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Research Article

Appraisal of Selected Anthropometric Variables as Prerequisites for Basketball Performance

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ABSTRACT

The need of this study was to investigate and appraise the selected anthropometric variables as prerequisites to Basketball performance. To achieve the objectives of the study, 40 basketball men players from Universities in Tamil Nadu were selected as subjects and the data were collected. The criterion score was the playing ability which was assessed through subjective rating by three basketball coaches. The statistical design of Pearson's product moment correlation was used to find out the relationship between each of the independent variables of selected anthropometric variables. The result of the study showed that anthropometric measurements of the selected variables of arm's length and leg length were a significant relationship with basketball playing ability.

INTRODUCTION

"Evaluation and measurement are universal practices. They reflect man's ever-present curiosity about his environment and his concern about himself."^[1] The process of evaluation in education is a never-ending cycle. In the light of results from judgments made concerning the individual to be educated and the means of teaching him, goals are appraised and restated, and procedures are replanted, and the cycle is repeated.

Measurement and assessment of performance are necessary to determine how well the formulated objectives have been met, how capable the process has been and how good the product is. The results indicate the direction and the rate of change in performance. "In athletics and physical education, as in education and life, the teacher and coach are constantly evaluating and measuring" (Meissner and Meyers, 1940).^[2] The most valid form of evaluation is the use of well-established criteria as a basis for comparisons.

According to Stroup^[3] in a team game like basketball, objective evaluation of performance is not easily possible, and all the abilities of the players cannot be assessed through the assessment of playing skills in competition. Experts through observation evaluate the game performance in basketball, which is subjective. Another method of evaluating the playing ability objectively adopted in basketball is gathering statistical information about the performance of the players during the basketball competitions, and the analysis is carried

out using this data. Although the objective evaluation of the playing abilities in basketball is not easily possible and time consuming, the same is carried out through evaluation of performance in skills through skills tests. It considered essential that the test should be composed of techniques and body movements that are required to be performed during the game if it has to predict the actual match performance of the players. It is understood from research findings that the game performance ability in basketball assessed through expert's ratings was positively related to performance in skills tests. It is established that team scoring high in skills tests is capable of winning a high percentage of competitive matches. Perhaps, it is because of this reason more skills tests have been devised in basketball than in any other sport or game.

Collings and Hooges^[4] said that though basketball is rich in the quantity of developed skills tests, the quality of developed skills tests, the quality of many tests is unsubstantiated by scientific evidence. However, coaches use them as an aid in team selection, as these are designed to measure basketball potential.

Shukla^[5] says that winning laurels at international sports arena has become a prestige issue linked with the political system and as such notions view with others to produce top class athletes for international competitions. For this, research is systematically conducted to identify the factors that help in achieving a level of skill, which a player can attain through proper coaching and evaluation.

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Received: 15th November 2017 Accepted: 25th November 2017 Published: 28th December 2018 Anthropometrical measurement for the assessment of physical status was expanded quite naturally to include consideration of body types and the relation of physique to one's health, immunity from diseases, posture, physical performance, and personality qualities. It soon became known that a single ideal physique was both not practical and unrealistic. Hippocrates first realized that fact and classified human beings according to two basic physiques – long and thin, or short and thick. Kretschmer, the father of recent body or somatotyping, defined three types by adding up an in between and referred to them as asthenic (lean), athletic, and pyknic (heavy).^[6]

Mathew^[7] "anthropometric measurements of the structure of the human body taken at specific sites to give a measure of length, girth, and width."

Studies are conducted on Olympic athletes, and they have revealed that various sports events differ from one another in their skills concern, organizations, equipment, and fitness requirements but also in the typical anatomical structure. To excel in sports, one must possess such typical characteristics of physical structure for the particular sports, which is likely to improve one's performance.^[8]

The body builds, linear and circumferential measurements are employed most frequently. Since they are easily measured and provide useful information concerning both physical growth and physical development. They also provide the basis for many useful devices.^[4]

METHODOLOGY

The basketball playing ability was determined by subjective rating matrixes, such as the individual skills evaluation matrix and individual's contribution to team combination evaluation matrix were prepared, evaluated, and utilized for the measure of criterion variables. The subjective rating was done by the three experts cum coaches in the field of basketball was considered as criterion variable for this study.

