Relationship of Selected Athropometric Variables With The Vertical Jump Ability of Elementary College Level Athletes

Sri Dipankar Maity[1], Dr. Prasanta Kumar Bhunia[2], Mr. Samir Hazra[3]

[1]Asstt. Professor, Department of B.P.Ed., Garhbeta College, Paschim Medinipur, West Bengal,
[2]Asstt. Professor, Department of B.P.Ed., Garhbeta College, Paschim Medinipur, West Bengal,
[3]Asstt. Professor, Department of B.P.Ed., Garhbeta College, Paschim Medinipur, West Bengal
Corresponding Author: Sri Dipankar Maity

Abstract: *The purpose of the Study was to investigate the relationship between Selected Anthropometric variables i.e. Standing Height, Weight, Full Leg length, Lower leg length, Thigh length, Arm length, Shoulder width, Chest girth, Thigh girth and Calf girth with the Vertical Jump ability of elementary College level Athletes. On the way of investigation, total of 30 male students, from various colleges of Paschim Medinipur District, those who are connected with regular sports activities, were selected purposively as a subject. The ability of Vertical Jump performance of each Athlete was measured by conducting the "Vertical Jump Test" and on account of measuring the undertaken Anthropometric variables, the following criteria of measures were introduced respectively to each variable i.e. Stadiometer for Standing Height, Weighing machine on account of Body weight, Flexible Steel tape for rest of the variables and the scores were recorded nearest to half a centimeter. The statistical technique of Pearson's Product Moment Correlation Coefficient was applied on the gathered data and on the basis of calculated 'r' it is observed that Standing Height (r=0.431), Weight (r= 0.547), Full Leg length (r=0.445), Lower Leg length (r=0.488) and Calf girth (r=0.612) are significantly related with the Vertical Jumping ability of the Athletes where the table value of 'r' is 0.349 at 0.05 level of confidence. Rest of the variables i.e. Thigh Length (r=0.200), Arm Length (r=0.326), Shoulder width (r=0.326), Chest girth (r=0.246) and Thigh girth (r= - 0.226) has shown no significant relationship with the vertical jump ability.*

Keywords: *Anthropometric variables, Vertical jump ability, Calibrated tools, Stadiometer, Weighing machine.*

I. Introduction

With the various fitness components, the anthropometric variable also plays a very important role on accounts of motor fitness ability of a person. Shape and size of an anthropometric element is significantly related to our movement and locomotion pattern. The factor which mostly affects on any of fundamental movement of an alive stuff is the force of Gravity. It is very well known to all of us that the Gravitational force control all movement pattern of anything which intended to move through its the Center of Gravity (CG). On the other side the determination of the position of the CG within the body is solely determined by the proportional weight. Shape and size of the body plays a vital role to its movement patter because of effect of Gravitational force through CG.

Among all basic movements of an animal including human being, Jumping is one of the most difficult movement pattern because in this case the performer must have to thrust his power against the Gravitational force. Especially in vertical jump [High Jump] the effect of Gravitational force through CG become a most regulating factors for a performer. So if the position of CG is determined by the composition of mass (m) within the body than it could be said that the shape and size of the body is one of the vital factor on the way to perform vertical jump.

Present study has been taken to determine the degree of relationship in-between Anthropometric variables and vertical jump ability of a performer.

OBJECTIVES OS THE STUDY
The objective of this study was to measure the relationship of selected Anthropometric variables with vertical jump ability.

HYPOTHESIS
It was hypothesized that there may be some significant relationship between Vertical jump ability and selected Anthropometric variables among the College level athletes.

II. Methodology

For the purpose of the study, 30 male students from various Colleges of Paschim Medinipur were selected purposively as a subject. Those pupils who are connected with regular physical activities were considered as a

---

subject. The study was further delimited by the male students whose age ranging from 18 to 24years.

