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Anthropometric Profile Of Kabaddi Players At Different Level Of Contests: In Reference To Inter University Team Players And Inter Collegiate Players

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ABSTRACT

The purpose of this study was to compare the anthropometric profiles of Kabaddi players at different level of matches (i.e., Inter collegiate level and inter universities level). A sample of 60 subjects , inter University and inter collegiate male Kabaddi players, was selected for the present study. The purposive sampling technique was used to select the subjects. All the subjects were assessed for height, weight, lengths, circumferences, diameters, and skin-fold thicknesses. An independent samples *t*-test revealed that inter university Kabaddi players had significantly higher height ($P < 0.05$), arm length ($P < 0.05$), upper leg length ($P < 0.05$), and lower leg length ($P < 0.05$) as compared to inter collegiate level Kabaddi players. The inter university level Kabaddi players were also found to have significantly greater elbow diameter ($P < 0.05$), shoulder diameter ($P < 0.05$), hip diameter ($P < 0.05$), knee diameter ($P < 0.05$), calf circumference ($P < 0.05$), chest circumference ($P < 0.05$), upper arm circumference ($P < 0.05$), and fore arm circumference ($P < 0.05$). Inter university Kabaddi players had significantly greater biceps ($P < 0.05$), triceps ($P < 0.05$), sub scapular ($P < 0.05$), and suprailliac skin-fold ($P < 0.05$) as compared to other players.

Keywords: Anthropometric, Kabaddi, Inter Collegiate players, Inter University Players.

INTRODUCTION

Anthropometry is defined as “The scientific procedures and processes of acquiring surface anatomical dimensional measurements such as lengths, breadths, girths and skinfolds of the human body by means of specialist equipment” (Stewart, 2010). This approach has altered little if at all over the last hundred years, and even in ancient Greece, we hear of systematic body measurement in order to produce statues which were appropriately sized to real individuals. Sculptors would have appreciated that this approach demands painstaking detail, adherence to best practice and diligence in reducing errors, and few scientists would argue with this. Anthropometry sits within the field of kinanthropometry - “The academic discipline which involves the use of anthropometric measures in relation to other scientific parameters and/or thematic areas such as human movement, physiology or applied health sciences” (Stewart, 2010).

However, one of the issues for kin anthropometry, particularly in its applications for physical activity and sport, is that the tools have not advanced in parallel with those of other disciplines such as sports physiology and biomechanics. Researchers, therefore, may be persuaded to think that its relevance is reducing in a contemporary research context. Indeed, for publications in two main research journals, the prevalence of anthropometry as central to research (estimated from key word searches using similar terms) appears to have peaked a generation ago (Olds, 2004). But perhaps kinanthropometry is on the verge of a renaissance for two reasons. Firstly, the field has now largely embraced tightly defined standard procedures and error control, the lack of which previously diminished its 3 ability to convince a research community becoming accustomed to more sophisticated methods. Secondly, recent advances in digital anthropometry, using 3D body scanning, enable an unprecedented range of new measurement possibilities. These new measures can augment traditional anthropometry, and the combination of manual and digital anthropometry may allow new research questions to be addressed.

Anthropometric characteristics are related to a player's profile and might be used to predict a player's success. Anthropometric characteristics of players have been an interest of sports trainers, exercise scientists, physical education, and sport medicine professionals for years and many of them assumed the practicing players might be expected to exhibited structural and functional characteristics that are specifically favorable for the sport. In addition, anthropometric measurements
and morphological characteristics play an important role in determining the success of a sportsperson (Wilmore and Costill, 1999 and Keogh, 1999). Kabaddi belongs to sport activities, in which anthropometric characteristics of its participants influence the level of sport performance. It was established that Kabaddi players compared to most other athletes have distinctive anthrop-morphological characteristics. Therefore, the purpose of this study was to compare the anthropometric characteristics of Kabaddi players at different match level.

METHODOLOGY:

SUBJECTS:

A sample of 60 subjects, which includes 30 each, at inter university team players (n = 30, mean ± SD: age 23.42 ± 0.47 years, height 169.04 ± 6.14 cm, weight 65.44 ± 4.42 kg, and body mass index [BMI] 23.34 ± 1.86) and inter- collegiate players (n = 30, mean ± SD: age 20.42 ± 0.47 years, height 163.08 ± 4.14 cm, weight 60.22 ± 4.36 kg, and BMI 19.42 ± 2.1) male Kabaddi players, was selected for the present study. The purposive sampling technique was used to select the subjects. The inter university team players and inter- collegiate players subjects were selected from different affiliated colleges Kabaddi players of Andhra university , Visakhapatnam.

