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ANALYSIS OF SELECTED ANTHROPOMETRIC CHARACTERISTICS ON MALE ATHLETES AMONG DIFFERENT SPORTS DISCIPLINES

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ABSTRACT

Anthropometric measurements play an important role in identification of sports talents. Different types of physique have specific advantage in specific sports. The aim of the study was to analysis of selected anthropometric characteristics on male athletes among different sports disciplines. A total of 55 male subjects from the different sports/games at the Sports Training Center scheme of sports Authority of India at Lakshmi Bai National College of Physical Education were selected as subjects for the study. Their age ranged from 13-24 yrs. The objectives and purpose were made clear to the subjects prior to the measurement. The selected anthropometric profile suggested by ISAK was measured to assess the bodily



features such as Body mass, Stretch Stature, Sitting Height, Triceps skinfold, Subscapular skinfold and Biceps skinfold. The skin fold caliper, weighing scale and anthropometric kit were used to assess selected variables. Descriptive statistics and F ratio were used to analyze the data and also to make a comparison among selected sports groups. Results of the study indicated that the swimming group possessed lowest and taekwondo group highest mean scores among all the four sports groups.

KEYWORDS: Anthropometry, weighing scale, skinfold and body mass.

INTRODUCTION

Anthropometry is the branch of study dimensions of the human body. It involves making precise, highly standardized measurements so that size and shape can be described objectively. It has the purpose of helping us to understand human movement in the context of growth, exercise performance and nutrition. The word anthropometry is derived from the Greek word 'anthros' meaning man, and 'metre' meaning to measure. Earlier

anthropometry was used mainly for racial differentiation and personal identification. Basic anthropometric measurements include those for body mass (weight), stature (height), and Skinfold thickness. Anthropometry has a rich tradition in sports sciences and sports medicine. In many sports, success is often associated with a particular body configuration. For this reason, anthropometry can be used by coaches and trainers to help predict the activity at which an individual is most likely to succeed. Knowledge of anthropometry is useful for biomechanical analyses in various sports events. For example the greater height of fullback in hockey seems to help them to be good defenders, because it helps them to cover a

wider range all around during the game. In long jump the stride length, takeoff, flight and landing distance are the major contributors and it depends on the athletes physical characteristics. Length of one's legs and the range of movement can provide immense information regarding the maximal performance of a jump.

STATEMENT OF THE PROBLEM

The purpose of the study was to assess and compare the selected Anthropometric characteristics of male athletes of different sports disciplines.

METHODOLOGY

A total of 55 male subjects from the different sports/games at the Sports Training Center scheme of sports Authority of India at Lakshmibai National College of Physical Education were selected as subjects for the study. Their age ranged from 13-24 yrs. The objectives and purpose were made clear to the subjects prior to the measurement. The selected anthropometric profile suggested by ISAK was measured to assess the bodily features such as Body mass, Stretch Stature, Sitting Height, Triceps skinfold, Subscapular skinfold and Biceps skinfold. The skin fold caliper, weighing scale and anthropometric kit were used to assess selected variables. Descriptive statistics and F ratio were used to analyze the data and also to make a comparison among selected sports groups.

Table 1.
Descriptive statistics of selected anthropometric measurements of male trainees in different sports disciplines

Sl.No.	Variables	Group	Number	Mean	Sd	Min	Max
1	Body mass	Cycling	7	60.58	6.60	54.00	70.00
		Swimming	8	53.59	9.04	37.30	68.70
		Taekwondo	10	66.90	12.30	50.00	82.00
		Athletics	30	62.60	7.55	47.50	73.90
		Total	55	61.82	9.32	37.30	82.00
2	Stretch Stature	Cycling	7	168.88	2.82	165.00	172.40
		Swimming	8	160.98	11.44	144.30	177.50
		Taekwondo	10	175.40	6.98	166.00	184.40
		Athletics	30	173.10	7.80	158.80	186.40
		Total	55	171.22	8.96	144.30	186.40
3	Sitting Height	Cycling	7	85.98	1.74	84.00	89.10
		Swimming	8	80.50	6.91	70.00	88.10
		Taekwondo	10	90.45	4.14	83.50	96.30
		Athletics	30	87.06	4.027	76.50	95.20
		Total	55	86.59	5.25	70.00	96.30
4	Triceps skinfold	Cycling	7	8.05	2.32	5.20	12.60
		Swimming	8	8.18	1.61	6.20	11.10
		Taekwondo	10	9.11	2.99	4.60	15.20
		Athletics	30	6.93	1.86	4.10	11.40
		Total	55	7.65	2.24	4.10	15.20

5	Subscapular skinfold	Cycling	7	9.31	1.91	7.40	12.40
		Swimming	8	7.15	1.09	5.40	8.40
		Taekwondo	10	9.44	1.66	7.80	12.00
		Athletics	30	8.90	1.57	6.20	13.20
		Total	55	8.84	1.69	5.40	13.20
6	Biceps skinfold	Cycling	7	4.71	0.81	3.60	6.20
		Swimming	8	4.40	0.80	3.00	5.40
		Taekwondo	10	4.92	1.47	3.40	8.00
		Athletics	30	3.68	0.63	2.60	5.00
		Total	55	4.14	1.00	2.60	8.0

