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Original Article

Comparison of anthropometric parameters between runner & thrower of Western Rajasthan.

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ABSTRACT

Track and field events comprise running, jumping and throwing. Each sport requires specific physique to be successful in that specific field. Aims & objective: To find out differences in skin fold thicknesses between runner & thrower. Material & method: The present study was performed on 66 athletes (33 runner& 33 thrower) 20 to 30 yrs age group. Six skin fold thicknesses (Triceps, chest, subscapular, suprailiac, abdomen & calf) were measured.Result: The present study indicates that Thrower shows higher mean skin fold value than the runner.

1. Introduction

Athletics is an exclusive collection of sporting events that involves competitive sports like track and field, road running, cross country running, and race walking. Each sport requires specific physique or morphological features which plays a major, arguably critical role in competition success.

An individual's physique greatly limits or enhances successful participation in physical activity. [1] Elite and world class athletes have different physiques than individuals in the non-athletic population. [2] The size, shape and proportions of athletes are important considerations in player performance and better the performance more critical the relationship. [3]

To evaluate these physical abilities, the anthropometric measurements are often used. Anthropometric techniques are used to measure the absolute and relative variability in size and shape of the human body. Anthropometric measurements include body weight, height, skin folds measurement, circumferences, and various body diameters. The most common method is determination of skin fold thickness. This is based on the fact that a large proportion of body fat is stored directly underneath the skin.

Lesser requirement of extra fat in the body in most of events in athletics helps in providing relatively a greater mass of muscle and bone.

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Sodhi noticed in his study that the athletes who were very lean bit heavy because of well-developed musculature were superior in performance in certain competitive sports such as football, weightlifters and shot put. [4]

The present study is therefore aimed at evaluating the anthropometric measurements of track and field athletes from Western Rajasthan, and eventual differences between track and field athletes, in regard to specific event.

2. Materials and Methods:

The present study was conducted at the department of anatomy, Dr. S. N. Medical college & associated group of hospitals, Jodhpur (Rajasthan), to determine the anthropometric measurements of university level athletes of Western Rajasthan. The data were collected from M.P.Ed. College, Physical Education department of Jai Narayan Vyas University, Jodhpur (Raj.). A total of 66 male subjects aged of 20-30 year included in this study. The study includes 33 runners and 33 throwers. Six skin fold were taken at the following sites by using skin fold caliper:

- Triceps – on the back of arm.
- Chest – the juxta-nipple skin fold site, between the axilla and nipple as high as possible on the anterior axillary fold.
- Sub scapular – below inferior angle of scapula.
- Abdomen – 5 cm adjacent to the umbilicus (belly-button), to the right side.
- Suprailiac – Above iliac crest, at the level of umbilicus.
- Calf – a vertical skin fold on the medial side of the leg, at the level of maximum girth of the calf.

4). RESULT & DISCUSSION:

Athletics like other dynamic sports requires multifaceted factors for its success. These range from anthropometric, psychological, environmental organic - functional to, specific sports factors like equipment, tactics, techniques etc. [5] These factors include genetic endowment, training and favourable health status. Top performance in sports is achieved if an athlete possesses the basic anthropometric characteristics suitable for the event. [6] Appropriate level of physical fitness is usually considered as the part of overall sportsman's ability to demonstrate high performance in tournaments. Morphological parameters are an essential part of the evaluation and selection of sportsperson for diverse field of sports therefore the present study was conducted on 66 athletes of 20 – 30 age group including 33 runners & 33 throwers for 6 anthropometric parameters:

The mean triceps skin fold of Runner & Thrower in this study was 10.55±1.49, 13.11±1.76 respectively. A statistically highly significant relationship (p=.0001 t =6.39) was observed (Table no.-1). Similarly Diwakar Amatya observed the triceps skin fold thickness were highest in the Nepalese D H & S throwers. [7]

Table No.-1.Mean skin fold thickness (mm) at Triceps (TRI) of subjects

Group	TRI (mm)Mean ± S.D.
Runner	10.55 ± 1.49
Thrower	13.11 ± 1.76
p value	(<.0001) HS
t value	6.396

***HS – highly significant**

The mean subscapular skin fold of Runner & Thrower was 10.60±1.77, 13.06±2.14 found respectively. A statistically highly significant relationship (p=.0001 t=5.126) was observed (Table no.-2).

