Physique of Elite Indian Female Netball Players

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ABSTRACT

The present study of physique has been conducted on twenty-two elite national Netball female players, who were anthropometrically tested on 4th January 2010 at SAI NSNIS Patiala. Body height, body weight, diameters, girths and skinfold at various sites were taken with standard instruments and techniques (Weiner & Lourie, 1969). Height weight ratio and somatotype of netball players were calculated by using computerised equations of carter (1980). Results of this study show that Mean values of decimal age, height and body weight were 24.32 years, 173.75 cm and 66.34 kg, respectively. But, range was very wide : 10 years for age, 26 cm for height and 30.0 kg for body weight. Indian players have shown similar results for age, height and body weight when compared with elite Australian high performance female Netball players of open age category (in statistical terms results were non-significant). Indian female Netball players have also shown similar results for Somatotype components as that of elite Australian high performance female Netball players (in statistical terms results were non-significant).

KEYWORDS

Height, Body Weight, Somatotype, Netball,

INTRODUCTION

Physique is one of very important parameter related with success in sports. Lots of studies have been conducted on physique of national and international level (Carter, 1984; Carter & Heath, 1990; de Garray et al, 1974 and Sodhi & Sidhu 1984). In India, research work is limited on physique of female (Grewal 1983; Kang et al, 2005; Kaur et al,

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1990 & Mokha et al, 1991, 1993). Australian scientists conducted studies on female Netball players (Connor,1995; Davis & Davis, 2006 and Hopper, 1997). Gasston & Simpson (2004) published a Netball specific fitness test. Indian studies on physique of female Netball players are still lacking.

Netball is an action packed team sport enjoyed by players of all ages and abilities, from junior players to highly skilled elite athletes. It is an intermittent game that requires explosive movements such as short, fast sprints, quick stops and many changes in direction (Davis & Davis, 2006). In Netball, as in any other sport, many players strive for success. Success in sport often begins at a very young age through selection into representative teams. Interestingly, the identification of factors that predispose an athlete towards success and representative team selection across a variety of sports has become an increasingly important and widespread research topic. Studies conducted on Rugby league and Volleyball have reported a strong relationship between physical fitness and playing level attained, with the fitness level of players, increasing as the playing level increased (Gabbett, 2000; Gabbett & Georgieff, 2007). Similar results were found for Soccer and Handball players, whereby elite athletes performed significantly better on physical tests compared to their non-elite counterparts (Gall et al, 2010; Gil et al 2007; Lidor et al, 2005).

In light of the previous research, the aim of this study is to find out the anthropometric and somatotypic characteristics of elite Indian female netball players.

METHODOLOGY

The present Anthropometric data have been taken on twenty two National Female Netball players on 4th January 2010, at SAI NSNIS Patiala. Ten anthropometric measurements viz. height, body weight, two diameters of bone, four skinfolds (triceps, sub scapular, supraspinale and calf) were taken with standard instruments and standard techniques (Weiner & Lourie, 1969). Computer equations of carter are used for assessment of somatotype. Appropriate statistic is used to analyze the data.

RESULTS & DISCUSSION

Table 1 shows the anthropometric measurements of elite Indian female Netball players. In the present study, elite Indian female players were 24.32 year old. The range for age was 18.25 to 29.11 years. On an average, the female Netball players were found to be 173.75 cm tall and 66.34 kg heavy. However, body height ranges from 162.5 cm to 188 cm; whereas, body weight 50.7 kg to 80.8 kg. The width of humerus bone ranges from 5.8 cm to 7.2 cm having mean value of 6.54 cm. In case of femur diameter, average value was found to be 9.61 cm ranging from 8.8 cm to 10.6 cm.

On an average circumference of upper arm (flexed) has been found to be 27.83 cm

ranging from 22.0 cm to 31.0 cm. In case of calf circumference, mean value was found to be 35.55 cm ranging from 31.7 cm to 40.5 cm. Triceps skinfold was found maximum (mean 17.45 mm) followed by calf (14.94 mm), sub scapular skinfold (13.72mm) and supra iliac (8.31mm). The maximum value of standard deviation (SD) was noticed in supraspinale (5.05mm) and triceps skinfold (5.0 mm). The high values of SD in the skinfolds indicate large variability among players. The range of skinfolds was very wide. In case of triceps skinfold, the range was 8.2mm to 32.6mm, sub scapular 7mm to 26mm, supraspinale 4mm to 28mm and calf 4 mm to 26.6mm.

In general, this study indicates mostly players differs more in skinfolds in comparison to height, body weight, bony diameters and circumferences.

