



PHYSIOLOGICAL VARIABLES AS PREDICTOR OF PLAYING ABILITY OF MALE BASKETBALL PLAYERS

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ABSTRACT

Background: The objective of the study was physiological variables as predictor of playing ability of national male basketball players.

Method: For the purpose of study, twenty male National basketball players were selected. Basketball playing ability was selected as a dependent variable and physiological was considered as Independent Variable. The basketball playing ability was measured by judges rating and physiological variable were measured by physiological kit. To find out the significant relationship Pearson's Product Moment correlation and to find out the joint contribution multiple correlations was used and to find out prediction multiple regression equation was used. The level of significance was set at .05 level.

Results: Basketball performance was found significantly correlated with Peak Flow Rate, Resting Heart Rate, at 0.05 level of significance and multiple correlation to Peak Flow Rate, Resting Heart Rate, Systolic Blood Pressure, Diastolic Blood Pressure and Body mass index are 0.788 and regression equation $Y = 26.407 - .181(\text{Resting Heart Rate}) + .015(\text{Peak Flow Rate})$.

KEYWORDS: physiological variables, Basketball playing, Peak Flow Rate, Systolic Blood Pressure.

INTRODUCTION :

Basketball, extremely popular around the world, is a court game played by two teams of five players each. The object is to put a ball through a hoop, or basket, and thus score more points than the opposing team.

Physiological variables such as cardiovascular

efficiency, body fat percentage, pulse rate, blood pressure, vital capacity and others should be given due weightage at the time of selecting basketball players. Cardio respiratory endurance is considered as one of the important variable for efficient performance in basketball game because a basketball player has to make nonstop continuous movement during a competition. Cardio respiratory endurance enables a person to perform for a prolonged period of time without undue fatigue with the help of oxygen which is collected, transported and utilized by lungs, blood and muscles respectively. Physical activity of any nature is directly related to energy supplying system which in turn is the cardio respiratory endurance of an individual.

OBJECTIVE OF THE STUDY

The objective of the study was physiological variables as predictor of playing ability of national male basketball players.

METHODOLOGY

Selection of Subjects

For the purpose of study, twenty young male Basketball players of national level belonging to the age level of 18 to 25 years from Varanasi region were selected as the subject for the study.

CRITERION MEASURES

1. Blood Pressure was measured by Stethoscope and sphygmomanometer and recorded in mm/Hg.
2. Resting Heart rate was measured by Stop watch and recorded in Heart beats/minute.
3. Peak flow rate was measured by peak flow metre and recorded in liter/minute.
4. Body mass index was measured by formula (weight/height²) and recorded in kg/m².

STATISTICAL ANALYSIS

1. To find out correlation between dependent variable (Basketball Playing Ability) and independent variables (Physiological Variables), Pearson's

Product Moment method of correlation was used.

2.To find out joint contribution of independent variables (Physiological Variables) in predicting dependent variable (Basketball Playing Ability), Multiple Correlation was used.

3.For predicting dependent variable (Basketball Playing Ability) on the basis of independent variables (Physiological Variables), multiple regression equation was used.

FINDINGS

The data was analyzed using product moment correlation to find out relationship of selected Physiological Variables to basketball performance. The results pertaining to the relationship are presented in Table no-1.

TABLE-1
Relationship of Physiological Variables to Basketball Playing Ability

Variables	Correlation coefficients
Systolic Blood Pressure	-.143
Diastolic Blood Pressure	.068
Peak flow rate	.666*
Resting Heart rate	-.716*
Body mass index	-.309

Significant at .05 levels

$r_{0.05} (18) = 0.443$

Table -1 revealed that Basketball Performance was found significantly correlated with Resting Heart rate, Peak flow rate as the correlation coefficient values (-.716, 666,) were found higher than the tabulated value at 0.05 level of significance. Basketball Performance was found not significantly with Systolic Blood Pressure, Diastolic Blood Pressure and Body mass index as the correlation coefficient values were found lower than the tabulated value at 0.05 level of significance.

TABLE-2
Combined Contribution of Physiological Variables to Basketball playing ability

Dependent Variables	Independent Variables	Coefficient of Multiple Correlation
Basketball Playing Ability	Systolic Blood Pressure	.788*
	Diastolic Blood Pressure	
	Resting Heart rate	
	Peak flow rate	
	Body mass index	

Significant at .05 levels

$r_{0.05} (14) = 0.513$

Table-2 indicates significant relationship between criterion variable (Basketball Playing Ability) and independent variables (Physiological Variables) as coefficient of multiple correlations 0.788 is higher than the tabulated value at 0.05 level of significance.

TABLE-3
Model Summary

R square	Adjusted R square	Standard Error
.621	.576	1.50

The above table-3 shows that Adjusted R Square (.576) as predictor was included, which means that 57.6% of the variance in the performance of Basketball player was associated with changes in the Physiological Variables.

TABLE-4
Analysis of Variance for the Regression

	Sum of Square	df	Mean Square	F	Significant
Regression	62.823	2	31.412	13.915*	.000
Residual	38.377	17	2.257		
Total	101.200	19	33.669		

*** Significant at .05 level**
F_{0.05} (2, 17) =3.59

Finding of table-4 revealed that developed regression model is significant for prediction of criterion variable and model can be used for further prediction, as value of 'F'(13.915) was found significant at 0.05 level of significance.

MULTIPLE REGRESSION ANALYSIS

The multiple regression equation for predicting the basketball performance on the basis of relative contribution of two Physiological Variables resulted in the following-

Equation:

$$Y = 26.407 - .181(\text{Resting Heart Rate}) + .015(\text{Peak Flow Rate})$$

DISCUSSION

The findings of the statistical analysis have shown dominant role of selected variables for the Male Basketball players in terms of predictor of Basketball performance. From Physiological Variables Peak Flow Rate, Resting Heart Rate was found to be significant in Basketball performance of Male Basketball players. Peak Flow Rate, Resting Heart Rate is determinant factor to basketball playing ability. The statistical analysis of the data has clearly indicated that those selected Physiological Variables which were not significantly related to Male Basketball performance i.e. Systolic Blood Pressure, Diastolic Blood Pressure and Body mass index. But in relation to multiple correlations, a significant multiple correlation coefficients were found between Physiological Variables and Male Basketball performance.

In equation Peak Flow Rate, Resting Heart Rate could provide a reasonably good estimation of basketball performance of male basketball player.

CONCLUSION

In basketball playing ability Peak Flow Rate, Resting Heart Rate, were found significant with Physiological Variables. Multiple correlation coefficients are 0.788.

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