



Comprative Study of Somatotype Between Football and Hockey Players

KEYWORDS

Endomorphy, Mesomorphy, Ectomorphy, Footballers and hockey players.

Dr. Manohar Lal

Assistant Professor, Department of Physical Education, Lovely Professional University, Phagwara, Punjab

ABSTRACT

The present investigation has been conducted on 100 athletes with an aim to find out difference in somatotype among the footballers (n=50) and hockey players (n=50). The data for the present study were collected during the inter colleges of Himachal Pradesh University in the session 2008-2009. Each athlete was tested for various anthropometric measurements necessary for somatotype. Somatotype ratings were calculated by the equations developed by Heath and Carter (1990). To compare the somatotype between footballers and hockey players the independent 't' test was applied. The results indicated that footballers were younger, taller, and heavier than hockey players. It has been also found that footballers were dominant on endomorph component than hockey players and difference was found significant. However hockey players were dominant on mesomorph and ectomorph component than footballers and differences were found insignificant.

INTRODUCTION

It is evident that performance depends upon various characteristics like morphology, physiology and body composition. Different type of body size, body composition and somatotype is required to achieve high performance, in different games and sports. Tanner (1964) has reported that those who became the best in world in 1960, Olympic Games, had definite body characteristics that were clearly specific for the different events in which they competed. Body size and body composition set limits, or predispose individual, to a certain type of athletic activity. The study of relationship of anthropometric characteristics to sports performance, between and within sports, has resulted in the great success, and in this regard Kang et al (2005) have cited over one hundred such studies. Carter (1990) emphasized that in the past fifteen years, there have been at least a hundred more research reporting of relationship of body structure and performance, of all levels of players.

Parnell (1954) and Hebbink (1985) suggested that good results, in sports, cannot be achieved; if the biological features, particularly the somatic ones, are unsatisfactory. Body fat % of Indian trained children, elite group sportsperson, and children of different countries, have been reported by Khanna (1987) and Mujumdar (1989). It has been observed in many sports disciplines that the peak performance age is associated with the time to start sport training and time required to develop necessary conditional, tactical, technical and sports performance. With regards to weight, height, body size and body composition, certain dimension is necessary, for success in selected events and sports. Age, height, body weight, body size and body composition of the Olympics, international and national athletes have been a subject of great interest for many research workers (Cureton, 1951; Jolk, 1964; Tanner, 1964; De Garay et al., 1974; Claessens & Lefevra, 1998; Guladi & Zaccagani, 2001; Kawashima, Kat & Miyazaki, 2003). Researchers have reported anthropometric data on Olympic athletes and revealed that suitable physique plays a predominant role for success in sports. Sidhu and Anand, 1971; Muthiah & Venkateswarlu, 1973; Sodhi, 1980; Debnath & Bawa, 1990; Kaur et al., 2002; Bajpai & Uppal, 2003 and Chouhan, 2004; have reported data on national athletes.

From these examples, it is evident that the examination of somatotype, which includes the determination of endomorphy, mesomorphy and ectomorphy among athletes, is very essential. The information collected on footballers and hockey players of Himachal Pradesh University can be used for monitoring the training programs as well as counseling, providing information about the choice for a particular sport.

METHODOLOGY

Purposive random sampling procedure was adopted by the investigator for the collection of data. The sample of the present study comprised of footballers (n=50) and hockey players (n=50), who had participated in inter-college level competition of Himachal Pradesh University in the session 2008-2009. Age group ranged from 18-25 years. The selected anthropometric measurements namely, height, weight, humerus bicondylar diameter, femur bicondylar diameter, upper arm circumference, calf circumference, triceps skinfold, sub scapular skinfold, supra spinal skinfold and calf skinfold were taken on each subject by following standard technique of Heath and Carter (1967). Heath and Carter (1990) somatotype method was used to get the three components of somatotype. To test the significance of mean difference among the footballers and hockey players the 't' test was applied.

