

RELATIONSHIP OF ANTHROPOMETRIC VARIABLES AND MOTOR ABILITY COMPONENTS WITH PERCENTAGE OF BODY FAT OF FEMALE COLLEGE STUDENTS

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INTRODUCTION

Body composition is an important factor contributing to higher level of physical working capacity in the activities where the total body weight must be moved. In addition a substantial amount of evidence is available to indicate that high percentage of body fat not only serves as a dead weight, but it also reveals that the relative ability to supply oxygen to the working muscles. Typically the composition of human body is assessed to determine percentage of body fat (PBF). Fat mass (FM) and lean body mass or fat free mass (FFM). However, it is now clear that in addition to the amount of fat in the body, its topography particularly the abdominal fat deposition is considered to be the most atherogenic, diabetogenic and hypertensiogenic fat deposition of the human body (Kopelman, 2000).

Anthropometric measurement consists of objective measurements and functions of the body. The measurement of structure include items such as Height, Weight, Length of the Limbs, Depth, Width and the circumference of the different parts of the body.

The body structure of an athlete has a vital influence on his physical performance, hence the coaches and physical education teachers while selecting their athletes for participating in any competition give due consideration to the technique possessed by the athletes and at the same time they provide due weightage to various anthropometric measurements (Johnson, 1974).

On the other hand the motor performance qualities commonly recognized are Strength, Speed, Power, Agility, Flexibility, Reaction time, Balance and Coordination.

Scientific knowledge has revolutionized the standards of human performance in sports disciplines. The athletes are now trained on scientific lines and using highly sophisticated technology for top performance in their specific sports, to get optimum performance with minimum expenditure of energy and time through research. Coaches are being exposed to scientific knowledge about exercises and training methods which have conducive for achieving higher standards.

Scientists and physiologists have been of a view, that anthropometric measurements and physical components of an athlete have a lot to do with his performance more than the technique and tactics of a player or a team. Physical and physiological characteristics help him for better performance. The research findings show that a high level of technique perfection alone has nothing to do with the competitive sports. Most of the game demands a higher level of speed, strength, endurance, flexibility, coordination and optimum fitness of the organism (Johnson, 1974).

Therefore, the purpose of the present study was to investigate the relationship of selected Anthropometric variables and Motor ability components with Percentage of Body Fat of female college students.

METHOD AND MATERIALS

Thirty-five female students of P.G.G.I.P.E., Banipur, age ranging from twenty to twenty eight years from B. P. Ed, M. P. Ed I and II acted as subjects for the study. The subjects were tested in the college premises in a single day. For the present study, the variables studied as criterion measure under anthropometric variables were Height, Weight, Upper arm Girth, Chest Girth, Hip Girth, Thigh Girth, and Calf Girth by steel tape in centimeters respectively and variables under Motor ability components were Explosive Leg Strength measured by Standing Broad Jump in centimeters, Strength Endurance measured by Sit-ups in numbers, Spine Flexibility measured by bridge-up test in centimeters, Shoulder Flexibility was measured by Shoulder Rotation Test in centimeters and Dynamic Balance by Modified Bass Test of Balance in points. Percentage of Body Fat was measured by Body Fat Monitor, an electronic device manufactured by Omron model no. HBF 306. The subjects were assembled in the Indoor Cricket cum Multipurpose Hall of the above said institute for experimental training. Proper warm up was administered before testing

STATISTICAL PROCEDURE

For the purpose of investigating the Relationship of Selected Anthropometric Variables and Motor ability components with Percentage of Body Fat of Female College Students, Descriptive Statistics and Coefficient of Correlation statistical technique was applied using SPSS 17 version. The level of significance was set at 0.05 level of confidence.

**Findings
Table – 1**

Descriptive Statistics

Variables	Mean	Std. Deviation	N
fat %	23.3343	2.53051	35
height	154.7914	4.38804	35
weight	50.9429	6.07523	35
upper arm girth	25.1429	2.18474	35
chest girth	81.8571	3.74278	35
hip girth	84.6857	2.38588	35
thigh girth	48.9429	3.66977	35
calf girth	29.8857	2.16620	35
standing broad jump	208.2000	14.61426	35
sit-ups	45.2571	7.99391	35
spine flex	27.6286	4.90549	35
shoulder flex	46.5714	6.53176	35
dynamic balance	87.6286	3.64680	35

TABLE – II

Coefficient of Correlation of Anthropometric Variables and Motor ability components with Percentage of Body Fat of Female College Students

S. No	Variables	Coefficient of correlation 'r'
01	Height	.343*
02	Weight	.621*
03	Upper arm Girth	.406*
04	Chest Girth	.397*
05	Hip Girth	.365*
06	Thigh Girth	.354*
07	Calf Girth	.353*
08	Standing Broad Jump	.350*
09	Sit-ups	.349*
10	Spine Flexibility	.355*
11	Shoulder Flexibility	.358*
12	Dynamic Balance	.358*

*Significant at 0.05 level of significance i.e., 0.325.

DISCUSSION OF FINDINGS

Statistical calculation of the gathered data showed that there were significant positive relationships between Anthropometric variables and Motor ability components with Percentage of Body Fat of Female College Students.

As majority of the subjects were from Master Degree and according to the curriculum the physical activity involvement is less in comparison to Bachelor Degree students, so it was seen that Anthropometric measurements and Motor ability components are higher and poor respectively with high body Fat Percentage.

The reason for these discrepancies are complex and attributed to a variety of factors such as differences in motor development, motor delays, physiologic limitations (e.g., reduced muscle activation), lack of movement opportunities, and anthropometric characteristics (Eichstaedt and Lavay; 1992).

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