

RELATIONSHIP OF BALANCE ABILITY WITH SELECTED ANTHROPOMETRIC VARIABLES OF COLLEGE FEMALES

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Background: A number of factors influence the way in which sports and physical activity have impact on health and body in different populations. Anthropometry is one of them. Anthropometrics measurements were central concern of the phase of the scientific era of measurement, which began in the 1860 concerned on three areas of growth measure of body type and body composition.

Purpose: The purpose of the present study is to determine the relationship observed on balance and selected anthropometric variables of college female students.

Methodology: For the purpose of the study, sixty college female students pursuing B.P.Ed & M.P.Ed course were randomly taken from Narangwal college of Physical Education, Ludhiana as the subject for the present study. The age group of the subject ranged from 21-24 years. Selected Anthropometric variables i.e. Height, Upper arm length, fore arm length, Hand length, foot length and leg length were measured through anthropometric rod in centimetres. Static balance was measured by Stork Stand Test in seconds and Dynamic balance was measured by modified Bass Test in score.

Statistics: Mean and S.D. were used as descriptive statistics. Coefficient of correlation was calculated for analysis, interpretation and discussion. A statistical calculation was conducted through SPSS 20 version and Excel Spread Sheet of Windows version 7 was used as statistical software. Statistical significance was fixed at 0.05 % level of confidence.

Result: The result of the present study revealed that there was no significant relationship between Static Balance with selected anthropometric variables except upper arm length of college female students under study. On the other hand, there was positive significant relationship between Dynamic Balance with selected anthropometric variables except Hand Length of college female students.

Key Words: Anthropometric variables, Balance and college females.

INTRODUCTION

Physical fitness is one of major influencing factors of healthy lifestyle of human life. A number of factors influence the way in which sport and physical activity have impact on health lifestyle in different populations. Anthropometry is one of them. It has come from two Greek words; “anthropose” which means “man” and “metron” which means “measure”. These refer to the measurement of the human individual. Anthropometry involves the systematic measurement of the physical properties of the human body, primarily dimensional descriptors of body size and shape. Anthropometry study of human measurements such as height and weight has several different applications. It enables us to perform up to our potential. It is the study of human height, weight and the size of different body parts, and how those measurements vary under certain circumstances. Anthropometrical data and formula are used in anthropological and medical research, forensic investigations and industrial design. Anthropometric measurements were central concerns of the phase of the scientific era of measurement, which began in the 1860. It concerned three areas of growth measure of body type and body composition. The use of such measure included classification, predication of growth patterns and prediction of success in physical activities as well as assessment of obesity. **Koley, Shyamal & Gupta (2012)** studied a correlation working of Static Balance and Anthropometric Characteristics in 47 Indian elite male shooters from Dr. Kami Singh Shooting Range area of Delhi (India). The results of these shooters in standing balance test had no significant correlations with any of the anthropometric characteristics under study whereas in case of **Das & Ghosh (2015)**, it worked extensively with Static Balance Anthropometric Characteristics of school going female students. A significant relationship was observed between Balance and anthropometric variables of selected subjects. Not only physical fitness, anthropometry can also influence the study of physical education and sports. In this modern era of competition, the Anthropometrical analysis of an athlete of team is as much important as teaching the different skills, techniques and tactics of a game on the scientific lines.

The team is prepared is not only to play the game but also to win. It is not the proficiency in the skills which gives victory. In fact, the spirit of the players is more important with which they play and perform their best in the competition.

Hence, the Anthropometric measurement is required to influence the performance in the game. The investigator, after going through the review of the related literature, was to observe the relationship of selected anthropometrical parameter with balancing ability among the sample of college female students under study.

PURPOSE OF THE STUDY

The purpose of the present study is to determine the relationship and observe balance selected anthropometric variables of college female students.

