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A Study of Correlation between Physical Fitness & BMI on Academic Performance

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Introduction :-

Physically active youth may be less likely than physically inactive youth to experience chronic disease risk factors and to become obese, and they may be more likely to remain active throughout adolescence and possibly into adulthood. Physical activity also has beneficial influences on behavior and cognitive functioning that may result in improving students' academic achievement.

For many years in India higher education examinations have been accepted as an important aspect of the educational system. Examinations have been used as the main basis for judging a student's ability and also as a means of selection for educational advancement and employment. . Although students may be of comparable abilities, learn in same environment and follow the same syllabus, their academic performance still vary. At this stage students are trying to set success with maximum efforts. For the efficient academic practice, concentration, attitude, social behavior, personal behavior, adaptations are individual influencing factors. The reported study concludes that these factors are directly positively influenced by physical fitness. Thus physical fitness plays important role in day to day life and social as well as person all behavior. Physical fitness of an individual strongly effects on concentration and stamina of work.

Hence one of the most important factors allocations the academic result of the students is his or her health physical fitness has important role for the stamina and concentration of academic study. Body Mass Index (BMI) is also reliable indicator of health and nutritional status of human beings. Body Mass index also known as the "Quetlet's Index" expresses the relationship between the two most widely used parameters to monitor linear and ponderal growth, viz, height and weight. BMI, does not measure fat directly, but research has shown that BMI correlates to direct measures of body fat, such as by underwater weighing and dual energy, X-ray absorptionmetry. So it was decided to find out the relationship between physical fitness & BMI with academic performance.

Method:-

120 students from XIth Science were randomly selected for this study. The students were grouped on the basis of their academic performance i.e. Marks in annual examination.

Different physical fitness factor test were conducted to measure the level of physical fitness. No norms were required for analysis of the said test as score itself was comprises the following factors.

* Cardiovascular Endurance
* Muscular Endurance
* Muscular Strength.
* Flexibility

The above components were measured by the following test-items

* AAHPERD sit-ups (flexed-leg) test were used to measure strength and endurance of the abdominal muscles.
* PACER push-up test were used to measure upper body muscular strength.
* AAHPERD standing broad Jump test were used to measure explosive power of the legs.
* AAHPERD Shuttle Run test were used to measure speed and agility.
* AAHPERD 50 yard Dash test was used to speed cardiovascular Endurance.
* ACSM Sit and Reach test were used to Measure flexibility of the lower back and hamstring muscles.
* Coopers 9 min run and walk test were used to measure maximal function and endurance of the cardio-respiratory system.

The BMI was measured on the basis of their height & weight. After collection of the data, mean of BMI was calculated for each group of students.

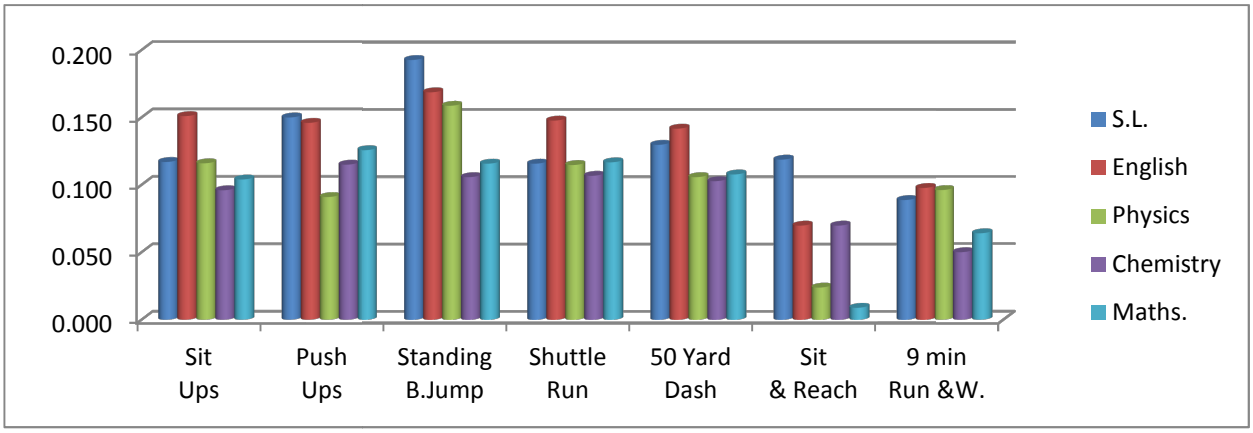
Analysis and Interpretation:-

Descriptive statistics were calculated for all physical fitness and BMI index with academic variables across the sample. Inter correlations were computed to examine the relationship among the physical fitness components and BMI index with academic performance scores. Data was analyzed to verify results. As total 120 Boys calculated to total of 120 (N= 120) students were tested for the study. For statistical significance, an alpha level of P 0.195 at 5 % & P 0.254 at 1% was used.

