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A Comparative Study on Body Composition of Weightlifters and Shot-Putters of Uttar Pradesh

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Abstract

The study of body composition affords us an opportunity to see whether athletes and sportsmen specializing in different events differ in the leanness of pairs of some selected parameters. Body composition has been studied in terms of fat percentage. For the purpose of the study sixty (N=60) male players 30 each of shot put and weightlifting of District and region level competitions from Eklavya sports stadium Agra. For finding the mean differences of body composition of weightlifters and shot putters of Uttar Pradesh Z – test was used. Level of significance was set at 0.05 level. The results of the study revealed that mean body composition of shot – putters were different than mean body composition of weightlifters.

Keywords: *Body composition, Athletes, Shot-put, Morpho-physiology.*

Body composition is an important morpho-physiological characteristic. The methodology for the measurement of body composition has been explained by several scientists. Fat fold measurement can provide fairly consistent and meaningful information related to body fat and its distribution. The sum of 'fat fold' is an indicator of relative degree of fatness among individuals. McArdle *et al*. pointed out that exercise-induced change in fat fold values can be evaluated either as absolute or on percentage basis. Peterson pointed out that body fat is a very personal datum and it is strongly recommended that this information be presented discreetly.

Shot put is an athletic event contest in which a very heavy round ball is thrown as far as possible. Ancient time it was used to gather food and safety needs which required maximum level accuracy and minimum reaction time for targeting their hunts. Later it become a sport and adopted in Olympic Games. Shot put competitions have been held at the modern Summer Olympic Games since their inception in 1896, and it is also included as an event in the World Athletics Championships. Each competition has a set number of rounds of throws. Typically there are three preliminary rounds to determine qualification for the final, and then three more rounds in the final. Each competitor is credited with their longest throw, regardless of whether it was achieved in the preliminary or final rounds. The competitor with the longest legal put is declared the winner.

Weightlifting is an athletic discipline in the modern Olympic programme in which the athlete attempts a maximum-weight single lift of a barbell loaded with weight plates. The two competition lifts in order are the snatch and the clean and jerk. Each weightlifter receives three attempts in each, and the combined total of the highest two successful lifts determines the overall result within a bodyweight category. Bodyweight categories are different for women and men. A lifter who fails to complete at least one successful snatch and one successful clean and jerk also fails to total, and therefore receives an

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"incomplete" entry for the competition. The clean and press was once a competition lift, but was discontinued due to difficulties in judging proper form.

Since shot – put and weightlifting both are power sports and both is equally required strength with respective to their events. Body composition is also seems to be common factor between shot – putter and weightlifter. Thus the purpose of this study is to find out the difference of body composition between shot – putters and weightlifters.

Procedure

Sample

For the purpose of the study sixty (N=60) male players 30 each of shot put and weightlifting of District and region level competitions from Eklavya sports stadium Agra. The subjects were the intermediate players of their respective events and the purpose of the research well known. Gathered subject were divided in two groups with their respective sports. The Variables; sitting height- stature index, Ponderal – Index, Arm length - stature index, Leg length- stature index, upper arm length – lower arm length, upper leg- lower leg length index was selected for data collection. The body proportionality was measured in Ratio as criterion measure. The segment length was measured in cm.

Design of the study: The current study is the status study where no need to manipulated data for analysis and discussion. The comparison and status of the body proportionality of district and region level weightlifters and shot putters are presented in study.

Data Collection

1) Biceps skin fold: Vertical skin fold was measured at the anterior aspect of the right arm with arms hanging relaxed at the sides with right palm directed interiorly. The jaws of the calipers were applied to the fold and after waiting for 2 to 3 seconds the reading was taken. One more reading was taken in the same way and average of the two was the final score

2) Triceps skin fold: The mid acromiale-radial line on the posterior surface of the right arm was marked and the skin fold about one centimeter above marked level was picked up and jaws of the calipers were applied to the fold and after waiting for 2 to 3 seconds the reading was taken. One more reading was taken in the same way and average of the two was the final score.

3) Sub-scapular skin fold: A point below the right scapula was marked. The skin fold about one centimeter below marked level was picked up and jaws of the caliper were applied to the fold and after waiting for 2 to 3 seconds the reading was taken. One more reading was taken by the same procedure and average of the two was the final score.