METHODS & MATERIALS

The methodology of the study was to observe the relation with selected anthropometric variables the static balance & dynamics of college women. Sixty college women pursuing B.P.Ed & M.P.Ed course students were randomly taken from Narangwal college of Physical Education, Ludhiana as the subject of the present study. The age group of the subject ranged from 21-24 years. Selected Anthropometric variables i.e. Height, Upper arm length, Fore arm length, Hand length, Foot length and Leg length were measured through anthropometric rod in centimetres, Static balance was measured by Stork Stand Test in seconds and Dynamic balance was measured by modified Bass Test in score. Mean and S.D. were used as descriptive statistics. Coefficient of correlation was calculated for analysis, interpretation and discussion. A statistical calculation was conducted through SPSS 20 version and Excel Spread Sheet of Windows version 7 was used as statistical software. Statistical significance was fixed at 0.05 % level of confidence.

RESULT

Table – 1

Table Representing Mean and Std. Deviation of selected variables of the Subjects

Variables	Mean	Std. Deviation	N
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Height (cm)	156.93	6.41	60
Upper Arm Length (cm)	25.94	2.46	60
Fore Arm Length (cm)	22.69	1.84	60
Hand Length (cm)	16.67	0.85	60
Foot Length (cm)	21.97	1.73	60
Leg Length (cm)	81.20	4.61	60
Static Balance (sec)	22.22	10.08	60
Dynamic Balance (score)	50.38	8.04	60

Mean and Std. Deviation has been presented in Table – 1. In **Table – 1**, the mean and standard deviation of height, upper arm length, fore arm length, hand length, foot length and leg length of the subject has been presented. Here the mean and standard deviation value of Static Balance and Dynamic Balance are also presented. Thus in Table-1, it appears that the mean and Std. Deviation value of height was 156.93 ± 6.41 cm. Upper arm length was 25.94 ± 2.46 , Fore arm length was 22.69 ± 1.84 , Hand length was 16.67 ± 0.85 , Foot length was 21.97 ± 1.73 cm. Leg length was 81.20 ± 4.61 cm. Static Balance was 22.22 ± 10.08 sec. and Dynamic Balance was 50.38 ± 8.04 respectively. The mean and S.D. value of all the selected variables of the subjects have been shown graphically (Figure – 1).