RESULT AND DISCUSSION

TABLE I: Comparison of age, height and weight between football and hockey players

Variables	Footballers (N=50)			Hockey players (N=50)			t ratio
	Mean	S.D	S.E.M	Mean	S.D.	S.E.M	
Age (Yrs)	19.76	1.27	.18	20.0	1.78	.25	.77
Height (Cm)	170.75	6.13	.87	167.64	6.31	.90	2.50*
Weight (Kg)	60.16	7.42	1.05	58.27	8.84	1.25	1.16

* Significant at .05 level; ** Significant at .01 level

Table I depicts the mean, S.D. and SEM value of age, height and weight of football and hockey players. It has been observe that football players were younger, taller and heavier than hockey players. It has also revealed from the

above table that no significant difference exists between football and hockey players mean scores on age and weight because the obtained (t) ratio value (for age, $t=.77$ and weight, $t=1.16$) was found to be much smaller than their required' t value (1.98) to be significant at .05 level of confidence. However in height they show significant difference between each other because the obtained (t) ratio value ($t=2.50$) was found to be greater than their required' t value (1.98) to be significant at .05 level of confidence. This indicates that football and hockey players were almost equal in age and weight but differ in height.

TABLE II: Comparison of somatotype between football and hockey players

Variables	Footballers (N=50)			Hockey players (N=50)			t ratio
	Mean	S.D	S.E.M	Mean	S.D	S.E.M	
Endomorphy	1.50	.71	.10	2.72	1.20	.17	6.21**
Mesomorphy	3.44	1.04	.14	3.33	1.48	.21	.42
Ectomorphy	3.39	1.13	.16	3.19	1.26	.17	.85

* Significant at .05 level;

** Significant at .01 level

Table II depicts the mean, S.D. and SEM value of somatotype of football and hockey players. It has been observed that football players were less endomorphic, and more mesomorphic and ectomorphic than hockey players. It has also revealed from the above table that there was significant difference exists between football and hockey players mean scores on endomorphy because the obtained (t) ratio value ($t=6.21$) was found to be much greater than their required' t value (2.63) to be significant at .01 level of confidence. However in mesomorphy and ectomorphy they show non significant difference between each other because the obtained (t) ratio value (for mesomorphy, $t=.42$ and ectomorphy, $t=.85$) was found to be much smaller than their required' t value (1.98) to be significant at .05 level of confidence. This indicates that football players were heavier than hockey players but hockey players were better developed and comparatively have leaner physique than football players.

DISCUSSION:

It has been found that football were younger, taller and heavier than the hockey players. There was significant difference established between the footballers and hockey players in height. However there was no significant difference in age and weight between them. This indicates that footballers were taller than hockey players but almost same in age and weight.

The mean somatotypes of footballers were 1.50-3.44-3.39, they were ectomorphic-mesomorph. The results of present study coincides with the results of Kaur (2000). She reported that footballers were ectomorphic mesomorph, had the mean somatotype 1.95-3.91-3.29. The mean somatotype of hockey players were 2.72-3.33-3.19, they were ectomorph-mesomorph. Results of present study were in accordance with the study conducted by carter et al. (1981). They reported that hockey players of New Zealand and Kenya – Malaysia were ectomorphic mesomorph had the mean 1.9-4.5-2.7 and 2.7-4.0-3.2, respectively. There was significant difference established between the footballers and hockey players in endomorph component. However in mesomorph and ectomorph component they show non significant difference. This indicates that football players were heavier than hockey players but hockey players were better developed and comparatively have leaner physique than football players.

CONCLUSIONS

Based on the finding of the study, the following conclusions have been drawn.

Footballers were younger in age, taller in height and heavier in weight than the hockey players and the difference was found significant only in height.

The mean somatotypes of footballers were 1.50-3.44-3.39, they were ectomorphic-mesomorph and the mean somatotype of hockey players were 2.72-3.33-3.19, and they were ectomorph-mesomorph. The footballers were dominant on endomorph component than hockey players and difference was found significant. However hockey players were more mesomorphic and ectomorphic than footballers and difference was found insignificant.

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