Total 10 Anthropometric components (variables) of each individual were measured i.e. Standing Height, Weight, Full Leg length, Lower leg length, Thigh length, Arm length, Shoulder width, Chest girth, Thigh girth and Calf girth. In order to measure these Anthropometric variables the standard and calibrated tools were introduced viz. the Height was measured by stadiometer in centimeter, weight was measured by weighing machine in kilogram, full Leg length, lower leg length, thigh length, arm length, shoulder width, chest girth, thigh girth and calf girth were measured by flexible steel tape in centimeter. On the other side the ability of vertical jump of each subject was measured by introducing competition situation in presence of three qualified judges. All subjects were directed to follow all respective rules and regulations as maintained during the time of competition. Performance score was recorded nearest to the half an inch by the best of three trial for each. After obtaining satisfactorily all respective data, the statistical procedure was applied for drawing the result.

STATISTICAL PROCEDURE
The Pearson Product Moment Correlation Coefficient technique was introduced in order to investigate the relationship between each of Anthropometric variables with Vertical jump ability correspondingly. The level of significance was set at 0.05 level of confidence.

FINDINGS TABLE NO. – 1
Descriptive analysis of selected Anthropometric variables with the Vertical jump ability among Athletes

	Standing Height	Weight	Leg Length	Lower Leg length	Thigh Length	Arm Length	Shoulder Width	Chest Girth	Thigh Girth	Calf girth
Mean	168.03	56.53	101.33	50.37	49.93	76.87	43.07	84.6	48.57	32.6
S.D.	6.11	5.6	4.07	3.24	1.62	3	1.87	3.92	3.13	1.95
Max Score	181	66	109	56	53	82	46	95	53	36.5
Min Score	157	45	94	46	47	72	40	80	43	29.5

TABLE NO. – 2
Relation between Anthropometric variables and vertical jump ability of Athletes

Variables	Correlation ['r']
Standing Height	0.431*
Weight	0.547*
Full Leg Length	0.445*
Lower Leg Length	0.488*
Thigh Length	0.200
Arm Length	0.326
Shoulder Width	0.326
Chest Girth	0.246
Thigh Girth	-0.226
Calf Girth	0.612*

'' refers to significant relationship*
The table value of 'r' (30) is 0.349 at 0.05 level of confidence.

III. Discussion Of Findings

The obtained data after analyzing with the help of Pearson Product Moment Correlation Coefficient it is found that the calculated 'r' in respect of Anthropometric variables of Standing Height (0.431*), Weight (0.547*), Full Leg Length (0.445*), Lower Leg Length (0.488*) and Calf girth (0.612*) was shown the significant relationship with the vertical Jump performance of the Athletes at 0.05 level of confidence. On the other hand at the same level of confidence the researchers found there was no significant relationship with the rest of the Anthropometric variables i.e. Thigh Length (*0.200*), Arm Length (*0.326*), Shoulder Width (*0.326*), Chest Girth (*0.246*) and Thigh Girth (*-0.226*) and the vertical jump ability of the Athletes.

IV. Conclusion

On the basis of the result of statistical analysis the following conclusion may be drawn.
1. The Anthropometric variables i.e. Standing Height, Weight, Full Leg Length, Lower Leg Length and Calf girth is

significantly related with the Vertical Jump performance.

2. The Anthropometric variables Thigh Length, Arm Length, Shoulder Width, Chest Girth, Thigh Girth are not found to be significantly related to Vertical Jump performance.

References

[1]. Nath, Surender "Anthropometry" The Measurement of Body Size, Shape and Form (New Delhi, Friends Publications 1993) P.139.
[2]. Puri and Abraham "Prediction of performance ability of Jumpers in relation to selected Anthropometric measurement" UNMESH, Vol. 6 No. 1. 2010. P.23.
[3]. Clarke, H. Harrison, "Application of Measurement to Health and Physical Education" 5th
[4]. ed. (Englewood Cliffs, N.J. Prentice Hall, Inc., 1976), P. 252
[5]. Nuton, Jogn E., "Long Jump or Triple Jump". Athletic Journal (February 1971):44
[6]. Wilkinson, Charles Dewey "Selected Anthropometric Measures and Two Methods of Putting the Shot," Dissertation Abstracts International 34: 8 (February 1974):4851
[7]. Bag, "Relationship between self-concept and motor fitness of Children studying in grade fifth to tenth." UNMESH, Vol. 6 No. 1. 2010. P.94.
[8]. Barrow, Harold M. and McGee, Rosemary. "A Practical Approach to Measurement in Physical Education." Philadelphia: Lea and Febiger, 1979