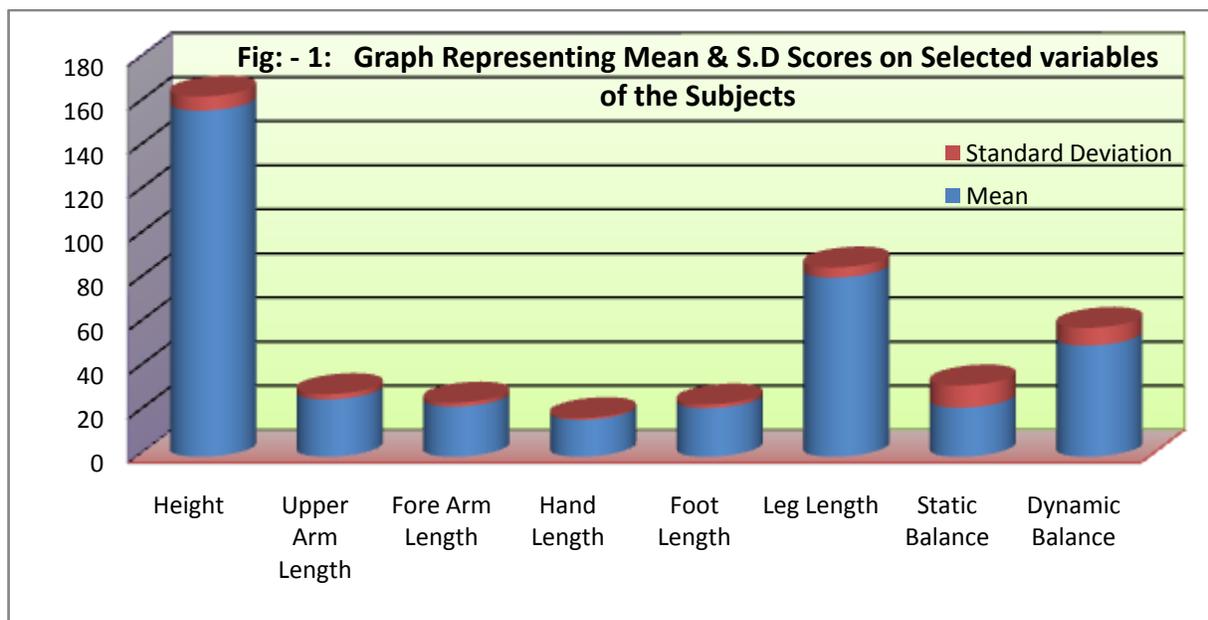


Table – 2

Representing Coefficient of Correlation of Static Balanced selected anthropometric variables of the college females.

Variables		r value
Static Balance	Height	0.117
	Upper Arm Length	0.285*
	Fore Arm Length	0.260*
	Hand Length	0.162
	Foot Length	0.197
	Leg Length	0.024

Level of confidence significance at $r_{0.05(2, 58)} = 0.250$

Table-2 represents the correlation value among the variables. It seems from the table-2 that there was a significant relationship between Static Balanced upper arm length and fore arm length. The r value of Static Balance and upper arm length and fore arm length was 0.285 and 0.260 respectively that is greater than the table value of 0.25 ($p < 0.05$) and no significant relationship

between Static Balanced Height, Hand Length, Foot length and Leg length of selected subjects ($p < 0.05$).

Table – 3

Representing Coefficient of Correlation of Dynamic Balance and selected anthropometric variables of the college females.

Variables		r value
Dynamic Balance	Height	0.250*
	Upper Arm Length	0.262*
	Fore Arm Length	0.317*
	Hand Length	0.038
	Foot Length	0.265*
	Leg Length	0.306*

Level of confidence significant at $r_{0.05}(2, 58) = 0.250$

Table-3 represents the correlation value among the variables. It also seems from the table-3 that there was no significant relationship between Dynamic Balance and Hand Length and leg length. The r value of Dynamic Balance and Hand Length was 0.038 that are smaller than the table value of 0.25 ($p < 0.05$) required for significance and remaining all the r value of selected anthropometric variables was greater than the table value of 0.25 ($p < 0.05$). That's why, a significant relationship existed with Dynamic Balance and Height, Upper Arm Length, Fore Arm Length, Foot length and Leg length of selected subjects ($p < 0.05$).

DISCUSSION

Anthropometric variables influence the stability limits of the organism and can affect the motor strategies relating to balance control. But the result revealed that there was no significant relationship between the selected anthropometric variables with static balance except upper arm length. The result signifies that static balance does not depend on Height, Fore Arm Length, Hand Length, Foot Length and Leg Length. But in case of upper arm length, a significant positive

correlation was found between static balance and upper arm length. This result may be explained that the static balance disturbed among the subject who tries to recover it by expanding her arm opposite to the direction of misbalanced i.e. opposite to the tendency of following. There are no other means to maintain and recover static balance by transferring arm weight opposite to the tendency of falling. Probably for that reason, significant positive correlation was obtained in static balance with fore arm and upper arm length.

On other hand, the correlation matrix revealed that Dynamic Balance was significantly related with selected anthropometric variables except Hand Length of college female students. The result signifies that dynamic balance is dependent on Height, Upper Arm Length, Fore Arm Length, Foot Length and Leg Length. The results may be explained by the fact that subjects belong to the trained physical education skills. They were performing vigorous activity daily during their practical classes as per their curriculum demands. That may be the reason that the subject gets well habituated to perform vigorous motion during their physical activity and researcher found the significant positive relationship among the variables of the selected subjects.

CONCLUSIONS

From the result it may be concluded that;

1. There was no positive/significant relationship between Static Balance and Height, Hand Length, Foot length and Leg length of college female students.
2. There was a significant relationship between Static Balance with upper arm lengths and fore arm length of college female students.
3. There was positive significant relationship between Dynamic Balance and Height, Upper Arm Length, Fore Arm Length, Foot length and Leg length of college female students.
4. There was no significant relationship between Dynamic Balance and Hand Length of college female students.

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