the students.

#### **Academic Achievement**

The data in respect of academic achievement was computed by percentage of marks scored by the subjects in the qualifying examination. Percentage of marks, for e.g. 50 % the data sheet was prepared by the researcher with the consultation of guide. Sums of 150 students were selected from two Govt. Colleges. The investigator was able to collect the data

from these two college students. Four simple physical fitness tests of normal health were administered on success / failure basis. Their reliability is as follows.

### **Cardiovascular Endurance**

#### **Harvard Step Test**

The Harvest Step Test is another test of the same general type as the Tuttle pulse ratio test; this test was originally constructed for college men following are instructions for its administration. The subject steps up and down 30 times a minute on a bench 20 inches high, each time, the subject should step all the war upon the bench with the body erect, stepping is done in four counts, as far as Tuttle pulse ratio test. However he may lead off with the same foot each time or change feet as he desires, so long as the four count step is maintained.

- a) The stepping exercise continues for exactly five minutes, unless the subject is forced to step sooner due to exhaustion. In either case, the duration of the exercise in seconds is recorded; the maximum number of seconds is 300 far for the full five minute period.
- b) Immediately after completing the exercise, the subject sits on a chair, the pulse is counted 1 to 1 1/2, 2 to 2 1/2 and 3 to 3 1/2 minutes after the stepping cases.
- c) A Physical Efficiency Index (PEI) is computed utilizing the following formula. Duration of exercise in seconds

$$PEI = \frac{\text{Duration of exercise in seconds}}{2 \times \text{sums of pulse counts in recovery}} \times 100$$

To illustrate the subject completed the exercise period, 300 seconds, his recovery period pulse counts were 75 for 1 to 1 1/2 minutes, so far 2 to 2 1/2 minutes and 35 for 3 to 3 1/2 minutes (the sum is 160) substituting in the formula. 30,000

$$PEI = \frac{300}{2 \times 160} \times 100 = 93.75$$

### **Muscular Strength**

- 1. Upper body – Pull ups
- 2. Abdominal – Sit up

## **Pull up test for boys**

### **Procedure**

The boys pull up test is administered from a chinning bar to which preferably rings have been attached, this arrangement permits the wrists to twist naturally as the subject performs the test, and the rings should be high enough from the floor so that the feet of the tallest boy do not touch the floor when performing the test. If this is impossible, it will be necessary for tall individuals to bend their knees in order to touch the feet on the floor in lowering the body to a straight arm hang.

### **Procedure**

The boy's lies on his back, knees straight, feet about 12 inches apart, and hands clasped, behind head. A scorer kneels on the floor and holds the soles of the feet against his knees, pressing firmly; the pupil performs the following movements of many times as possible.

## **Muscular Flexibility**

### **Procedure**

This is one of the physical fitness tests which is used to measure the flexibility of a person. Here is AAHPERD flexibility test the subject stand with bare foot and bend forward without flexing the knees and touches the ground with the tip of his fingers. If the subjects is unable to touch his finger tips to the ground the dispense between the finger tips and ground will be measured and given negative marks.

## **Body Mass Index**

### **Procedure**

To measure BMI, respondents were asked to self report their weight and height, BMI was calculated from these self-reports with the following formula weight in kilograms (height in meters x height in meters). Because BMI values are sensitive to changes in fat distribution and the development of muscle during puberty, we calculated and used BMI z-scores.

### Significance of the study

1. The study may motivate future investigations to undertake more similar studies.
2. The study may help to understand the academic achievement of the college students.
3. This may help giving useful guidance to the concerned authorities and enlighten the students in the colleges.

### RESULTS AND DISCUSSION

The main purpose of the present investigation was to assess the health related fitness to according to achievement of students of Govt. Degree Colleges of Jammu district. To achieve the purpose of the present study (N=150), boys from Govt. Degree Colleges of Jammu District. The subjects drawn were in age group of 18-25 years. The subjects selected for the study were rated as the best of their consistency in performance in achievements. The AAPEHERD test was used for the present study. The data for the study was in the form of numerical scores that was collected by the response of the subjects to the different items of test. The mean academic achievement values were computed from the available data to assess the health related fitness and to academic achievement level of Govt. Degree College of Jammu district.