The subjects were assessed for circumferences, height, weight, lengths, diameters and skin-fold thickness. Stature was measured using a standardized wall mounting standiometer (measuring range 200 cm, least count 0.5 cm, MIndiart, New Delhi, India). The body mass was measured to the nearest 0.1 kg using calibrated digital scale in kilogram (Adam equipment Co, Ltd, Milton Keynes, UK) and it's capacity was 150 kg. The scale was checked using standardized weights in regular intervals and checked, whether it was reading zero or not before measured. BMI was calculated by the following formulae: BMI (kg/m2) = (Body weight in kg)/(height in meters).[2] Girths and lengths were taken with the steel tape to the nearest 0.5 cm, while widths and diameters of body parts were measured using sliding caliper. Skin-folds thicknesses were assesses using skin-fold caliper.

STATISTICAL ANALYSES

Values are presented as mean values and SD. Independent samples *t*-test was used to test if population means estimated by two independent samples differed significantly. The level of significance was set at 0.05. Data were analyzed using SPSS Version 20.0.

RESULTS:

Table 1: the demographic characteristics of inter university and inter collegiate level Kabaddi players.

Variables	Inter Collegiate players		Inter University players		t-Value	Sig
	Mean	SD	Mean	SD		
Age(Years)	16.42	0.47	21.42	0.46	34.204	0.000*
Height(Cm)	162.04	6.14	171.08	6.14	167.591	0.000*
Body Weight(Kg)	58.44	4.42	64.22	4.56	45.147	0.000*
BMI(Kg/m2)	18.34	1.86	21.42	2.18	0.048	0.000*

Significant at 0.05 Level

Table 1 depicts the demographic characteristics of inter university and inter collegiate level Kabaddi players. The mean age of inter university players was 23.42 years and inter collegiate were 20.42 years. The mean height of inter university was 169.08 cm and inter collegiate was 160.04 cm. The mean weight of inter university was 69.22 kg and inter collegiate was 60.44 kg. The mean BMI values of inter university were 23.42 and inter collegiate was 19.34. Results indicated than inter university players that had more height and weight than inter university Kabaddi players.

Table 2: the comparison of length measurements of inter university and inter collegiate level Kabaddi players.

Variables	Inter Collegiate players		Inter University players		t-Value	Sig
	Mean	SD	Mean	SD		
Arm Length(Cm)	73.26	3.7	78.99	3.7	4.256	0.000*
Leg Length(Cm)	86.32	14.86	90.36	14.86	1.024	0.292
Upper Leg Length(Cm)	46.23	6.25	50.6	6.25	2.365	0.011*
lower Leg Length(Cm)	36.25	3.42	40.86	3.42	4.235	0.000*

Significant at 0.05 Level

Table 2 shows the comparison of length measurements of inter university and inter collegiate level Kabaddi players. It is evident from the results that significant differences were found between inter university and inter collegiate level Kabaddi players with regard to arm length ($P < 0.05$), upper leg length ($P < 0.05$), and lower leg length ($P < 0.05$). The inter university players had better lengths measurements than inter collegiate Kabaddi players.

Table 3: the comparison of diameter measurements of inter university and inter collegiate level Kabaddi players.

Variables	Inter Collegiate players		Inter University players		t-Value	Sig
	Mean	SD	Mean	SD		
Elbow Diameter(Cm)	7.86	0.62	8.33	0.62	8.321	0.000*
Shoulder Diameter(Cm)	38.31	2.03	42.63	2.03	9.862	0.000*
Hip Diameter(Cm)	29.65	2.36	31.86	2.36	2.032	0.0032*
Knee Diameter(Cm)	9.42	0.96	10.68	0.96	4.568	0.000*

Significant at 0.05 Level

Table 3 shows the comparison of diameter measurements of inter university and inter collegiate level Kabaddi players. Results indicated that inter university players had significantly greater elbow diameter ($P < 0.05$), shoulder diameter ($P < 0.05$), hip diameter ($P < 0.05$), and knee diameter ($P < 0.05$) as compare to inter collegiate Kabaddi players.

Table 4 : the comparison of circumference measurements of inter university and inter collegiate level Kabaddi players

Variables	Inter Collegiate players		Inter University players		t-Value	Sig
	Mean	SD	Mean	SD		
Claf Circumference(Cm)	34.23	3.96	36.23	4.03	5.323	0.000*
Thigh Circumference(Cm)	57.53	7.68	62.32	9.32	2.132	0.1637
Chest Circumference(Cm)	98.32	11.2	103.23	13.56	3.021	0.084*
Upper arm Circumference(Cm)	30.02	2.96	35.23	3.45	6.125	0.000*
Fore arm Circumference(Cm)	28.62	3.96	30.12	4.8	4.096	0.0001*

Significant at 0.05 Level

Table 4 shows the comparison of circumference measurements of inter university and inter collegiate level Kabaddi players. Results indicated that inter university players had significantly greater calf circumference ($P < 0.05$), chest circumference ($P < 0.05$), upper arm circumference ($P < 0.05$), and fore arm circumference ($P < 0.05$) as compare to inter collegiate Kabaddi players.