4) Supra iliac skin fold: A point above the anterior superior iliac spine on the line to the anterior axillary's border of right side was marked. The skin fold about 2 to 5 centimeter above marked level was picked up and jaws of the caliper were applied to the fold and after waiting for 2 to 5 seconds the reading was taken. One more reading was taken by the same procedure and average of the two was considered.

5) Calf skin fold: The subject was made to sit on a chair with knees bent at right angles. Medial side of the right calf, slightly above the level of the maximum girth was marked. The skin fold above the marked level was picked up and jaws of the caliper were applied to the fold. After waiting for 2 to 3 seconds the reading was taken. One more reading was taken by the same procedure and average of the two was considered.

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6) Biceps muscles girth: The subject was made to raise his right arm to the horizontal position in the sagittal plane with the fully supinated forearm flexed at the elbow to an angle of 45^{o}. The subject was encouraged to 'Make a muscle' by fully tensing his biceps. The measurement was taken with the help of measuring tape wrapped at right angles to the long axis of the upper arm where the maximum girth was affected.

7) Calf muscles girth:The subject was made to stand erect with body weight equally supported on both legs. The measuring tape was wrapped around the right lower leg and measurement was taken at right angles to the axis of lower leg where it was maximum.

8) Body Composition: Total body weight was recorded in kg. by using standard weighing machine. Body composition is calculated in terms of fat percentage mass by using Durnin and Womersley (1974) method of finding Body Density i.e.

- Body density (kg/m³) for 17-19years male= 1.1620-0.063 log (biceps + triceps+ sub scapular + suprailliac)
- Body density (kg/m³) for 20-29years male = 1.1631-0.0632 log (biceps + triceps+ sub scapular + suprailliac)
- Body density (kg/m³) for30-39years male = 1.1422-0.0544 log (biceps + triceps+ sub scapular + suprailliac)
- Body density (kg/m³) for 40-49 years male = 1.1620-0.0700 log (biceps + triceps+ sub scapular + suprailliac)
- Body density (kg/m³) for above 50 years = 1.1715-0.0779 log (biceps + triceps + sub scapular + suprailliac)

Fat percentage was calculated by using Brozek et. al. (1963) method i.e.

$$\text{Body Fat \%} = \left(\frac{4.570}{\text{Body Density}} - 4.142\right) \times 100$$

Statistical Procedure:

For finding the mean differences of body composition of weightlifters and shot putters of Uttar Pradesh Z – test was used. Level of significance was set at 0.05 level.

TABLE – 1

ANALYSIS OF DATA OF DIFFERENT VARIABLES OF BODY composition OF WEIGHTLIFTERS AND SHOT-PUTTERS OF UTTAR PRADESH

Fat Percentage	Mean value of Shot – Putters	Mean value of Weight lifters	Z – value	Mean Difference
Fat percentage	15.56	21.45	2.26	5.89

