### A Comparative Study To Explore The Difference On Body Composition Varriables Between State Level Body Builders And Weight Lifters

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Abstract: The interest in body type or physique of individuals and populations has a long history going back to the ancient Greeks, Rome and India. Many systems for classifying physique have been proposed over the centuries, leading to the system called somatotype as proposed by Sheldon (1940), and subsequently modified by others, notably Parnell (1958) and Heath and Carter (1967). The somatotype is defined as the quantification of the present shape and composition of the human body. Sheldon believed that somatotype was a fixed or genetic characteristic, but the present view that the somatotype is phonotypical and thus amenable to change under the influence of growth, aging, exercise and nutrition (Carter and Heath 1990). Among these, Heath and Carter somatotype method is one of the comprehensive evaluation methods. Using this method 10 items of anthropometric indicators are selected and three factors which could be to represent relative content of body fat, growth degree of skeletal muscle and relative height and thinness of body (relative line degree), respectively are calculated. Somatotype or body type has a great role to play in the aspect of sport and games. As a definite game or sporting event has its unique demand for body type so as the athletes body type suited to a definite sport. Several research studies have been conducted to analyze the impact of body or somatotype on sport also numerous studies conducted to assess the effects of body composition on various sporting events but according to the literature available very few studies have been conducted to locate the difference of body composition among weight lifters and body builders though performance in both of them are to a great extent influenced by their bodily fat mass, lean mass, fat percentage etc. thus the author felt encouraged to conduct the study entitled "A comparative study to explore the difference on body composition variables between state level body builders and weight lifters". From data analysis the investigator arrived at the conclusion that Weight lifters possess more fat percent than the body builders, weight lifters possess more fat mass than the body builders. Also the weight lifters possess more lean body mass than the body builders.

Keywords: Body composition, Body builders, Weight lifters.

### I. INTRODUCTION

The interest in body type or physique of individuals and populations has a long history going back to the ancient Greeks, Rome and India. Many systems for classifying physique have been proposed over the centuries, leading to the system called somatotype as proposed by Sheldon (1940), and subsequently modified by others, notably Parnell (1958) and Heath and Carter (1967). The somatotype is defined as the quantification of the present shape and composition of the human body. Sheldon believed that somatotype was a fixed or genetic characteristic, but the present view that the somatotype is phonotypical and thus amenable to change under the influence of growth, aging, exercise and nutrition (Carter and Heath 1990). Among these, Heath and Carter somatotype method is one of the comprehensive evaluation methods. Using this method 10 items of anthropometric indicators are selected and three factors which could be to represent relative

content of body fat, growth degree of skeletal muscle and relative height and thinness of body (relative line degree), respectively are calculated. Somatotype or body type has a great role to play in the aspect of sport and games. As a definite game or sporting event has its unique demand for body type so as the athletes body type suited to a definite sport. Several research studies have been conducted to analyze the impact of body or somatotype on sport also numerous studies conducted to assess the effects of body composition on various sporting events but according to the literature available very few studies have been conducted to locate the difference of body composition among weight lifters and body builders though performance in both of them are to a great extent influenced by their bodily fat mass, lean mass, fat percentage etc. thus the author felt encouraged to conduct the study entitled "A comparative study to explore the difference on body composition variables between state level body builders and weight lifters".

#### II. METHODOLOGY

For the present study 10 state level male body builders and equal number of male weight lifters were selected as the subjects. Their age range was between 20 to 30 years. The selected variables for study and analysis were percentage of body fat, fat mass and lean body mass. Body weight, body height of the subjects and the skin fold measurements like biceps, triceps, suprailliac and sub scapular were measured for estimation of body composition variables like percentage of body fat, fat mass and lean body mass.

For collecting data the following instruments and tools were used: like weighing machine for measuring body weight, steel tape graduated in cm was used to measure body height and Skin fold caliper was used to measure skin fold thickness.

For assessment of Body height and weight standard procedures were used. The procedure for assessment of various skin folds have been mentioned as below.

*BICEPS:* The skin fold is measured by raising the vertical fold at the midpoint acromiale radial on the anterior surface of the arm. The subject stands with the arm hanging down word freely.

*TRICEPS:* The measurement is taken on the posterior surface at the level of biceps skin fold with the subject in the same position.

SUB SCAPULAR: The skin fold is raised beneath the inferior angle of the left scapular in the direction of obliquely down wards at an angle of about  $45^{\circ}$  from the horizontal plane.

