

ORIGINAL ARTICLE

A Study On Dependence Of Agility Of Male Raiders And Defenders In Kabaddi On Selected Anthropometric Measurements

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ABSTRACT

Anthropometrics are the bodily measurements which play a crucial role in sports performance. This study has been made to correlate the agility of male Kabaddi players with some of their anthropometric measurements. In the process of correlating agility with anthropometric measurements, the study has revealed some other interesting statistics of relationship between various anthropometric measurements such as negative correlation between height of the players and their calf girth, leg length and calf girth and many more conclusions have been drawn. The study revealed that hip circumference was the one factor which highly influenced the agility of players irrespective of players being raiders or defenders.

Key Words: Muscle Mass, Girth, Response Time, Quickness.

INTRODUCTION

India is a country where traditional games are widely encouraged and practiced. Kabaddi is one among such games which has gained the attention of Indian population since ages and has today taken a leap ahead in the format of the Pro-Kabaddi League and World Championships. India is one of the leading nations in the world of Kabaddi. One reason behind the success of India in Kabaddi is the muscular build and toughness among the Indian youth when compared to the western countries. The cost effectiveness of playing the game stands as another major reason behind it being admired in masses of India. The structure and stature of human body plays a vital role in determining the health related physical fitness and skill related physical fitness of an individual. Hence anthropometrics comes into picture in determining the playing ability and performance of players with respect to any game.

Agility is one of the performance determining component for a player. The quickness in movements of an individual determines the skill execution and scoring ability of a player for a team. The response times of a human being to visual, tactile and auditory stimulus in game situations, especially in Kabaddi play a key role in player performance in raiding, defending and scoring.

This study has been designed to study the correlation of selected anthropometric measurements namely Height, Weight, Leg Length, Calf Girth, Hip Circumference and Hand Length with agility of male raiders and defenders in the game of Kabaddi.

LITERATURE REVIEW

Kabaddi being one among the ancient games of India, has undergone transformations in its formats since ages. Hence, a lot of research has gone into the game for past many years which has reduced the injuries, improved the ease of playing and has increased the craze for the game among all age groups. Yuvraj Sriwasthava et.al. (1) in their recent research concluded that when there was a comparison among male Kabaddi and Kho Kho players with respect to agility, the participants differed significantly in this area. The Kabaddi players Mean (21.20) outperformed the kho-kho players Mean (10.64) which means that the high value of Kabaddi players is because of the structure and training with respect to skills required in the game. Jasvir Ram and Joseph Singh (2) in their research concluded that the thigh girth and distance positively and center of gravity negatively contributes to the performance of toe-touch skill in male kabaddi players. Jyotsna Aggarwal et.al. (3) conducted a study to provide a reference to coaches and sports scientists working to enhance and compare the performance of kabaddi players based on their positional specific physiological requirements.

Hence ample research is available to facilitate and strengthen this research. Some of the findings from this research may be in line and some may contradict the earlier research. Positional playing abilities and respective capabilities have been studied in this research with respect to 2 major categories of Kabaddi players namely the raiders and the defenders.

METHODOLOGY

The purpose of this research was to identify the extent to which the agility of male raiders and defenders in kabaddi depends on the selected anthropometric measurements namely Height, Weight, Leg Length, Calf Girth, Hip Circumference and Hand Length.

40 regular Kabaddi players of Anurag University, Hyderabad were selected as samples for this study where 20 were raiders and 20 were defenders. All these players were regularly attending the practice camp at the university for past 2 years. The age group of this sample ranged from 18 to 21 years. The following methods were incorporated into the study for making the anthropometric measurements and agility test.

A stadiometer was used to measure the height of the players. The weight of individuals was measured accurately on a digital weighing machine and a flexible measuring tape was used to make all the anthropometric measurements across various parts of the body as required for the study.