**Table-1**  
**ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	226.283	1	226.283	25.035	000 <sup>a</sup>
Residual	524.238	58	9.039		
Total	750.521	149			

a – Predictors (constant) MUS FLEX

b – Dependent variable, BMI

**Table-2**  
**Coefficients**

Model	Un Standardized Coefficients		Standardized Coefficients	t	Sig.
	b	Standard Error	Beta		
Constant	25.924	1.002		25.869	000 <sup>a</sup>
MUSFLEX	524.238	58	9.039		

a – Dependent variable: BMI

**Table-3 Excluded Variables**

Model	Sum of Squares	df	Mean Square	F	Sig.
Endurance	.070 <sup>a</sup>	.587	.560	.078	.861
Pull up	.057 <sup>a</sup>	.476	.636	.063	.847
Time	-.188 <sup>a</sup>	-1.720	.081	-.222	.972
Sit ups	-.206 <sup>a</sup>	-1.739	.087	-.224	.827

a – Predictors in the model (constant) MUSFLEX

b – Dependent variable, BMI

The correlation, coefficient value ‘r’ showed a very high positive correlation between academic achievement health related fitness and it was also found relationship was statistically significant subjects related in the present study were between the age group of 18-25 years. It may be fact that the students as they were grown up and mastered might have perceived achievement of studies and health in the right perspective. The subjects have reached the stage of maturity in light and also they are matured enough to understand academic achievement and health related fitness, hence the result of the study.

**Table-4 Correlations**

		Academic	Endurance	Pull up	Time		Muscle Flex	BMI
<b>Academic</b>	Pearson Correlation		**	**	*	**	**	**
<b>Endurance</b>	Pearson Correlation	.372**		**			**	
	Sig(2 Tailed)	.003						
	N	150						
<b>Pull up</b>	Pearson Correlation	.433**	**			**	**	
	Sig(2 Tailed)	.001						
	N	150						
<b>Time</b>	Pearson Correlation	.301**				**		*
	Sig(2 Tailed)	.019						
	N	150						
<b>Sit ups</b>	Pearson Correlation	.333**		**	**		**	**
	Sig(2 Tailed)	.009						
	N	150						
<b>Muscle Flexibility</b>	Pearson Correlation	.381**	**	**		**		**
	Sig(2 Tailed)	.003						
	N	150						
<b>BMI</b>	Pearson Correlation	.312**			*	**	**	
	Sig(2 Tailed)	.015						
	N	150						



## **Significance**

Significance related to endeavor present pull up time, sit up and muscle flexibility, positive relationship. BMI is correlated significantly negative related academic achievement indicating inverse relationship between academic and BMI.

## **Findings**

BMI was to find to be correlated significantly negatively with the time, sit-ups and muscle flexibility, however, BMI was independent of endurance and pushups variables with the time correlation coefficient 2.76 was found to significance. .3371 With the sit-ups correlation coefficient of -311 which was found as significance as .02111 and least with muscle flexibility B.M.I. had correlation of-.59 which was found significant .00 levels. In reference with the BMI was independently of endurance and pull ups and negatively related to time sit ups and muscle flexibility.

## **Regression**

When variables like endurance, pull ups, time sit ups and muscle flexibility were upgraded as BMI through steps were multiple regression following results are obtained. The only variable to entering the equality to predict BMI was muscle flexibility with correlation coefficient of .459 and contributes of 28.91. The regression ANOVA obtained for the model was found to be 25.035 which was found significant at .00 level, further 't' value obtained for constituent and muscle flexibility was also found to be significant at .000 level. The excluded variable in the first step in order of significant were endurance, pull ups, time and sit ups.

## **Limitations**

1. Due to financial limitations and lack of equipment's the investigator administered four simple physical fitness tests to assess the attainment of minimal level of fitness; they are generally taken as health oriented fitness tests.
2. Academic achievement was computed by enquiring the subjects performance in the board and universities examinations, the versions of the subjects was taken as true.
3. The study was conducted on 150 boys were selected from two colleges of Jammu district.

## **Conclusion**

The purpose of the present study by the investigator was to analyse the relationship between health related fitness and academic achievement of students of Degree Colleges, 150 students were selected for the collection of data. Ranging in age between 18-25 years was drawn as subjects. The in respect of health related fitness variables were in numerical form. There were significant difference in the mean value of BMI and academic achievement. There was no significant difference the mean value of academic achievement of students of Govt. Degree Colleges of Jammu District. Regular participation in physical activity had a significant effect on the improvement and enhancement of physical fitness performance and improved academic achievements. The college participants, who took part in the regular physical activity had improve their physical fitness and academic achievement as compared to control group. Participation in regular exercises is very important for college students for overall development. There was a strong correlation between academic achievement and physical fitness. It was concluded from the analysis of data that there were significance difference health related fitness and academic achievement of students of degree college boys of Jammu district.

## **Suggestions**

1. Physical fitness Students with a larger sample of subjects may be undertaken as they may yield tangible results.
2. A Study on homogenizes groping of subjects may yield more reliable results.
3. A particular age level of students, for e.g. 25 years, 30 years may be considered for further studies.
4. The study may be repeated using the other standardized test of relationship between health related fitness and academic achievement available.

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