Table 01: Inter correlation Analysis of Physical fitness variables with academic performance variables.

Inter Co relational Analysis of Academic Performance with Physical Fitness							
	Sit Ups	**Push Ups**	**Standing B.Jump**	**Shuttle Run**	**50 Yard Dash**	**Sit & Reach**	**9 min Run &W.**
S.L.	0.117	0.150	0.193	0.116	0.130	0.119	0.089
English	0.151	0.146	0.169	0.148	0.142	0.070	0.098
Physics	0.116	0.091	0.159	0.115	0.106	0.024	0.096
Chemistry	0.096	0.115	0.106	0.107	0.103	0.070	0.050
Maths.	0.104	0.126	0.116	0.117	0.108	0.009	0.064

Graph 01: Inter correlation Analysis of Phy. Fit. with Aca. Per. variables.



Above given Figure shows Inter correlation of Academic score with Physical fitness score of XI th class students. The correlation of Sit Ups test score with subject English score is higher in the group but not at significant level. Other subject score have very low level correlation with Sit Ups test score. The correlation of Push Ups test score with subject English & SL score is max in group but not at significant level, rest of the subject score showing low level correlation with Sit Ups test score. The score of SL have very close to the significant level correlation with score of Standing Broad Jump test. Other physical fitness test score showing very low level correlation with the entire subject score except the score of English & SL. But this score is also not having significant correlation with physical fitness test score.

Thus there is no effect of physical fitness level with academic performance.

Table -1: Mean of BMI and academic performance of students.

Academic Performance	Mean of BMI
50-60	22.80
60-70	23.20
70-80	23.57
80-90	22.67
90-100	23.06

From above given score it becomes clear that, in spite of their academic performance of students were found to have BMI in the range of 22.67 to 23.57. The BMI level of the students having 50 to 60 percentages of marks is close to the students having 80 to 90 percentages of marks. BMI level of students having 60 to 70 & 70 to 80 percentages of marks is close to the students having 90 to 100 percentages of marks. Here we don't found any increasing or decreasing level of BMI with the score of Academic Performance. Thus we conclude that, there is no effect of BMI level of the students on Academic Performance.

Conclusion:-

The findings of the study have supported to previous research which have indicated a negative effect on Academic Performance of Physical Fitness and BMI. Some studies that show no significant relationship or a very weak relationship between student academic performance with increased physical activity levels (Taras, 2005), although that same evidence suggests that although increasing time spent on physical activity does not adversely affect academic performance (Trost & van der Mars, 2010). The weak correlation often observed between physical activity and academic performance measures may be also due to the short-term nature of many studies (Murray, Low, Hollis, Cross, & Davis, 2007). Increases in physical activity over longer periods of time may be more likely to enhance academic achievement (Taras, 2005). Taras also proposes that it is possible that the positive effects of increased physical activity exist primarily in certain sub-populations of students such as those students who are low-achieving or who have lower levels of physical fitness.

There are some positive resulted studies done in the past. Physical activity has a positive effect on health outcomes, both physical and psychological (American Heart Association, 2010; Siegel, 2006), and evidence suggests that it may have a positive effect on academic performance (Trudeau & Shephard, 2008). However, there are barriers to increasing physical activity in schools. First, gaining administrative and government support for school health programs can be difficult considering the pressure that local leaders face to improve academic performance on standardized tests. (Symons, 1997) physical education programs are not often seen as a primary concern to these administrators, since many believe that student health is not of concern to schools but should be an issue that parents address (Symons, 1997). Second, budget constraints are frequently cited as reasons for cut backs on health and physical education, especially in low-income areas (Symons, 1997).

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