Table 2

Analysis of variance of mean scores on body mass among sports groups

VARIABLES	VARIANCE	SUM OF SQUARES	DF	MEAN SQUARES	F	Sig(P)
<i>BODY MASS</i>	Between Groups	838.64	3	278.54	3.69*	.018
	Within Groups	3859.49	51	75.67		
	Total	4698.13	54			
<i>STRETCH STATURE</i>	Between Groups	1162.78	3	388.50	6.23*	.001
	Within Groups	3170.96	51	62.17		
	Total	4333.74	54			
<i>SITTING HEIGHT</i>	Between Groups	455.00	3	151.66	7.46*	.000
	Within Groups	1037.85	51	20.35		
	Total	1492.85	54			
<i>TRICEPS SKINFOLD</i>	Between Groups	40.23	3	13.41	2.90*	.041
	Within Groups	231.80	51	4.54		
	Total	272.03	54			
<i>SUBSCAPULAR SKINFOLD</i>	Between Groups	28.69	3	9.57	3.88*	.014
	Within Group	126.02	51	2.48		
	Total	154.71	54			
<i>BICEPS SKINFOLD</i>	Between Groups	15.28	3	5.00	6.53*	.001
	Within Groups	39.75	51	.77		
	Total	55.03	54			

From Table 2 it is observed that the F value Body mass (3.69*), Stretch stature (6.23*), Sitting height (7.46*), Triceps skinfold (2.90*), Subscapular skinfold (3.88*) and Biceps skinfold (6.53*) obtained is significant at .05 level ($p < .05$). As 'F' ratio was found significant difference of all selected variables, the Scheffe's post hoc test was applied to test the significance of difference between paired means on selected variables of different sport groups.

Table 3
Significance of difference between paired means on selected variables of different sports groups

VARIABLES	PAIRED MEANS		MEAN DIFFERENCE	SIGNIFICANCE
Body Mass	Cycling(M=60.58)	Swimming(M=53.59)	6.98	0.50
		Taekwondo (M=66.90)	6.41	0.53
		Athletics (M=62.60)	2.02	0.95
	Swimming (M=53.59)	Taekwondo(M=66.90)	13.4*	0.02
		Athletics (M=62.60)	9.01	0.09
	Taekwondo(M=66.90)	Athletics (M=62.60)	4.39	0.59
Stretch Stature	Cycling(M=168.88)	Swimming (M=160.98)	7.91	0.30
		Taekwondo(M=175.40)	6.56	0.42
		Athletics (M=173.10)	4.21	0.65
	Swimming (M=160.98)	Taekwondo (M=175.40)	14.47*	0.004
		Athletics (M=173.10)	12.12*	0.004
	Taekwondo(M=175.40)	Athletics (M=173.10)	2.35	0.88
Sitting Height	Cycling(M=85.98)	Swimming (M=80.50)	5.47	0.15
		Taekwondo(M=90.45)	4.47	0.26
		Athletics (M=87.06)	1.08	0.95
	Swimming (M=80.50)	Taekwondo (M=90.45)	9.95*	0.00
		Athletics (M=87.06)	6.56*	0.007
	Taekwondo(M=90.45)	Athletics (M=87.06)	3.39	0.25
Triceps Skinfold	Cycling(M=8.05)	Swimming (M=8.18)	0.11	1.00
		Taekwondo(M=9.11)	1.05	0.8
		Athletics (M=6.93)	1.12	0.66
	Swimming (M=8.18)	Taekwondo (M=9.11)	0.93	0.84
		Athletics (M=6.93)	1.24	0.55
	Taekwondo(M=9.11)	Athletics (M=6.93)	2.18	0.06
Subscapular Skinfold	Cycling(M=9.31)	Swimming (M=7.15)	2.16	0.08
		Taekwondo(M=9.44)	0.12	0.99
		Athletics (M=8.90)	0.32	0.97
	Swimming (M=7.15)	Taekwondo (M=9.44)	2.29*	0.03
		Athletics (M=8.90)	1.84*	0.04
	Taekwondo(M=9.44)	Athletics (M=8.90)	0.45	0.89
Biceps Skinfold	Cycling(M=4.71)	Swimming (M=4.40)	0.31	0.92
		Taekwondo(M=4.92)	0.2	0.97
		Athletics (M=3.68)	1.03	0.06
	Swimming (M=4.40)	Taekwondo (M=4.92)	0.52	0.67
		Athletics (M=3.68)	0.72	0.25
	Taekwondo(M=4.92)	Athletics (M=3.68)	1.24*	0.004

Results of the study indicated that the swimming group possessed lowest and taekwondo group highest mean scores among all the four sports groups. On the body mass, stretch stature and sitting height, swimming group has shown significant different with Taekwondo group on their body mass, with Taekwondo and Athletics groups on their stretch stature, sitting height. The observance of low mean scores on body mass, stretch stature and sitting height of swimming group may be because they were the youngest group among all. Taekwondo group was dominated with the circumference measurements of upper arm relaxed, upper arm tensed and flexed and

at wrist. Taekwondo group was with highest and swimming with lowest on their chest girth measurements. Wrist girth measurements of all the sport groups showed a significant difference. However swimming group showed comparatively lower and Athletics group higher mean scores on their waist girth.

CONCLUSIONS

Swimming group were found comparatively less body measurements, whereas the Taekwondo group was observed with higher body measurement.

Swimming group were found comparatively less Stretch Stature, whereas the Taekwondo group was observed with higher measurement.

Swimming group were found comparatively less Sitting Height, whereas the Taekwondo and Athletics group was observed with higher measurement.

There is insignificant difference among the group for Triceps Skinfold.

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