A repeated measure research design was used with basketball playing ability as the criterion variable and selected anthropometric, physical fitness, and physiological variables as the predictor variables. In this study, the basketball playing ability was predicted from 100 university-level basketball men players with the help of selected predictor variables such as height, weight, leg length, and arm length. Subjective rating determined the basketball playing ability by three experts and was used as the criterion variable. The backward selection of multiple regression methods was used to determine the prediction equation.^[9]

Analysis and interpretation of the data

The basketball playing ability of the universitylevel basketball men players was predicted from selected anthropometric, as prerequisite for basketball performance, that is, the players playing ability. The selected criterion variables, basketball playing ability were predicted from predictor variables, height, weight, leg length, and arm length. The backward selection of multiple regression methods was used to determine the prediction equation.^[9] In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as appropriate.

Anthropometrical measurement for the assessment of physical status was extended quite naturally to include consideration of body types and the relation of physique to one's fitness, immunity from diseases, posture, physical performance, and personality qualities. It soon became known that a single ideal physique was both impractical and unrealistic. Hippocrates first realized that fact and classified human beings according to two basic physiques – long and thin, or short and thick. Kretschmer, the father of new body or somatotyping, defined three types by adding an in between and referred to them as asthenic (lean), athletic, and pyknic (heavy).^[10]

In Table 1, the Pearson correlation of the criterion variable (basketball playing ability) with the predictor variables is presented in the following order, namely, height, weight, arm length, and leg length. The mean values of the subjects' height were 181.80 with a standard deviation of \pm 7.117; the weight was 71.08 with a standard deviation of \pm 8.441, the arm length was 81.82 with a standard deviation of \pm 3.713 and leg length was 106 with a standard deviation of \pm 4.649.

DISCUSSION ON RELATIONSHIP BETWEEN ANTHROPOMETRIC MEASUREMENTS AND PLAYING ABILITY

In the present study, the selected anthropometric measurements of arm length and leg length were significantly related to basketball playing ability.

The results proved that the selected anthropometric variables, arm length and leg length, were significantly correlated with the basketball playing ability as the obtained "r" values 0.30 and 0.40, respectively, greater than the necessary table "r" value of 0.195 to be significant at 0.05 level. Moreover, there was no significant relationship between basketball playing ability with height and weight of the subjects.

The present study findings supported by Delextrat *et al.*,^[11] Ben *et al.*,^[12] and Metaxas *et al.*,^[13] on the anthropometric characteristics of basketball players with position-wise analysis, a model of selection in male basketball players could be established supported the findings.

Longer length of arms was helpful to the players to cover more area during offence as well as defense at the time of receiving and tackling found that the performance of swimming significantly related to arm's length Nair^[14] supported the result of the present study.

Table 1: Pearson correlation coefficient between criterion and predictor variables

| | PA | HT | WT | ArmL | LegL |
|------|------|------|------|------|------|
| PA | 1.00 | 0.07 | 0.11 | 0.30 | 0.40 |
| HT | 0.07 | 1.00 | 0.50 | 0.53 | 0.52 |
| WT | 0.11 | 0.50 | 1.00 | 0.30 | 0.29 |
| ArmL | 0.30 | 0.53 | 0.30 | 1.00 | 0.46 |
| LegL | 0.40 | 0.52 | 0.29 | 0.46 | 1.00 |

The combined contributions of height, weight, arm length, and leg length to playing ability were significant from the obtained value of multiple correlations; it was concluded that the height, weight, arm length, and leg length together contribute to hockey playing ability (Davidson, 2010).^[15]

CONCLUSIONS

The result of the study showed that anthropometric measurements of the selected variables of arm's length and leg length were a significant relationship with basketball playing ability.

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