PREDICTION OF PERFORMANCE OF FEMALE BASKETBALL PLAYERS ON THE BASIS OF ANTHROPOMETRIC VARIABLES

Isha Verma and Sanjay Kumar Prajapati

ABSTRACT :

Background: The objective of the study was to prediction of female basketball performance on the basis of anthropometric variables.
Method: For the purpose of study, twenty female basketball players were selected. Basketball performance was selected as a dependent variable and Anthropometry was considered as Independent Variable. The Basketball performance was measured by Knox Basketball Test and anthropometric variables were measured by anthropometrical kit. To find out the significant relationship Pearson's Product Moment correlation and the computation of multiple regressions was also used for prediction of Basketball performance. The level of significance was set at 0.05 levels.
Results: Basketball performance was found significantly correlated with Height, Weight, Arm length and Leg Length at 0.05 level of significance and multiple correlations to Height, Weight, Arm length, Leg length, Calf Girth and Waist to Hip Ratio are 0.815.

KEYWORDS :basis of anthropometric variables , female basketball players,Basketball performance .

INTRODUCTION

Basketball is a game of skill. But it's also a game of athletic ability and movement. To be a good player, not only do you have to know the game and have good basketball skills, but you also have to be extremely agile. Improving your ability to move quickly around the court and you'll be a better player.

Basketball is an athletic game involving its participants in a range of demanding motor skills and anthropometrical characteristics.

Anthropometrical variables play a dominant role especially at higher level of sports competitions. The scholar is of opinion that height, arm length, weight, leg length, calf girth, may be basic pre-requisites for attaining top-level performance in Basketball.

The study of human physical measurements is dealt by another science Anthropometry, which has wide application as one of the essential parameters constituting the selective diagnostics of any game or sport. The study of 'Body types' has a significant place in the field of sports. Anthropometrical indices aided in evaluating potentiality for athletic performances.

OBJECTIVE OF THE STUDY

The objective of the study was to prediction of performance of female basketball players on the basis of anthropometrical variables.

METHODOLOGY
Selection of Subjects

For the purpose of study, twenty young women basketball players belonging to the age level of 18 to 25 years in tournament selected as the subject for the study.

CRITERION MEASURES

1. Height was measured by Stadiometer and recorded in centimetre.
2. Weight was measured by digital weighing machine and recorded in kilogram.
3. Leg length was measured by steel tape and recorded

in centimetre.
4. Arm length was measured by steel tape and recorded in centimetre
5. Calf girth was measured by steel tape and recorded in centimetre.
6. Waist to Hip Ratio measured by formula and recorded in centimetre

STATISTICAL ANALYSIS

The present study consists of one dependent variable, namely performance of basketball players and six independent variables (anthropometric variables). Statistical analysis of collected data as explained below. To determine the relationship between dependent variable and independent variable Pearson product moment correlation was used. The computation of multiple regressions was also used. In multiple regressions, a criterion variable was predicted from a set of predictors. Stepwise selection method of multiple regressions was used in this study to find out the predictor variable that has the highest correlation with the criterion variables and it is entered into the equation first. The rest variables are entered into the equation depending on the contribution of each predictor. In all the cases 0.05 level of significance was fixed to test the hypothesis.

TABLE- I
MEAN, STANDARD DEVIATION, PEARSON PRODUCT MOMENT AND MULTIPLE CORRELATIONS OF SELECTED ANTHROPOMETRICAL VARIABLES AND PERFORMANCE OF WOMENBASKETBALL PLAYERS

Independent Variables	Mean	Standard Deviation	Pearson r value	R-Value
1. Weight	58.15	12.31	-.579*	
2. Height	167.41	7.57	-.678*	
3. Arm Length	73.55	4.74	-.758*	.815*
4. Leg Length	94.90	4.70	-.546*	
5. Calf Girth	33.92	2.78	-.377	
6. Waist to Hip Ratio	.76	.05	-.083	

*Significant at 0.05 levels with df 18 is 0.443.

