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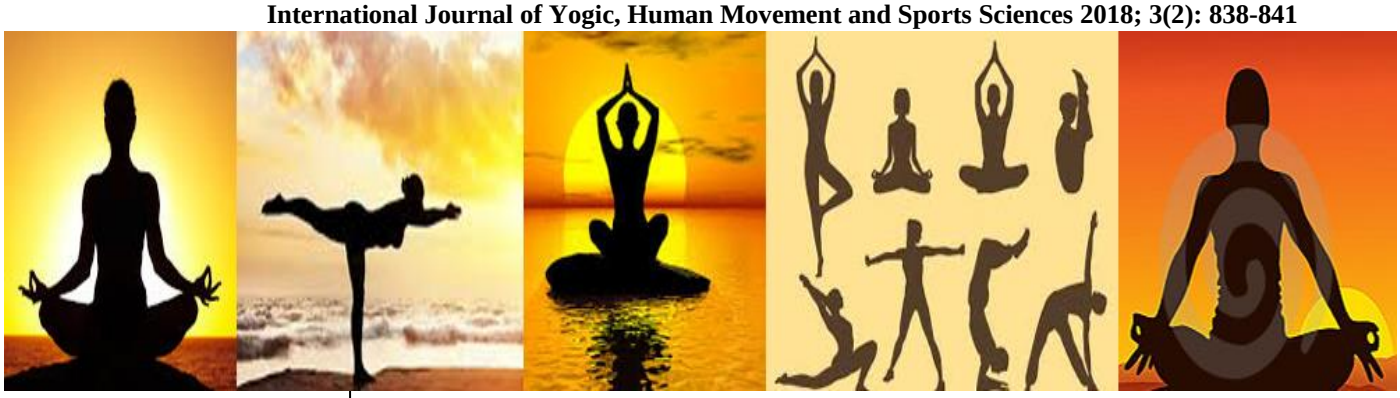

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Role of selected anthropometric measurements in basket ball players field goal performance

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Abstract
Main determination of the study was to discover the Role of Selected Anthropometric Measurements in Basket Ball Players' Field Goal Performance. For this study who has participated at Kuvempu University Intercollegiate Tournament for the year 2016-17 were considered. With the simple random sampling method 60 male Subjects were selected. Anthropometric Variables like Height, Weight, Forearm Girth, Upper arm girth, Chest girth, Thigh girth, Calf girth, Arm length and Leg length and Basket Ball Players' Field Goal speed test were measured. For testing the hypothesis level of significance was 0.05. The Anthropometric Measurements Height, Weight, Forearm Girth, Upper arm girth, Chest girth, Thigh girth, Calf girth, Arm length and Leg length are positively correlated with Basketball playing ability.

Keywords: Anthropometric measurements, basket ball players

Introduction
The game of Basket Ball adopts a means of recreation about a century back has progressed very fast from its original status of a recreational sport, it assumed the position of a minor competitive sport, before the mid of the century at university level and subsequently as a fully fledged competitive sport at international level in the beginning of the second half of the century.
The various actions in Basket Ball are so fast that it is difficult to justify the performance of a player without analyzing it. It is ascertain performance development of players in various factors like skills, physical, physiological, anthropometrical and psychological variables affecting performance. The topmost teams in the world have come up because they have worked hard to reach world level through long term systematic and scientific training. Thus to conclude there are many factors such as physical fitness, anthropometrical factors like height, age and sex, level of skill experience knowledge and understanding competitive instinct and so on that contribute to a Basket Baller's performance.
Anthropometry 'means the measurement of man. Whether living or dead and consists primarily in the measurement of the dimensions of the body. Anthropometry the measurements of man provide scientific methods and observations on the living man and the skeleton. Anthropometry represents the typical and traditional tool of human biology, physical anthropology and axiology.
Relationship between anthropometric measurements and physical fitness. Negro's have significantly longer legs, longer arms and hands, longer feet a wide shoulder girdle and narrower pelvic girdle than Caucasians and therefore they proved better in 50 yards dash and soft ball throw for distance.

Need and Importance of Selected Anthropometric Variables
The physical structure especially the height and arm length have definite and decisive advantage in many games and sports. Similarly, segmental length of individual body parts especially height and arm length are of considerable advantage in certain games like Basket Ball, Cricket and volleyball.

Statement of the Problem
The purpose of the study was to know the Role of Selected Anthropometric Measurements in Basket Ball players' Field Goal performance.

Delimitations

1. The study was delimited to male players.
2. The study was delimited to Kuvempu University intercollegiate Basket Ball players during the Year 2008-09.
3. The study was restricted to the following selected Anthropometric and performance variables only.

Anthropometric Variables

a. Height.
b. Weight.
c. Forearm circumference.
d. Upper arm girth.
e. Chest girth.
f. Thigh girth.
g. Calf girth.
h. Arm length.
i. Leg length.

Hypothesis

It was hypothesized that there might be a significant relationship between Selected Anthropometric Measurements and Basket Ball Field Goal Ability.

