



ORIGINAL RESEARCH PAPER

Physical Education

A COMPARATIVE STUDY OF SELECTED ANTHROPOMETRICAL VARIABLES OF MALE THROWERS OF DIFFERENT THROWING EVENTS

KEY WORDS: Body Composition, Athlete and Throw

Mahesh Jetly

(M.Phil), Assistant Professor in Physical Education

ABSTRACT

Aim: The purpose of the study was to assess a Comparative Study of selected physiological variables of Male Throwers of Different Throwing Events.

Subjects: One hundred Eighty (180) male Indian throwers were selected as subjects for the purpose of study. Keeping in view the objectives, the throwers were categorized into four group's i.e. International (15 male), National (15 male) and All India Intersarsity (15 male) were selected as subjected for the study.

Methods: The performance of throwers although researcher has selected variable on the bases of their highly importance in throwing competition the research Scholar had gone through discussion, critical as well as allied literature related to the problem. The Following Selected physiological Variables were selected Body Composition.

Statistic: The data was analyzed by applying Analysis of Variance (ANOVA) in order to assess and Comparative Study of Anthropometrical Characteristics Male Throwers of Different Throwing Events. The level of significance was set at 0.05.

Conclusion: There is significant difference among different male throwers, in relation to Body Composition.

INTRODUCTION

Throws (Short-put, discus, Javelin, hammer) are field events in athletics. They are measure for explosive strength (power) in a human being. The throws were included in Olympic games at different times as-shot put and discus throws were included in 1896 Athens Olympic. The javelin and hammer throws were include in 1980 London Olympic.

The throwers of Discus, shot put, Javelin and hammer differed greatly in Physique from the other athletes. As a group, they were taller and heavier, with longer arms in relation to their legs. They had broader Shoulders and broader hips even for their trunk size and were somewhat fatter than the track athletes. Their proportions of legs to the trunk were similar to those of middle distance runners. The discus throwers were the largest of all athletes. Their arms in particular exceptionally big, being not only broader in both muscle and bone, relative to the muscle and bone in the legs but also longer than the legs.

The Shot Putters were also very/large and muscular men. None was under 185 cm. and the tallest Shot Putter was 195 cm. and weighted 115 Kg. They also had long arms, but not so long as those of the discus throwers. Like the discus throwers, they had wide humerus in relation to the widths of the femur and tibia. The large arm bone was not seen in Javelin and hammer throwers nor in the simple of weight lifters. The discus, hammer and Shot Putter are taller and heavier and possess longer extremities and broader knees with a larger amount of leaver body mass. As already mentioned their greater weight is useful, because when the object is thrown forwards and upwards, an equal and opposite reactive force is exerted on the athlete, pushing him back ward and downwards. The effect of this reaction is however more if he is lighter. The greater height in their case will be of further advantage by making the flight of the implement longer before it touches the ground. Further while throwing the discus, the speed of the discus at the moment of releases of prime importance indenturing how for it will go and for given angular velocity (dependent on how fast the thrower does his turn) the speed is proportional to the length of the lever throwing the discus from the axis of the thrower hence the desirability of long as powerful arms.

Objective:-

The purpose of the study was to assess a Comparative Study of Anthropometrical Characteristics and Anxiety of Indian Elite Male Throwers of Different Throwing Events.

Methodology:

One hundred Eighty male Indian throwers were selected as subjects for the purpose of study. Keeping in view the objectives, the throwers were categorized into four group's i.e. International (15 male), National (15 male) and All India Intersarsity (15 male). The International throwers comprised of those who had represented India in Senior and Junior International Athletics

competitions held in India or abroad and National throwers were those who had represented in Senior National and Junior National Athletics competitions held in India only were selected as subjects for purpose of the study who were true representative to the population of Indian throwers. All India Interuniversity throwers who represented in AIU competitions.

The tests were administered to the three sample elite throwers group i.e. International, National and Intersarsity Players.