The above table showed that the Pearson product moment values between the performance and weight, height, arm length, leg length of women basketball players were greater than the tabulated r value at .05 level of significance. Therefore, it was concluded that there was significant relationship between performance and weight, height, arm length, leg length of women basketball players and there was no significant relationship between performance and calf girth, waist to hip ratio of women basketball players as Pearson product moment values less than the tabulated r value at .05 level of significance. The table above also showed that the multiple correlation (R) value between the performance and the combined effect of weight, height, arm length, leg length calf girth and waist to hip ratio were greater than the tabulated R value at .05 level of confidence. Therefore, it was concluded that there was significant relationship between performance and the combined effect of weight, height, arm length, leg length calf girth and waist to hip ratio of women basketball players.

Pearson Product moment correlation values between the selected physical variables and playing ability were graphically presented in figure.

TABLE II
MULTIPLE CORRELATION COEFFICIENTS FOR THE PREDICTORS
OF PERFORMANCE OF WOMEN BASKETBALL PLAYERS

S. No	Variables (Stepwise Selection)	R	R Square	R Square Change
1	Arm Length	.758	.574	.574
2	Arm Length & Waist to Hip Ratio	.815	.664	.091

From the table II, it was found that the multiple correlation coefficients for predictors such as weight, height, arm length, leg length calf girth is 0.815 which produce highest multiple correlations with basketball performance of women players. R square values showed that the percentage of contribution of predictors to the performance (dependent variable) in the following order.

1. About 57% of the variation in the performance was explained by the regression model with one predictor Arm Length.

2. About 66% of the variation in the playing ability was explained by the regression model with two predictors, Arm Length & Waist to Hip Ratio. An additional 9% of the variance in the playing ability is contributed by Waist to Hip Ratio.

DISCUSSION ON FINDINGS

The findings of the statistical analysis have shown important role of selected variable for the women basketball players in terms of predictor of basketball performance. From anthropometric variables height, weight, arm length and leg length were found to be significant in basketball performance of women basketball players. The statistical analysis of the data has clearly indicated that those selected anthropometric variables which were not significantly related to women basketball performance i.e. Calf Girth and Waist to Hip Ratio.

In relation to multiple correlations, a significant multiple correlation coefficients were found between anthropometric variables and women basketball performance. Basketball playing ability is predicted from arm length and waist to hip ratio as the variables which produce the highest multiple correlations with basketball performance. Obviously these variables need to be given special attention while preparing players for university level competitions. Training schedules should include separate training for variables.

CONCLUSION

In basketball performance Height, Weight, Arm Length and Leg Length were found significant with anthropometric variables. Multiple correlation coefficients are 0.815.

REFERENCES
Goel R.G, (1975) "Encyclopedia of Sports and Games" (New Delhi Vikas Publishing House).

Moontasir A, (1979) "Principal of Basketball" (Bombay: Skande Publication) p. 119

Best, J.W. (1963). Research in education. U.S.A.: Prentice Hall.

Clark, H. H., & Clark, D. H. (1975). Research process in physical education. Englewood cliffs, New Jersey: Prentice Hall, Inc.

Donald K. Mathews (1978), "Measurement in Physical Education", 5th ed. (Philadelphia: W.B., Saunder, Co.).

Barry L. Johnson and Jack K.Nelson (1982) Practical Measurement of /Evaluation in Physical Education (3rd Ed.), (Delhi: Surjeet Publications), 259.

Bayios, I .A, Bergeles, N.K.,Apostolidis N.G, Noutsos K.S and Koskolou, M.D. (2006), "Anthropometric, Body Composition and Somatotype differences of Greek elite female basketball, volleyball and handball players." Journal of Sports Medicine and Physical Fitness; 46(2):271-80.

Swapan K. Dey, Nabanita Kar and Parthasarthi Debray(2010), "Anthropometric, motor ability and physiological Profiles of Indian national club footballers: A comparative study." South African Journal for Research in

Sport, Physical Education and Recreation; 32(1):43-56. 2010, 32(1):43-56.

Hoare, D. G. (2000). Predicting success in junior elite basketball players-the contribution of anthropometic and physiological attributes. Journal of Science and Medicine in Sport, 3(4), 391-405.

Isha Verma