



A COMPARATIVE STUDY ON BICEPS MUSCLE GIRTH, CALF MUSCLE GIRTH AND THIGH MUSCLE GIRTH OF HIGH AND LOW PERFORMANCE OF KABADDI PLAYERS OF MAHARASHTRA FEDERATION TOURNAMENT

Mr. Sunil H. Rawale¹, Ph. D. & Anand S. Bhatt², Ph. D.

Research Scholar, Asst. Prof. Aadarsh college, Hingoli (SRT University, Nanded.) .

Abstract

This study was conducted to compare the biceps muscle girth, calf muscle girth and thigh muscle girth of high and low performance male kabaddi players of Maharashtra. High performance kabaddi players were selected from Maharashtra Federation tournament of youth group (Boys), held at Sawantwadi, district –Ratnagiri, on 22nd to 25th November, 2015, and from Maharashtra Kabaddi federation tournament male at Ashti, district- Beed on 5th Oct to 8th Oct 2015 and from Maharashtra federation under 14 boys kabaddi tournament held at Sangali, District Sangali on 2nd Oct to 4th Oct. 2015. Low performance kabaddi players were selected from Raigad district kabaddi tournament male. The Z- test was used to test the significant difference between mean biceps, calf and thigh muscle girth. Statistical analysis revealed that mean biceps muscle girth and calf muscle girth of high performance kabaddi players were significantly greater than the mean biceps muscle girth and calf muscle girth of low performance kabaddi players. Where as insignificant differences were observed in the mean thigh muscle girth of the two groups.



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Introduction

The physical activity and athletic training can also change body composition. Under activity, the proportion as well as absolute amount of lean body mass increase at expense of fat (Parizkova 1968).

Fundamental skills of Kabaddi like thigh hold, front kick, Back kick, toe touch, Block hold requires a specific type of physique having specific musculature.

The purpose of this research work was to compare biceps muscle girth, calf muscle girth and thigh muscle girth of high and low performance kabaddi players of Maharashtra.

Keeping in view the objectives of our study 50 subjects each from high and low performance Kabaddi players of Maharashtra were selected.

High performance kabaddi players were selected from:-

1. 20 subjects were selected from Maharashtra federation youth kabaddi tournament held at Sawantwadi- Maharashtra from 16st to 26th Nov. 2016.
2. 10 subjects were selected from Maharashtra Kabaddi federation tournament male at Ashti, district- Beed on 5th Oct to 8th Oct 2015.
3. 20 subjects were selected from Maharashtra federation under 14 boys kabaddi tournament held at Sangali. District Sangali on 2nd oct to 4th oct. 2015. .
4. 20 subjects were selected from Raigad district kabaddi tournament male.

Collection of Data

The kabaddi players of the two categories were approached through coaches and managers of the teams participating in the above mentioned tournaments. The anthropometrical and physiological measurements were taken in the way described below.

1) Biceps muscle 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°. 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.

2) Calf muscle 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.

3) Thigh muscle girth:

The Subject stood erect with arms by sides. The tape was positioned horizontally just below the gluteal furrow about 2/3 of the distance from the mid-knee to the crotch. The measurement was taken with help of measuring tape.

Statistical Procedure

Reiterating the objective of the study we have to point out that we intend to investigate the anthropometrical and physiological differentials between high and low Performance Kabaddi players. Thus, Z test is used to test the significance of difference between physiological and anthropometrical parameters of high and low performance kabaddi players. Z test is based on normal probability distribution and is used for judging the significance of several statistical measures, particularly the mean. It is the most frequently used test in

research and is generally used for judging the significance of difference between means of two independent samples, when sample size is more than 30

(C.R. Kothari, 1998).

Level of significance

The differences in various variables of high and low performance Kabaddi players were tested at 0.05 level of significance.

Table – 1 Biceps muscle girth

Biceps muscle girth	High performance kabaddi players	Low performance Kabaddi players
Mean	29.68	27.8
Standard Deviation	2.40	2.56
Obtained value Z		3.79

The mean biceps muscle girth of high performers is greater than the mean biceps muscle girth of low performers by 6.76%.

* Significantly at 0.05 level.

* Z value for one tail test to be significant at 0.05 level 1.68

Table -1 Show significant obtained Z -value for one tail test, which leads us to

Conclude that the mean biceps muscle girth of high performance kabaddi players is significantly greater (6.76%), than the mean biceps muscle girth of low performance kabaddi players.

Table – 1 : Biceps muscle girth

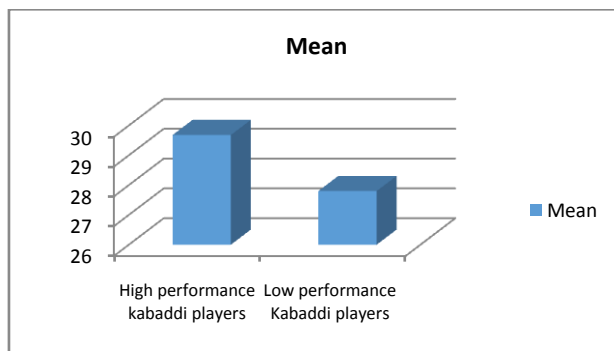


Figure -1 Mean biceps muscle girth of high performer and low performer kabaddi players.