Necessary instructions were given to the subjects before the administration of each test. Subjects were ensured that the responses given by them on the questionnaire will be kept strictly confidential and would not be exposed to anyone in any circumstances. At the same time research scholar motivated the respondents by promising to send a separate abstract of the conclusions of his study to each of them. It was clearly explained to the subjects that overall purpose of the study was to allow each subject to acquire deeper insight into her psychological functioning. Confidentiality of responses was guaranteed so that the subjects would not camouflage their real feelings. During response researcher stand with them to clear doubt or to motivate them feel boredom.

Statistical Analysis: The data was analyzed by applying Descriptive Statistic i.e. Mean, Standard Deviation, Minimum and maximum & Analysis of Variance (ANOVA) in order to assess and Comparative Study of Anthropometrical Characteristics and Anxiety of Indian Elite Male Throwers of Different Throwing Events The level of significance was set at 0.05. The data was analyzed by SPSS version 16.

**Table – 19 (A)
DESCRIPTIVE ANALYSIS OF BODY COMPOSITION IN DIFFERENT THROWER**

	Mean	Std. Deviation	Minimum	Maximum
Discus	32.73	15.63	12.50	62.90
Hammer	40.57	21.30	12.00	82.50
Javelin	29.01	14.88	8.70	69.70
Shot Put	42.61	17.55	13.00	72.90

Table-19 (A) reveals the descriptive analysis of Body Composition in different thrower, Discus Thrower, Hammer Thrower, Javelin Thrower and Shot Put mean and SD values were 32.73 ± 15.63; 40.57 ± 21.30; 29.01 ± 14.88; 42.61 ± 17.55 respectively. The minimum and maximum values of Discus Thrower, Hammer Thrower, Javelin Thrower and Shot Put were 12.50 & 62.90, 12.00 & 82.50, 8.70 & 69.70, 13.00 & 72.90 respectively.

The graphical representation of Descriptive Analysis of Body Composition in Different Thrower has been presented in figure 31.

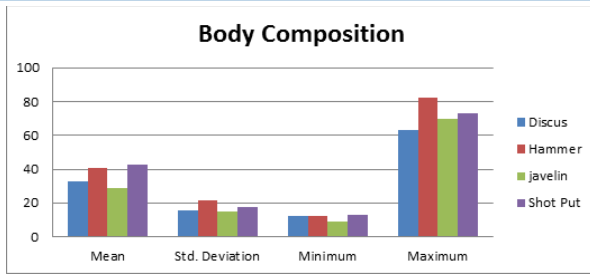


Figure 31: Descriptive chart of body composition in different male thrower

Table – 19 (B)
ANALYSIS OF VARIANCE OF BODY COMPOSITION AMONG DIFFERENT MALE THROWERS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5577.26	3	1859.08	6.057*	.001
Within Groups	54016.75	176	306.91		
Total	59594.01	179			

*Significant at 0.05 level of confidence
F0.05 (3,176) = 2.65

Table-19 (B) reveals that there is significant difference among different male throwers, in relation to Body Composition as obtained 'F' ratio of 6.057 which is higher than the tabulated value of 2.65 required for significance at 0.05 level with (3,176) degree of freedom.

As the F-ratio was found significant in the case of Body Composition the least significant difference (L.S.D.) test of post-hoc test was applied to test the significant difference between paired means. Further, the L.S.D. analysis for paired means for Body Composition has also been presented in table 19 (C).

Table – 19 ©
LEAST SIGNIFICANT DIFFERENCE POST HOC TEST OF THE MEAN OF BODY COMPOSITION AMONG DIFFERENT MALE THROWERS

(I) Throws	(J) Throws	Mean Difference (I-J)	Std. Error	Sig.
Discus	Hammer	-7.844(*)	3.693	.035
	Javelin	3.720	3.693	.315
Hammer	Shot Put	-9.878(*)	3.693	.008
	Javelin	11.564(*)	3.693	.002
Javelin	Shot Put	-2.033	3.693	.583
	Shot Put	-13.598(*)	3.693	.000

* The mean difference is significant at the .05 level.
CD 0.05=1.38

It is evident from table-19 (C) that means difference of Discus Thrower & Hammer Thrower (7.844); Discus Thrower & Shot Put Thrower (9.878), Hammer Thrower & Javelin Thrower (11.564), Javelin Thrower & Shot Put Thrower (13.598), was found significant in relation to Body Composition since mean difference was found greater than critical difference of 1.38 at 0.05 level.