*SUPRAILLIAC:* This skin fold is picked up for measurement immediately superior to the iliac creast at the mid auxiliary (lateral axis). Appropriate care was taken during the measurement of skin fold of all the subjects. The thumb and index fingers were used to pinch the loose skin over the site to be measured.

### III. ANALYSIS OF DATA

In this part of the manuscript the author tried to depict the tables related to inferential statistics and discussion related to those have been systematically presented.

| Grou       | Me       | Mean       | Т   | Remark      |
|------------|----------|------------|-----|-------------|
| р          | an value | difference |     | S           |
| Body       | 8.3      |            |     | Signific    |
| builders   | 9        | 3.1        | 5.0 | ant at 0.05 |
| Weig       | 11.      |            | 8   | level       |
| ht lifters | 49       |            |     |             |

# Table 1: Mean values and t-values of B.F % for body builders and weight lifters

From table 1 it is clear that percentage of body fat was 8.39 for body builders group and 11.49 for weight lifters group. So it is clear that the mean value for percentage of body fat of weight lifters is greater than body builders. In order to test the significance of the difference between means t value was calculated from the table which is seen that the calculated t value was 5.08. This was greater than the required table value 2.10.

So it is clear from the data analysis that the weight lifters are significantly higher in Body Fat percentage than the Body Builders.

| Group             | Mean<br>value | Mean<br>difference | Т    | Remarks                         |
|-------------------|---------------|--------------------|------|---------------------------------|
| Body<br>builders  | 5.44          | 5.96               | 7.01 | Significant<br>at 0.05<br>level |
| Weight<br>lifters | 11.40         |                    |      |                                 |

## Table 3: Mean values and t-values of fat mass for body builders and weight lifters

It is clear from table No. 2 that the mean value of fat mass was 5.44 for body builders and 11.40 for weight lifters group. It is also clear that the mean value of fat mass of weight lifters group greater than those of the body builders. In order to test the significance of the difference between means t value was calculated from the table which is seen that the calculated t value was 7.01. This was greater than the required table value 2.10.

So it is clear from the data analysis that the weight lifters are significantly higher in Fat mass than the Body Builders.

| Group             | Mean<br>value | Mean<br>difference | t    | Remarks                      |
|-------------------|---------------|--------------------|------|------------------------------|
| Body<br>builders  | 59.54         | 29.75              | 4.75 | Significant<br>at 0.05 level |
| Weight<br>lifters | 89.29         |                    |      |                              |

Table 3: Mean values and t-values of lean body mass for body builders and weight lifters It appears from table 3 that lean body mass for body builders group was 59.54 and 89.29 for weight lifters group. So it is revealed that the mean lean body mass value of weight lifters group was greater than the body builders group. In order to test the significance of the difference between means t value was calculated from the table which is seen that the calculated t value was 4.75. This was greater than the required table value 2.10.

So it is clear from the data analysis that the weight lifters are significantly higher in lean body mass than the Body Builders.

### IV. RESULT

The results derived from the findings of the present are summarized as under:

The weight lifters are significantly higher in Body Fat percentage than the Body Builders. The weight lifters are significantly higher in Fat mass than the Body Builders. The weight lifters are significantly higher in lean body mass than the Body Builders.

### V. CONCLUSION

Based on the findings the author drawn following conclusions:

Weight lifters possess more fat percent than the body builders. Weight lifters possess more fat mass than the body builders. Also the weight lifters possess more lean body mass than the body builders. From the above study the author arrives at the ultimate remark that since Fat Mass and Body Fat percentage are predictors of good health and fitness the weight lifters apart from their regular training should emphasize on reduction of above mentioned body composition variables for maximum fitness or to reach the ultimate goal of sport.

### REFERENCES

- [1] Carter, J.E.L and Heath, B.H (1990). Somatotyping Development and Applications Cambridge: Cambridge University Press.
- [2] Christophen, D.L., Deborah J. Rhea., Allen, E.C (2003). Muscle Dysmorphia in Elite Level Power Lifters and Body Builders: A Test Differences within a conceptual Model. Journal of Strength and Conditioning Research. 16 (4), 649-655.
- [3] Hennery E. Garrett. (1961). Statistics in psychology and education. Paragon International Publication, New Delhi 110002 (INDIA).
- [4] Hennery E. Garrett. (1961). Statistics in psychology and education. Paragon International Publication, New Delhi 110002 (INDIA).
- [5] Sodhi, H.S (1991). Sports Anthropometry. Anova Publication, Mohali.