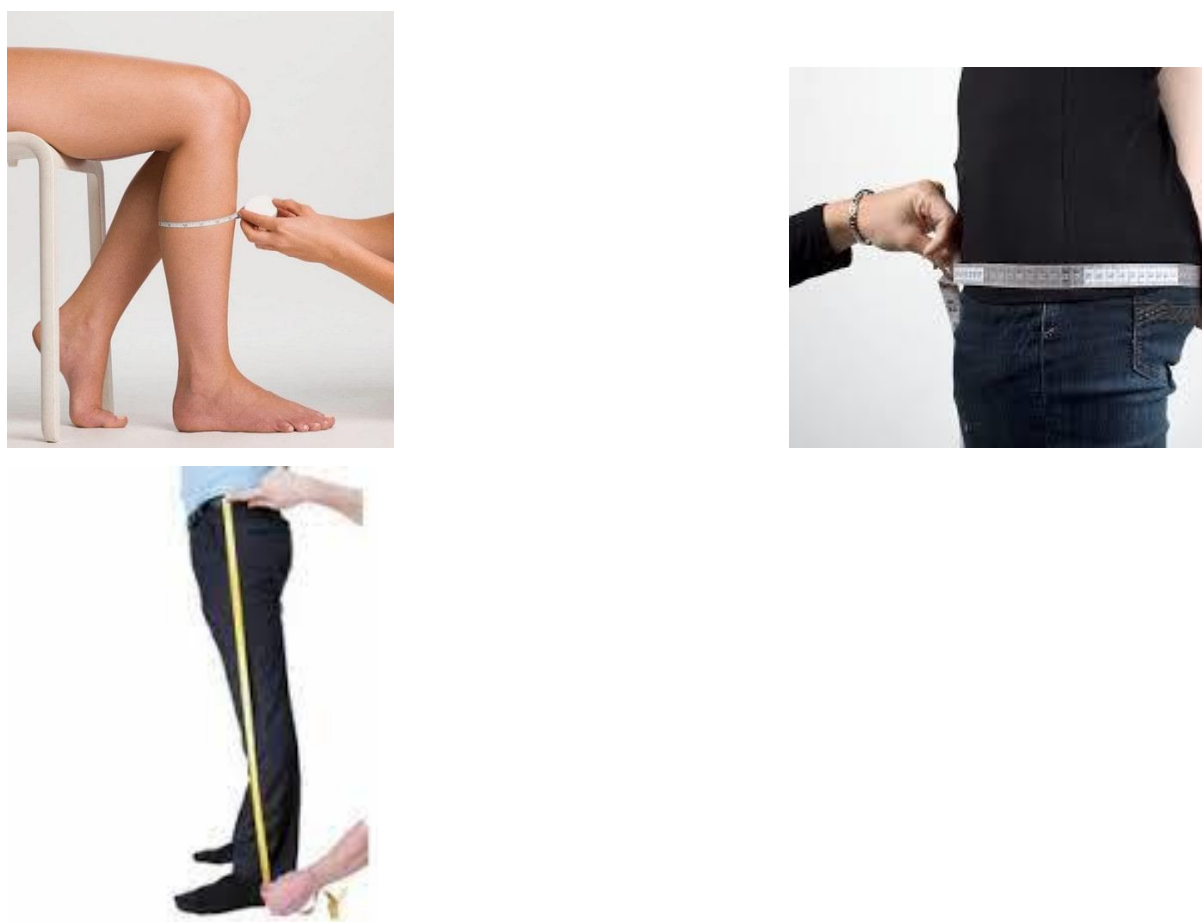


Fig 1. Making the anthropometric measurements using a measuring tape.

AGILITY TEST

A general shuttle run was administered for the players in the kabaddi court using the center line, end line and the baulk line. 3 trials were given to every player to perform the shuttle run and the best of three trials was recorded as the agility score of every player.

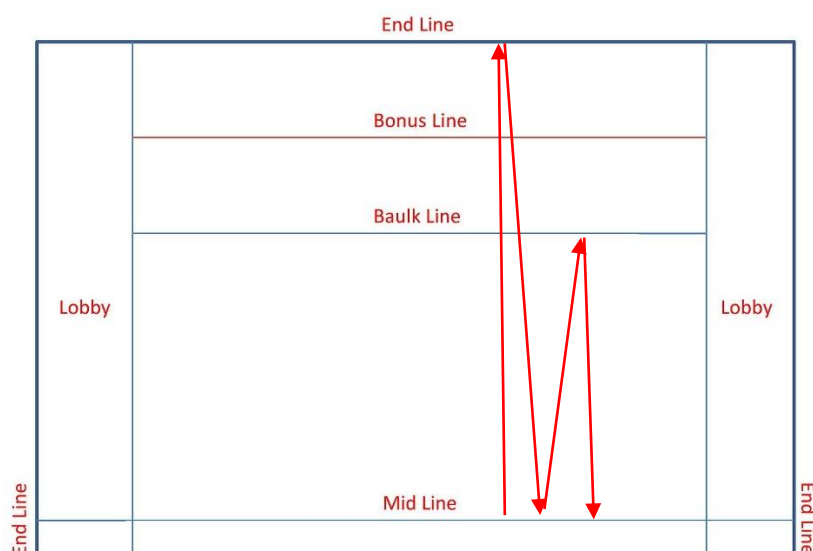


Fig.2. Administration of shuttle run in Kabaddi Court to determine agility of players.

