



## A Comparative Study of Selected Physical Fitness Variables on the Academic Achievement of College Students

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### Abstract

The purpose of the study was to analyse on the relationship between selected physical fitness variables on the academic achievement of college students. For the purpose of this study, 1500 subjects were selected randomly from the colleges affiliated to Madurai Kamaraj University. To find out the (independent variables) body composition of the students skinfold caliber were used and to find out the flexibility of the students-sit and reach box were used and the data were collected by the respective tests administrations. For the analyses of the academic achievement (dependent variables) of the students, final semester marks statements (consolidated) were to be collected. To find out the relationship between variable and independent variables, Pearson product moment correlation was used. The computation of multiple regressions was also used to predict the independent variable from a set of predictors. Forward selection method of multiple regressions was used to find out the predictor variable that has the highest correlation with the criterion variable was entered into the equation first. The remaining variables were entered into the equation depending on the contribution of each predictor. The regression equation for the prediction of achievement with physical fitness variables includes flexibility, body composition. As the multiple correlation on achievement with the combined effect of these independent variables was highly significant, it was apparent that the obtained regression equation has a high predictive validity. Thus, this equation may be successfully utilized for the improvement of achievement of college students.

**Keywords:** Physical Fitness, Academic Achievement, College Students, Prediction.

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### Introduction

The youth are the future of India. Particularly the educated youth are going to be the “pillars” of the future India. The great personalities like Vivekananda and Dr. Abdul kalam have focal faith in the potentiality of the youth. It became imperative to create a youngster who is strong in body, mind and intellectual capacity. If one is strong in these three aspects, he will excel in his life and he will be an asset to our nation. But it was astonishing to note that today’s youth was lacking behind in these aspects without having an awareness about the values and significance of the said factors. Modern youth has spoiled their health and mind by involving in unnecessary and unwanted habits that were not conducive to the synchronized development of the said factors. The researcher hoped that a transformation could be brought out by creating an awareness about the values of healthy body and the intellectual capacity after assessing the present condition of the subjects.

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### Statement of the problem

The purpose of the study was to analyse on the relationship between selected physical fitness variables on the academic achievement of college students.

### Hypothesis

There would be a strong relationship between physical fitness variables such as body composition, flexibility on the academic achievement of college students.

### Methodology

For the purpose of this study, 1500 subjects were selected randomly from the colleges affiliated to Madurai Kamaraj University. To find out the (independent variables) body composition of the students skinfold caliber were used and to find out the flexibility of the students-sit and reach box were used and the data were collected by the respective tests administrations. For the analyses of the academic achievement (dependent variables) of the students, final semester marks statements (consolidated) were to be collected. To find out the relationship between variable and independent variables, Pearson product moment correlation was used. The computation of multiple regressions was also used to

predict the independent variable from a set of predictors. Forward selection method of multiple regressions was used to find out the predictor variable that has the highest correlation with the criterion variable was entered into the equation first. The remaining variables were entered into the equation depending on the contribution of each

predictor.

**Analysis and Interpretation of the Data**

It was also evident from the table I that there was significant relationship between achievement and flexibility and body composition of college students in each variable separately.

**Table I.** Zero Order Correlation Matrix for Selected Variables of College Students

Variables	Achievement	Body Composition	Flexibility
<b>Achievement</b>	1.000	0.071**	-0.102**
<b>Body Composition</b>	0.071**	1.000	0.023
<b>Flexibility</b>	-0.102**	0.023	1.000

Multiple correlation was computed by forward selection method on the data obtained for the college

students and the results were presented in table II.

**Table – II.** Multiple Correlation Co-efficient for the Predictors of Achievement in Physical Fitness Variables of College Students

Model	R	R Square	Adjusted R Square	Change Statistics			
				R Square Change	df1	df2	F-Change values
1	.102a	0.010	0.010	0.010	1	1498	15.882*
2	.126b	0.016	0.015	0.006	2	1497	12.076*
a. Predictors: (Constant), Flexibility							
b. Predictors: (Constant), Flexibility, Body composition							

\*Significant at 0.05 level

From the table II, it was found that the multiple correlation coefficient for predictors such as flexibility and body composition is 0.126 which produced the highest multiple correlation with achievement of college students. R square values showed that the percentage of contribution of predictors to the achievement (dependent variable) in the following order:

1. About 1% of the variation in the achievement was explained by the regression model with one predictor flexibility.

2. About 1.6% of the variation in the achievement was explained by the regression model with two predictors such as flexibility and body composition. An additional 0.6% of the variance in the achievement was contributed by body composition.

Multiple regression equation was computed and the results were presented in table III.

**Table – III.** Regression Co-efficients for the Predictors of Achievement in Physical Fitness Variables of College Students

Model	Model	Unstandardized Coefficients		Standardized Coefficients	
		B	Std. Error	Beta	't' value
1	(Constant)	71.456	2.118		33.732*
	Flexibility	-0.208	0.052	-0.102	-3.985*
2	(Constant)	67.997	2.434		27.932*
	Flexibility	-0.212	0.052	-0.104	-4.061*
	Body Composition	0.020	0.007	0.073	2.862*

\*Significant at 0.05 level.

From the table III, the following regression equations were derived for college students with dependent variable.

**1. Regression Equation in obtained scores form ( $X_c$ )**

$$X_c = (-0.212) X_1 + 0.02 X_2 + 67.997$$

Where,  $X_c$  = Achievement,

$X_1$  = Flexibility

$X_2$  = Body composition

**2. Regression Equation in standard scores form ( $Z_c$ )**

$$Z_c = (-0.104) Z_1 + 0.073 Z_2$$

Where,  $Z_c$  = Achievement,

$Z_1$  = Flexibility

$Z_2$  = Body composition

The regression equation for the prediction of achievement of college students included flexibility and body composition. As the multiple correlation on achievement with the combined effect of these independent variables was highly significant, it was apparent that the obtained regression equation has a high predictive validity. Thus, this equation may be successfully utilized to improve the achievement of college students.

**Conclusions**

From the analysis of the data, the following conclusions were drawn:

The regression equation for the prediction of achievement with physical fitness variables includes flexibility, body composition. As the multiple correlation on achievement with the combined effect of these independent variables was highly significant, it was apparent that the obtained regression equation has a high predictive validity. Thus, this equation may be successfully utilized for the improvement of achievement of college students.

Thus, the results of the study clearly points out that the performance of achievement was based on flexibility, body composition. The reason may be due to the fact that flexibility was the prime factor for academic

achievement. Rigid approach towards academic would purely result in failure. On the contrary the student must be flexible enough in his/her approach or attitude towards academics. Physical flexibility paved the path for setting correct attitude towards studies. A rigid body can be a sure synonym to laziness. Rigidity can also mean lack of exertion. Supple body is the right vessel to hold a supple mind, a reservoir of energy required for academic excellence. For ages, the need of physical activity was emphasized because physical exercises influence in an individual in a new vigor and thus a new life.

In the hypothesized that there would be a strong relationship between academic achievement and health related physical fitness variables such as body composition and flexibility of the college students. The results of the study revealed that there was significant relationship between academic achievement and physical fitness variables (flexibility and body composition) Further, the regression equation for the prediction of academic achievement of college students includes flexibility, body composition. Hence, the researcher's hypothesis was partially accepted.

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