Table-1 : Mean, SD, and Range values of Anthropometric parameters of Elite Indian female Netball players (N=22)

	Anthropometric parameters	Mean	SD	Minimum	Maximum
1	Decimal Age (years)	24.32	2.56	18.25	29.1
2	Height (cm)	173.75	5.81	162.5	188.0
3	Weight (kg)	66.34	7.18	50.70	80.80
	Diameters (mm)				
4	Humerus bicondylar diameter (cm)	6.54	0.37	5.8	7.2
5	Femur bicondylar diameter (cm)	9.61	0.49	8.8	10.6
	Circumferences (cm)				
6	Upper Arm (cm)	27.83	2.42	22.0	31.00
7	Calf (cm)	35.55	2.30	31.7	40.5
	Skinfolds(mm)				
8	Triceps (mm)	17.45	5.01	8.2	32.6
9	Sub-Scapluar (mm)	13.72	3.91	7.0	26.0
10	Supraspinale (mm)	8.31	5.05	4.0	28
11	Calf (mm)	14.94	4.93	4.0	26.6

Table-2 : Mean, SD, and Range values of Height Weight ratio and Somatotype of Elite Indian female Netball players (N=22)

S.No	Derived Variables	Mean	SD	Minimum	Maximum
1	Height Weight ratio	43.01	1.64	39.72	46.74
	Somatotype Components				
2	Endomorphy	3.90	1.06	1.79	6.51
3	Mesomorphy	3.79	1.24	1.19	5.78
4	Ectomoprhy	2.90	1.20	0.49	5.64

Table 2 shows the somatotype components of elite Indian female Netball players. On an average, height weight ratio has been found to be 43.01 ranging from 39.72 to 46.74. The mean value of first component of somatotype (endomorphy) has been found to be 3.90 units ranging from 1.79 to 6.51. Thus, the players differ very much among themselves in fatty tissue. In similar lines, mesomorphy differs among female Netball players (mean=3.79±1.24, range= 1.19 to 5.78). The results of ectomorphy were similar to height weight ratio. In general, findings of physique indicates, large variations among female Netball players.

Table-3 : Physical and Morphological Characteristics of High Performer Elite Netball Female Players of Australia1988 (Hopper, D.M., 1997)

Age categories	Sample size (N)	Age (years)	Height (cm)	Weight (kg)	Endomor-phy	Mesomor-phy	Ectomo-phry
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Open	68	23.7 (3.59)	73.5 (6.35)	66.17 (7.99)	3.6(1.0)	3.5(1.3)	2.9(1.0)
Under /21	77	19.2 (2.23)	173.1 (5.81)	66.89 (7.34)	3.9(1.0)	3.4(1.3)	2.6(0.9)

As depicted in Table 1 and 3, decimal age (years) of elite Indian Netball female players (24.32 years) has shown statistically non-significant differences with open category of elite Australian Netball female players (23.7 years); but, it was found significant t test value at 1% level for decimal age between present study Indian players and under/21 Australian players(19.2 years). When height and body weight of Indian female Netball players (present study) were compared with elite Australian female Netball players reported by Hopper, (1997) it has been found that former (173.75cm & 66.34kg) resembles with open category (173.5cm & 66.17kg) and under/21 age category (173.1cm & 66.89kg), respectively and has shown statistically non-significant t test values for height and body weight.

Table-4 : 't' test values between Indian Female netball players and High Performer Elite Netball Female Players of Australia,1988 (Hopper, D.M., 1997)

Present study vs		Age (years)	Height (cm)	Weight (kg)	Endo moprhy	Meso moprhy	Ecto moprhy
Elite Australian Study	't' values	0.63	0.164	0.09	1.21	0.92	0.00
Under/21		9.01**	0.46	0.31	0.00	1.25	1.28

* Significant at 5% level (N=22; 2.08), ** Significant at 1% level (N=22; 2.83)

Indian female Netball players were 0.3 units more endomorphic than open category of elite Australian Netball players and have same results with under/21 age category. Mesomoprhy of present study of female Netball players were slightly more than the open and under/21 age category of elite Australian high performance female Netball players. Elite female Netball players of present study were slightly more ectomorphic than under/21 years Australian female Netball players. All somatotype components of present study has shown no significant t test values with open category and under/21 age category of elite Australian Netball players. Thus, the findings of this study indicate that Indian female Netball players resemble in body structure to high performance Australian female Netball players. However, in case of Indian female player's range of somatotype components were very wide in small sample of twenty-two players. Thus, more research work is requiring for establish the somatotypes of Netball players.

CONCLUSIONS

From this study, following conclusions are made

1. Mean values of decimal age, height and body weight were 24.32 years, 173.75 cm and 66.34 kg, respectively; but, has shown large range values, 10 years for age, 26 cm for height and 30.0 kg for body weight.
2. Indian players has shown similar results for age, height and body weight when compared with elite Australian High performance female Netball players of open age category and under/21 age category and has shown non-significant t test values.
3. Indian female Netball players have also shown similar results for somatotype components viz., Endomorphy, mesomorphy and ectomorphy as that of elite Australian high performance female Netball players and under/21 age category and has shown non-significant t test values.
4. Range of anthropometric parameters and somatotype components were very wide in small sample of twenty-two players of elite Indian female Netball players. Thus, more research work is requiring on large sample for establish the somatotypes of Netball players.

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