Table 5: the comparison of skin-folds measurements of inter university and inter collegiate level Kabaddi players.

Variables	Inter Collegiate players		Inter University players		t-Value	Sig
	Mean	SD	Mean	SD		
Biceps(mm)	5.98	1.96	8.65	1.96	8.965	0.000*
Triceps(mm)	7.32	2.86	12.35	2.86	8.562	0.000*
Sub scapular(mm)	10.02	2.91	13.52	2.91	6.023	0.000*
Suprailliac(mm)	9.98	3.99	16.86	3.99	6.895	0.000*
Calf(mm)	8.63	2.75	9.85	2.75	2.987	0.000*

Significant at 0.05 Level

Table 5 shows the comparison of skin-folds measurements of inter university and inter collegiate level Kabaddi players. Results indicated that significant differences were found between inter collegiate and inter collegiate level Kabaddi players with regard to biceps ($P < 0.05$), triceps ($P < 0.05$), subscapular ($P < 0.05$), and suprailliac skin-fold ($P < 0.05$), respectively. The inter collegiate had significantly greater skin-folds thickness as compare to inter university Kabaddi players.

DISCUSSION

In the present study, the anthropometric measurements of the Kabaddi players have been evaluated in relation to their competition level (i.e., Inter University and Inter collegiate). This study indicates the existence of differences between Inter University and Inter collegiate players. The overall results show that Inter University Kabaddi players were taller and heavier as compared to the Inter collegiate Kabaddi players. Body height, being the most characteristic trait of Kabaddi players, is significantly conditioned genetically (Milicerowa, 1973). The mean height of the Inter University Kabaddi players (169.06 ± 6.14 cm) and Inter collegiate Kabaddi players (163.06 ± 6.14 cm) in the present study is greater than the Kabaddi players of Andhra University Affiliate Colleges, Visakhapatnam. In Kabaddi, teams compete by manipulating skills of afencive and difensive high above the head. Therefore, the presence of tall players is an indispensable factor in the success of a team (Gaurav *et al*., 2010). In this study, the Inter university Kabaddi players had significantly greater arm length, upper leg length, and lower leg length than inter colegiateKabaddi players because anthropometric characteristics are almost exclusively genetically determined; therefore, length and breadth measurements cannot be changed with training (Norton and Olds, 2001).On the other hand, Inter university Kabaddi players had significantly greater all the diameters.

Results indicated that the inter university Kabaddi players had significantly greater calf circumference, chest circumference, upper arm, and forearm circumference than the inter collegiate Kabaddi players. The findings of the present studyare in line with the study of Gaurav and Singh (2014), evaluated the differences in anthropometric characteristics of Kabaddi players in relation to their performance level (i.e., inter-university and inter-college). They observed that inter-university players had better anthropometric measurements as compared to inter university Kabaddi player. In case of skin-fold measurements, the inter collegiate Kabaddi players had significantly greater skin-folds thickness as compare to inter university Kabaddi players. The skin-fold thickness of four sites, biceps, triceps, subscapular, and suprailiac of Kabaddi players in the present study was more than those of reported by Bandyopadhyay (2007). The skinfold thickness is significantly higher in the inter universityKabaddi players group, indicating that the inter collegiate Kabaddi players had a greater quantity of subcutaneous fat deposition.

CONCLUSION

It is concluded that various anthropometric measurements have clear impact on the competition level of Kabaddi Players.

The skin-fold thickness is significantly higher in the project Kabaddi players group, indicating that the project Kabaddi players had a greater quantity of subcutaneous fat deposition.

In this regard, Inter University Kabaddi players had significantly greater chest circumference, upper arm, and forearm circumference than the Inter Collegiate Kabaddi players. In addition, the inter university Kabaddi players had significantly greater arm length, upper leg length, and lower leg length than inter collegiate Kabaddi players. Moreover, inter university Kabaddi team players were taller and heavier as compared to the inter collegiate Kabaddi players.

RECOMMENDATIONS

In selecting the physical exercises while designing the training program, it is recommended that the form of exercise should have on the anthropometric variables. Significant differences existed among Kabaddi Inter collegiate tournament players of different playing positions. Coaches should use this information to determine the type of anthropometric measurements that are needed.

The selection and training process should emphasis on their anthropometric measurements for the betterment of the result.

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