*Significant at .05 level Tab.$Z_{.05}(29,1) = 1.644$

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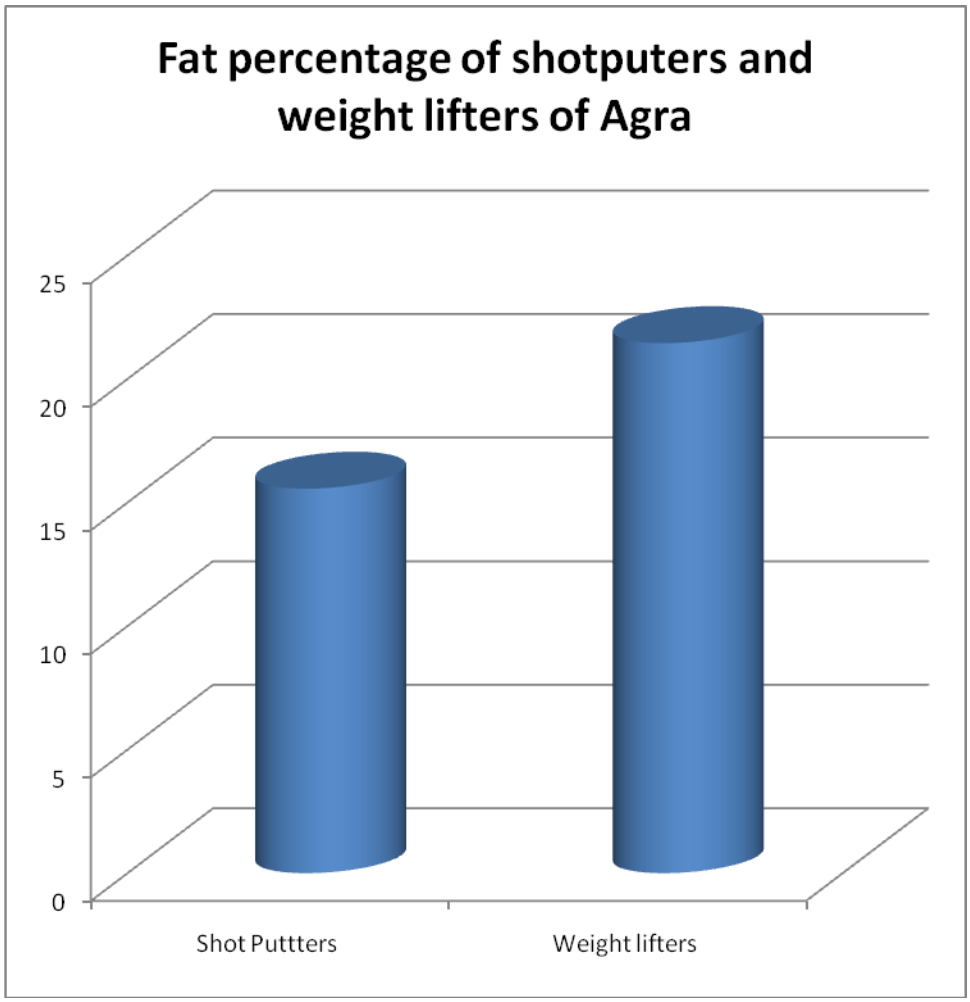
Interpretation of Results and Discussion of Findings

Analysis of data done through one tail Z – test at .05 level of significance. The analysis of data revealed that mean body composition of Weightlifters is significantly greater than mean body composition of shot-putters.

Gautam and Singh (2013) conducted a study on body composition of National level Weightlifters of different weight categories. They also reveled in study that means fat percentage weightlifters was 23.21 which is similar to our findings.

Daudayal and Singh (2007) conducted a study on body composition of Indian elite male Throwers. Similar to our study they also found the mean fat percentage of shot-putters was 14.24.

FIGURE – 1



Works cited and consulted:

1. Abdel-Khalek, E., (2005) "Sports training (theories and applications)".Knowledge organization, 12 edition, pp: 127.
2. Daudayal and Singh B.B. (2007) "a study on anthropometrical characteristics of Indial Elite male throwers", Unpublished PhD Thesis of Physical Education Submitted to Aligarh Muslim University, Aligarh.
3. Gautam, G.K. and Singh B.B.(2013) "a Study on Psycho-physical characteristics of Indian elite male weightlifters of different weight categories", Unpublished Ph.D. Thesis of Physical Education submitted to Aligarh Muslim University, Aligarh.
4. Harre Dietrich (1982) Principles of Sports, Sportverlag Berlin. p-151.
5. HICK, W.E. (1952) On the rate of gain of information. *Quarterly Journal of Experimental Psychology*, 4, p. 11-26
6. Hirtz, P. (1985). *Koordinative Faehigkeiten in Schulsport*, (Coordinative abilities in school sports) (Berlin : Volk and Wissen Valkeseigener Verlag, p. 127.
7. Peter Hirtz, Physical education Programme in Schools (Berlin: Volkascigner, 1995)
8. Ross,W.D.; Ward,R.; Leahy,R.M.;Day,J.A.P.:Proportioinality of Montreal athletes; in Carter, Physical structure of Olympic athletes I.The Montreal Olympic Games Anthropometrical Project. Medicine Sport,Vol.16,pp.81-106(Karger,Basel 1982).
9. Singh, H. (1991). "*Science of Sports Training",* (New Delhi: DVS Publication), p.163 & 165.
10. Tawfiq, F.A., (2004) "Athletes Encyclopedia" (technical aspects of throwing contests). Dar Almaaref, Alexandria, pp: 120.