Definition and Explanation of Terms

- **Intercollegiate Players:** Players who are selected to represent the college team in the intercollegiate tournament.
- **Anthropometry:** Anthropometry is the science of measuring human body and its part. It is used as an aid to the study of human evaluation and variables.
- **Height:** Height is taken as the maximum distance from the point of vertex on the head to the ground.
- **Weight:** Weight is a composite measure of total body size.
- **Leg Length:** It measures the straight from land mark symphysion to Spherion.
- **Arm Length:** It is the distance between the inferior border of acromion process to the tip of the middle finger.
- **Forearm Length:** It measures the vertical distance from the land mark radiate to stallion radiate.
- **Forearm Circumference:** It is the maximal girth of the forearm when the is held palms up and relaxed.
- **Upper arm Girth:** It is the perimeter distance of the right arm parallel to long axis of the humorous when the subject stands erect and relaxed arm hangs by the sides. The tape is held at the measured marked mid acromial radiate distance.
- **Chest Girth:** Chest circumference was taken with the help of measuring tap at the level of nipple. The tape was placed around the chest at the nipples so that it was in tight contact with skin all round the measurement was taken at the end of normal expression. The measurement was recorded to nearest centimetres.
- **Thigh Girth:** It is the perimeter of the thigh with the subject standing erect, legs slightly apart with the body weight equally distributed on both feet.
- **Calf Girth:** It is the perimeter of the thigh with the subject standing erect, legs slightly apart with the body weight equally distributed on both feet.

Significance of the study

The study will make the following contributions:

1. The results of the study may be used as a screening tool in assessing and selecting Basket Ball players at college level.
2. The finding of the study will provide criteria for selecting potential Basket Ball players.
3. The finding would help physical education teachers and coaches by way of informing the significance of Anthropometric and performance variables.

Methodology

Sixty Basketball men players, who have participated in the Kuvempu University Intercollegiate Tournament for the year 2008-09, were selected as subject for this study.

The investigator explained the purpose and significance of the study to all the selected basketball players to ensure maximum co-operation from subjects.

Selection of variables

The Investigator reviewed the available literature pertaining to the study from books, journals, periodicals, magazines and research papers. Taking into consideration, the importance of variables and feasibility criteria the following variable were selected.

Performance variable

a. Field Goal Speed Test.

Test administration

Field Goal Speed Test: The subject assumes any position that he desires under the Basket. At the signal "Go" he begins to make "lay-up" shots as rapidly as possible for a period of 30 seconds. Score one for each Basket.

The tester asks the basketball player (examine) to stand in any position under the basket and is required to make maximum number of baskets in 30 seconds. The number of successful baskets thrown in 30 seconds provides the score for this test. This item measures the ability of the examinee to make successive field goals as quickly as possible under the stress of time.

The three testes may be scored as a battery by totaling the three tests score after they have been scaled.

Reliability of Data: The reliability of data was ensured by using standard equipment.

Instrument Reliability: The testers used standardized instrument such as weighing machine, studio meter and unstretchable measuring tape.

Anthropometric variables

Standing height: The standing height was taken with the subject standing erect without shoes a marked scale on the wall the subject were instructed to keep the heels together, touching the wall with the heels, buttock and back held erect without tilt and to hold a full breath and stand tall while measuring was taken a stiff hard boards was held vertical on his head and touching the scale marking on the wall at right angle. The subject was asked to step out by covering the head and reading indicator by the hard boards lower end was read and recorded to the nearest centimeters.

Body Weight: The weight of the subject was taken on a weighing machine. The subject wearing minimum of clothes stood on a weighing machine and weight was taken in kilograms.

Leg Length: The subjects were asked to stand in all crest position with equal weight on the feet. The difference in the length between the height of illiospiral and the sole of the foot is recorded to the nearest 1/10 of centimeters.

Arm length: The arm length was measured with a tape. The measurement was taken from the top entre of the shoulder to tip of the middle finger. The arm length was recorded to the nearest centimetre.

Forearm Circumference: The subject was asked to sit on a chair the arm extended slightly forward with palm facing upward and relaxed. The maximum enclosed area of the forearm is measured to the nearest 1/10 of the centimetre.

Upper arm Girth: The subjects were asked to stand with arms hanging down freely. A circumferential point half a distance between the tipoff the acromion and radial is located and marked. The tape is placed around this point in horizontal plane. The measurement is taken without pressing the skin surface, with no air underneath and it is recorded to the neatest $1/10^{th}$ of the centimetre.

Chest girth: Chest circumference was taken with the help of measuring tape at the level of nipple. The tape was placed around the chest at the nipples so that it was in tight contact with skin all round the measurement was taken at the end of normal expression. The measurement was recorded to neatest centimeters.

Thigh Girth: Gullick tape was used to measure the circumference, placed around the thigh horizontally with it top edge just under the fold of the buttocks. The subject was asked to stand with body weight equally distributed on the feet. The measurement was taken to the nearest $1/10^{th}$ of centimetre.