Table No.-2 Mean skin fold thickness (mm) at Subscapular fold (SS) of subjects

Group	SS (mm)Mean ± S.D.
Runner	10.60 ± 1.77
Thrower	13.06 ± 2.14
p value	(<.0001) HS
t value	5.126

***HS – highly significant**

The mean chest skin fold of Runner & Thrower was 8.56±.98 & 11.24±1.51 found respectively. The highly significant relationship found between Thrower & Runner (p<.0001; t=8.451) (Table-3)

Table No.-3Mean skin fold thickness (mm) at Chest (CHE) of the subjects

Group	CHE (mm)Mean ± S.D.
Runner	8.56 ± .98
Thrower	11.24 ± 1.51
p value	(<.0001) HS
t value	8.451

***HS – highly significant**

The mean Suprailiac skin fold of Runner and Thrower was 10.32±1.45& 15.59±1.96 found respectively. The highly significant relation found between Thrower & Runner (p<.0001; t=12.492) (Table-4)

Table No.-4 Mean skin fold thickness (mm) at Supraliiac (SI) of the subjects

Group	SI (mm)Mean ± S.D.
Runner	10.32 ± 1.45
Thrower	15.59 ± 1.96
p value	(<.0001) HS
t value	12.492

***HS – Highly Significant**

The mean abdominal skin fold of Runner & Thrower was 12.25±2.19& 12.73±1.62 found respectively. The highly significant relation found between Thrower & Runner (p=.3133; t=1.016) (Table-5).

Table No.-5Mean skin fold thickness (mm) at abdomen (ABD) of subjects

Group	ABD (mm)Mean ± S.D.
Runner	12.25 ± 2.19
Thrower	12.73 ± 1.62
p value	(.03133) NS
t value	1.016

***NS – Non significant**

The mean Calf skin fold of Runner & Thrower was 8.06±1.22 & 11.63±2.002 found respectively. A statistically highly significant relationship (p<.0001; t=8.829) was observed (Table no.-6).

Table No.-6 Mean skin fold thickness (mm) at Calf of subjects

Group	CALF (mm) Mean ± S.D.
Runner	8.56 ± .98
Thrower	11.24 ± 1.56
p value	(<.0001) HS
t value	8.829

***HS – highly significant**

Fig.- 1 Showing suprailiac skinfold

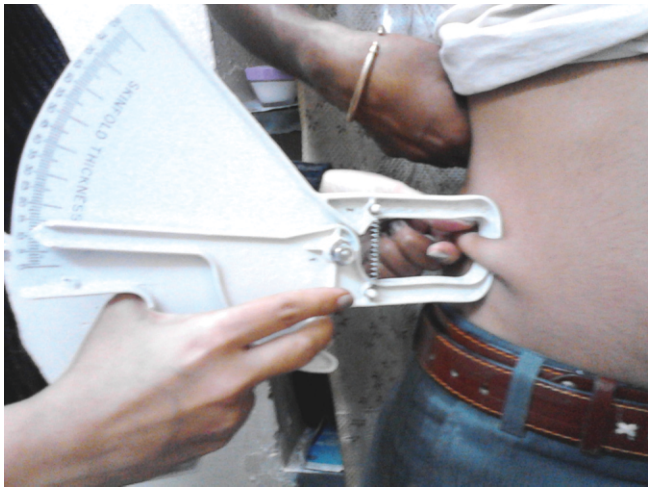

Fig.- 2 showing chest skinfold

Fig 3.- showing calf skinfold

Gualdi et al. found significant differences in skin fold thickness means of different sports groups. [8]

Shafeeq et al (2010) concluded that Throwers had significantly higher values of skin folds than other groups. [9]

Similarly Sodhi (1986) reported that on average the throwers possessed considerably thicker fat-folds at all sites than all other categories of track and field athletes. [4]

4. Conclusion

All the anthropometric parameter (triceps skin fold, chest subscapular, suprailiac, calf skin fold) have significant relationship for Runner & Thrower (except abdomen skin fold).The study indicates that the throwers shows higher mean value of skin fold thickness than the runners.

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