Table - 2 : Calf muscle girth

Calf muscle girth	High performance Kabaddi players	Low performance Kabaddi players
Mean	34.88	33.30
Standard Deviation	1.93	2.38
Obtained value		3.65

The mean calf muscle girth of high performers is greater than the mean calf muscle girth of Low performers by 4.74%.

* Significantly at 0.05 level.

* Z- value for one tail test to be significant at 0.05 level 1.68

Table -2 Shows significant obtained Z -value for one tail test, which leads us to conclude that the mean calf muscle girth of high performance Kabaddi players is significantly greater (4.74%), than the mean calf muscle girth of low performance Kabaddi players.

Figure-2 Calf muscles girth

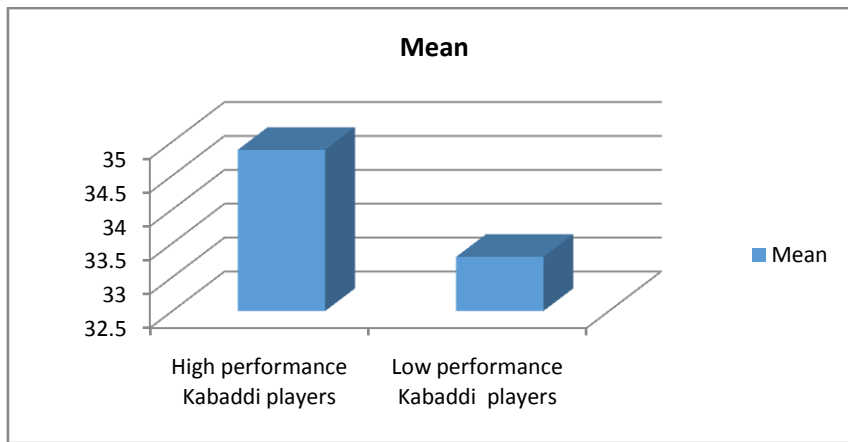


Figure -2 Mean calf muscle girth of high performer and low performer kabaddi players.

Thigh muscle girth	High performance kabaddi players	Low performance kabaddi players.
Mean	49.55	49.81
Standard Deviation	3.44	4.04
Oriented Value		0.34

* Z- value for one tail test to be significant at 0.05 level 1.68

Table -3 Shows insignificant obtained Z- value for one tail test, which leads us to conclude that the mean thigh muscle girth of high performance Kabaddi players is insignificantly lesser than the mean thigh muscle girth of low performance kabaddi players.

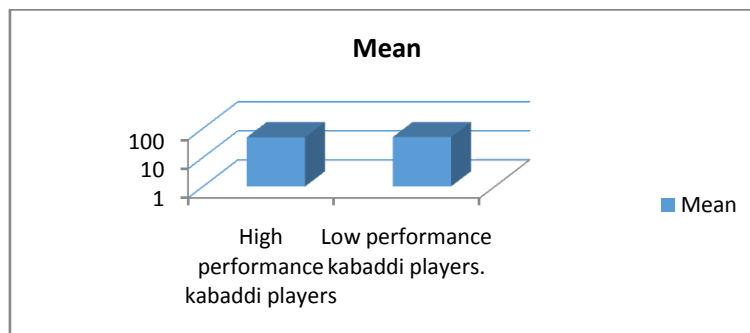


Figure - 3 Mean thigh muscle girth of high performer and low performer kabaddi players.

Discussion of Findings

Statistical analysis had revealed that the mean biceps muscle girth of higher performance Kabaddi players is significantly greater (6.76%), than the mean biceps muscle girth of low performance kabaddi players. Further the mean calf muscle girth of high performance of kabaddi players is significantly greater (4.74%), than the mean calf muscle girth of low performance kabaddi players. Also the mean thigh muscle girth of high performance Kabaddi players is insignificantly lesser than the mean thigh muscle girth of low performance kabaddi players.

Zhdanova (1962) studied athletes under training of different intensities in order to determine the relationship between changes in body composition and oxygen consumption, and creatinine excretion, at rest under basal conditions. Besides providing further evidence of changes in body composition in relation to intensity of physical activity she demonstrated a positive relationship between creatinine excretion and oxygen consumption at rest and proportion of LBM.

In 1964, Kuta and associates examined men in their 7th decade of life and found greater proportion of LBM. Because of continuity in sports throughout life, they were more proficient in a number of sports than non-sporting men of equal age.

By factoring body composition and several motor aptitude items **Wilmore, Jack H. Baston, Massachusetts, 1977** concluded that muscular fitness is more closely related to the proportion of LBM than to the total LBM. Similarly **Leesy and colleagues (1965)** found that physical performances in which the whole body must move are dependent primarily on the proportion of LBM. They found statistically non-significant relationship between LBM or proportion of LBM and the rate of response of heart to exercise in adults. They developed regression equations for calculating body composition from performance in various tests (Pull-ups, standing broad jump, etc). **Thorsen, M: Research Quarterly, 35(3) (supple) ; 418-432, 1964** found a relationship between body composition and motor aptitude in pre-adolescent boys.

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