Calf Girth: The circumference of the calf in a palm right angle to its long axis, pressure is put on both the feet; the most bulging surface of the calf muscle is marked. The tape is placed around his point horizontally in a plane at right angle to the long axis, with normal pressure exerted to the skin counter. Reading his recorded to the nearest $1/10^{th}$ of a centimeter.

Analysis of data and results of the study

Analyses of data collected on sixty intercollegiate Basketball men players of Kuvempu University. The data on Basketball Players Field Goal ability test along with selected Anthropometric Measurements like Height, Weight, Arm Length, Leg Length, Forearm circumference, Chest Girth, Thigh Girth and Calf Girth. These variables were examined by correlation co- efficient to find out the relationships of Basketball players Field Goal ability to Anthropometric Measurements separately.

The Range Mean and Standard Deviation of Field Goal Speed Test, Height, weight, Arm Length, Leg Length, Forearm circumference, Chest Girth, Thigh Girth and Calf Girth. Variables are presented in Table – 1.

Table 1: The Range Mean and Standard Deviation of Field Goal Speed Test and Anthropometric Variables

Sl. No.	Variables	Minimum	Maximum	Mean	Standard Deviation
1	Field Goal Speed Test	01	16	7.8556	3.5429
2	Height	161	190	172.0889	5.7702
3	Weight	45	85	61.8111	8.1349
4	Forearm Circumference	20	29	24.5667	2.0666
5	Upper arm Girth	20	33	26.8889	2.8696
6	Chest Girth	71	99	85.7	5.7932
7	Thigh Girth	40	59	49.3222	4.91
8	Calf Girth	27	43	34.2444	3.0365
9	Arm Length	71	84	77.7	3.0185
10	Leg Length	68	112	101.7222	6.3033

Table shows that the mean and standard deviation of Height 172.0889 and 5.7702, Weight 61.8111 and 8.1349, Forearm Circumference 24.5667 and 2.0666, Upper arm Girth 26.8889 and 2.8696, Chest Girth 85.7 and 5.7932, Thigh Girth 49.3222 and 4.81, Calf Girth 34.2444 and 3.0365, Arm Length 77.7 and 3.0185, Leg Length 101.7222 and 6.3033 respectively.

Table 2: Correlation Coefficient of Field Goal Speed Test and Anthropometric Variables

S. No.	Variables	Correlation Coefficient
1	Field Goal Ability and Height	100*
2	Field Goal Ability and Weight	0.027*
3	Field Goal Ability and Forearm circumference	0.081*
4	Field Goal Ability and Upper Arm Girth	0.012*
5	Field Goal Ability and Chest Girth	0.102*
6	Field Goal Ability and Thigh Girth	0.056*
7	Field Goal Ability and Calf Girth	0.014*
8	Field Goal Ability and Arm Length	0.093*
9	Field Goal Ability and Leg Length	0.084*

*Significance at the 0.05 level

The above table number 2 indicates the Shooting Ability significantly related to Height=100, Weight=0.027, Forearm= Circumference= 0.081, Upper arm Girth=0.012, Chest Girth=0.102, Thigh Girth=0.056, Calf Girth=0.014, Arm Length= 0.093, Leg Length= 0.084. Therefore, it is evident that Height, Weight, Forearm circumference, Chest Girth, Thigh Girth, Calf Girth Arm Length and Leg Length contributed Shooting Ability. Shooting ability 'r' value says there is ideal positive correlation with other anthropometric variables taken in this study.

Summary, conclusions and recommendations

Summary

The Purpose of the study was to predict the Basket Ball players Field Goal ability from the selected Anthropometric Measurements like Height, Weight, Leg length, Arm length, Fore arm girth, Upper arm girth, Chest girth, Thigh girth, Calf girth to achieve this purpose the tests were conducted to sixty intercollegiate basketball men players of Kuvempu University. The dependent variables were Field Goal Speed Test and Anthropometric Measurements are Height, Weight, Leg length, Arm length, Fore arm girth, Upper arm girth, Chest girth, Thigh girth and Calf girth.

The data were analyzed by using correlation coefficient by setting the level of significance 0.05 level.

Analysis of data revealed significant relationship of Shooting Ability to each of the following Height (=r.100), Weight (=r.027), Forearm Circumference (=r.081), Upper arm Girth (=r.012), Chest Girth (=r.102), Thigh Girth (=r.056), Calf Girth (=r.014), Arm Length (=r.093) and Leg Length (=r.084). Shooting ability 'r' value is showed ideal positive correlation with height and positively negligible correlation with rest of the variables.

Conclusions

With the limitation of the study, the Anthropometric Measurements Height, Weight, Forearm Girth, Upper arm girth, Chest girth, Thigh girth, Calf girth, Arm length and Leg length are positively correlated with Basketball playing ability.

Recommendations

In the light of findings of the present study the following recommendations were made to the coaches and physical education teachers regarding selection of players to Basketball game.

Following recommendations can be made for further studies.

1. The results of this study can be used by the physical education teachers and coaches as an aid in screening and selecting the student for Basketball game.
2. The same study may be conducted by the selecting other variables.
3. The same study may be conducted on women players.

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