On the other hand insignificant difference was found between Discus Thrower & Javelin Thrower (3.720), Hammer Thrower & Shot Put Thrower (2.033) in relation to Body Composition.

The sequence of Body Composition among Discus Throw, Hammer Throw, Javelin Throw and Shot Put Throw in different male throwers was Shot Put > Hammer Throw > Discus Throw > Javelin.

The graphical representation of post test means of Body Composition of Discus Throw, Hammer Throw, Javelin Throw and Shot Put Throw in different male throwers has been presented in figure 32.

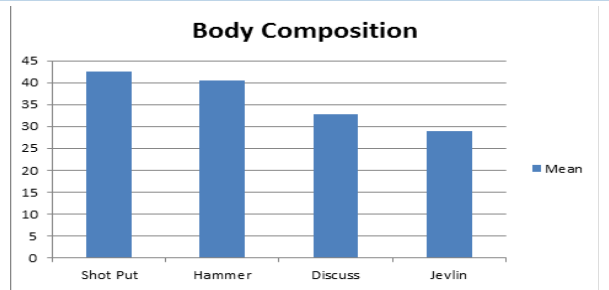


Figure 32: Sequence of post test means of body composition in different male throwers

Discussion of Findings

Research scholar found no significant difference in Body composition. A player's performance is greatly influenced by his/her body composition specially in throwing events. As it is already evident that for good performance players go through many sort of training programme and exercise which brings a greater change in their body shape and size such as height weight and fat. It may be because of the demanding similar nature of the workout, nutrition, daily scheduled exercises and may be the fact that all the subjects belong to the same level of the competition. Similarity in most of the parts may be the major cause to bring no significant differences in body composition of the players.

In the case of upper arm length, fore arm length, upper leg length, lower leg length, the data reveals that there is a significant difference in these four regions of the lengths in different throwers. This might be due to the individual difference or any other factor such as heredity. As it is earlier stated that every individual has a different type of body structure and length of the body played an important role in achieving good performance in throwing events. As we clearly know that the length of the upper and lower extremities of the player's played a vital role in the sportive event such as javelin and discus throw because it is helpful in giving height to the angle of release which is quite significant for giving good performance to achieve top position in many competitions. Especially in discus and javelin throw it has a positive impact.

The findings of the LSD reveal that the mean difference of the groups of discus and javelin, javelin and shot put is more significant than to the groups of discus & hammer, discus and shot put as compared with the critical difference in upper arm length. Apart from all discus and shot put throwers are best from the groups in upper arm length. On the other hand in fore arm length the mean value of discus and hammer, discus and javelin, hammer and shot put, javelin and shot put found significant than the group of hammer and javelin, discus and shot put as compared with the critical difference. Apart from others shot put and hammer throwers in fore arm length are the best group.

In the case of upper leg length the LSD reveals that the mean difference of the groups of discus and hammer, discus and javelin, discus and shot put is more significant than to the groups of hammer & javelin, hammer & shot put, javelin & shot put as compared with the critical difference in upper leg length. Apart from all discus and shot put throwers are best from the groups. On the other hand in lower leg length the mean value of discus and hammer, discus and javelin, hammer and shot put, found significant than the group of hammer and javelin, discus and shot put, javelin and shot put, as compared with the critical difference. Apart from the others discus and hammer throwers are the best from the other groups.

Conclusion

1. There is significant difference among different male throwers, in relation to Body Composition.
2. In case of post means difference of Discus Thrower & Hammer and Shot Put Thrower, Hammer Thrower & Javelin Thrower, Javelin Thrower & Shot Put Thrower was found significant in relation to Body Composition. And insignificant difference was found between Discus Thrower & Javelin Thrower,

Hammer Thrower & Shot Put Thrower in relation to Body Composition.

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