ANALYSIS OF DATA

6 anthropometric measurements of every subject were recorded along with the best timing of shuttle run performance as the determinant of agility. This data was interpreted using the correlational analysis and the following is the representation of data

| | <i>HEIGHT IN CM</i> | <i>WEIGHT IN KGS</i> | <i>CALF GIRTH IN CMS</i> | <i>LEG LENGTH IN CMS</i> | <i>HAND LENGTH IN CMS</i> | <i>HIP CIRCUM IN CMS</i> | <i>AGILITY IN SEC</i> |
|--------------------------|-------------------------|--------------------------|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|---------------------------|
| HEIGHT IN CM | 1.000 | | | | | | |
| WEIGHT IN KGS | 0.124 | 1.000 | | | | | |
| CALF GIRTH IN CMS | -0.097 | 0.792 | 1.000 | | | | |
| LEG LENGTH IN CMS | 0.792 | 0.151 | -0.078 | 1.000 | | | |
| HAND LENGTH IN CMS | 0.759 | 0.233 | -0.164 | 0.740 | 1.000 | | |
| HIP CIRCUMFERENCE IN CMS | 0.116 | 0.174 | -0.101 | 0.118 | 0.166 | 1.000 | |
| AGILITY IN SEC | 0.238 | 0.474 | 0.264 | 0.298 | 0.381 | -0.048 | 1.000 |

Table 1. Correlation values between the anthropometric measurements and the agility of Raiders.

| | <i>HEIGHT IN CM</i> | <i>WEIGHT IN KGS</i> | <i>CALF GIRTH IN CMS</i> | <i>LEG LENGTH IN CMS</i> | <i>HAND LENGTH IN CMS</i> | <i>HIP CIRCUM IN CMS</i> | <i>AGILITY IN SEC</i> |
|--------------|-------------------------|--------------------------|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|---------------------------|
| HEIGHT IN CM | 1.000 | | | | | | |

| | | | | | | | |
|--------------------------|--------|-------|--------|-------|-------|-------|-------|
| WEIGHT IN KGS | 0.143 | 1.000 | | | | | |
| CALF GIRTH IN CMS | -0.101 | 0.759 | 1.000 | | | | |
| LEG LENGTH IN CMS | 0.792 | 0.157 | -0.080 | 1.000 | | | |
| HAND LENGTH IN CMS | 0.701 | 0.157 | -0.145 | 0.701 | 1.000 | | |
| HIP CIRCUMFERENCE IN CMS | 0.132 | 0.210 | -0.108 | 0.124 | 0.106 | 1.000 | |
| AGILITY IN SEC | 0.254 | 0.505 | 0.244 | 0.299 | 0.288 | 0.003 | 1.000 |

Table 2. Correlation values between the anthropometric measurements and the agility of Defenders.

The above 2 tables are the representation of data wherein every individual anthropometric variable of players is correlated with all other anthropometric measurements and also the agility of the players in the last column. The correlation values range from -0.164 to 1.00.

RESULTS AND DISCUSSION

The following results have been drawn from Table.1 for raiders and Table.2 for defenders

The calf girth of players irrespective of playing position has a negative correlation (-0.80 to -0.164) with the leg length, height and hand length of the players and the second component that shows the impact on agility of kabaddi players is the hip circumference.

Table.3 - Comparison of Agility dependence on anthropometrics in raiders and defenders

| | <i>AGILITY VS HEIGHT IN CM</i> | <i>AGILITY VS WEIGHT IN KGS</i> | <i>AGILITY VS CALF GIRTH IN CMS</i> | <i>AGILITY VS LEG LENGTH IN CMS</i> | <i>AGILITY VS HAND LENGTH IN CMS</i> | <i>AGILITY VS HIP CIRCUM IN CMS</i> |
|-----------|--------------------------------|---------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|
| RAIDERS | 0.238 | 0.474 | 0.264 | 0.298 | 0.381 | -0.048 |
| DEFENDERS | 0.254 | 0.505 | 0.244 | 0.299 | 0.288 | 0.003 |

The above table shows the correlation between the selected anthropometric measurements with the agility of players with respect to positional play in 2 major categories namely the

raiders and the defenders. The correlation values tell us that there is a positive correlation between the anthropometric measurements except the hip circumference in case of the defenders.

The highest positive correlation was obviously identified between the body weight and the agility of players which means that more the weight of the players, more was the time taken to finish the shuttle run. All other correlations were not significant.

CONCLUSIONS

1. Irrespective of the position and specialization of male players in the game of Kabaddi, the selected anthropometric measurements had positive correlation to their agility.
2. The hip circumference of defenders had a negative correlation which means that in defenders the agility was being impacted by their hip circumference.

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