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RESEARCH ARTICLE

A KIN-ANTHROPOMETRIC STUDY OF SENIOR AND JUNIOR (U-17) MALE FOOTBALL PLAYERS

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ABSTRACT

This anthropometric study was conducted on inter university male Senior Football players (n=27) of Guru Nanak Dev university, Punjab and junior football players (n=20) of national school games camp held in Jalandhar, having age ranging from 18 to 25 years. Eleven anthropometric parameters were taken with standard instruments and standardized techniques followed by Weiner and Lourie, 1969. The results this study reveals that the senior football players were found heavier for body weight and taller in stature with respect to junior (U-17) football players. The senior football players were examined larger values for sitting height and leg length with respect to junior (U-17) football players. The change in sitting height was found more (5.50cm) and less for leg length (2.26cm). The senior football players were observed larger values for upper arm, fore arm, thigh and calf girth with respect to junior (U-17) football players respectively. The change in all girths was recorded from 4.00 to 7.00cm between both groups. The senior football players were recorded higher values for arm span (10cm) and slightly higher for hand span (0.06cm) with respect to junior (U-17) football players respectively. The senior football players were examined smaller mean value for foot length with respect to junior (U-17) football players. All eleven anthropometric parameters have shown highly significant differences at 1% level between senior and junior (U-17) football players. It was concluded from this study that anthropometric parameters have played significant role for talent identification.

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INTRODUCTION

Football is a team game. Team games are sports where body size, shape, body composition and level of fitness, all play an important part in providing distinct advantages for specific playing positions particularly at the highest levels of performance, where there is a high degree of player specialization (Bale, 1986). Specific positional roles within each code may demand unique physique, physiological and physical fitness (Reilly *et al.*, 1990). These are reflected in the physical and physiological fitness of the soccer players (Reeves *et al.*, 1999). The database of physique and performance qualities of the players of the renowned clubs throughout the country is very important to make a National Team. Football is probably the most popular game worldwide but there is still limited scientific information available concerning the physique and performance qualities of elite Indian footballers. Not many sports scientists have been attracted to examine the footballers in details because of the lack of adequate experimental models to study the games in the laboratory (Reilly *et al.*, 1990). The game comprises activities like sprint and jumps in attack and defense. Anthropometric and physical

characteristics including: segment length, segment weight, overall height, overall weight, body type, body composition and physical fitness refers to maximum strength, explosive and reactive power, sprinting speed, low load and heavy load speed strength, special and specific strength unique to each individual. Many Scientist has conducted anthropometric and somatotypic studies on various sports populations of National and International level Carter *et al.* (1984) and Kang *et al.* (2005). The main purpose of this study was to find out the kin-anthropometric study of Senior and junior (U-17) male football players and also to explore the selected anthropometric parameters of football players, which helps us to select children at early ages for talent identification and to make guidelines and counseling about their body structure and physical fitness.

MATERIALS AND METHODS

The present study was conducted on interuniversity level male football players (N=27) of Guru Nanak Dev university during the course of Interuniversity coaching camp held at GNDU, Amritsar and on junior (U-17) footballers (N=20) of national school games camp held in Jalandhar. Eleven anthropometric parameters like height, body weight, Sitting height, leg length, circumferences (like upper arm, fore arm, thigh and calf), arm span, hand span and foot length (Weiner and Lourie, 1969)

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were taken with standard instruments and standardized techniques. Appropriate statistical methods (mean, standard deviation and Student's t test) were used to analyze the data.

RESULTS AND DISCUSSION

Table-1 depicts eleven anthropometric parameters of senior and junior male football players. Mean body weight and SD values were recorded 63.80 ± 5.31 and 47.04 ± 6.08 kg of senior and junior football players having range values (upper and lower limit) of 72.60 kg to 55 kg and 64.40 to 41.15 respectively. On applying student's t test, significant differences were observed at 1% level (5.51) between body weight of Senior and junior footballers. Average body height and SD values were examined 172.96 ± 6.26 & 164.17 ± 8.40 cm of senior and junior football players having range values (upper and lower limit) of 189.60 to 156.80 & 179.6 to 149.70 cm respectively.

football players having range values (upper and lower limit) of 27.30 to 19.90 and 24.40 to 17.80 cm respectively. Forearm girth was observed highly significant t test value (4.76) at 1% level between senior and junior footballers. Average thigh girth and SD values were examined 50.79 ± 3.20 & 43.67 ± 2.93 cm of senior and junior football players having range values (upper and lower limit) of 56.50 to 44.10 & 48.50 to 38.70 cm respectively. Thigh girth was observed highly significant t test value (4.85) at 1% level between senior and junior footballers. Mean calf girth and SD values were noticed 34.83 ± 1.66 & 30.12 ± 1.64 cm of senior and junior football players having range values (upper and lower limit) of 38.80 to 32.20 & 34.60 to 27.50 cm respectively. Calf girth was observed highly significant t test value (4.90) at 1% level between senior and junior footballers. Average arm span and SD values were reported 178.32 ± 8.46 & 168 ± 3.37 cm of senior and junior football players having range values (upper and lower limit) of 194.40 to 155.30 & 191.00 to 150.80 cm respectively.

Table 1. Mean, SD, Range and Student 't' test values of Anthropometric parameters of Senior and Junior (U-17) Football Players

S. No	Anthropometric Parameters	N	Sports Group	Mean	SD	t test values
1	Body Weight	27	Senior	63.80	5.31	5.51**
		20	Junior(U-17)	47.04	6.08	
2	Body Height	27	Senior	172.96	6.26	4.52**
		20	Junior(U-17)	164.17	8.40	
3	Sitting Height	27	Senior	89.97	2.66	4.60**
		20	Junior(U-17)	84.47	4.77	
4	Leg Length	27	Senior	82.97	5.10	4.35**
		20	Junior(U-17)	79.71	4.69	
5	Upper Arm Girth	27	Senior	26.26	2.08	5.003**
		20	Junior(U-17)	21.49	1.86	
6	Fore Arm Girth	27	Senior	24.01	1.55	4.76**
		20	Junior(U-17)	20.97	1.66	
7	Thigh Girth	27	Senior	50.79	3.20	4.85**
		20	Junior(U-17)	43.67	2.93	
8	Calf Girth	27	Senior	34.83	1.66	4.90**
		20	Junior(U-17)	30.12	1.64	
9	Arm Span	27	Senior	178.32	8.46	4.49**
		20	Junior(U-17)	168.37	11.13	
10	Hand Span	27	Senior	21.69	1.50	4.13**
		20	Junior(U-17)	21.75	1.25	
11	Foot Length	27	Senior	24.93	1.01	4.16**
		20	Junior(U-17)	25.56	1.28	

* Significant at 5% Level (2.01), ** Significant at 1% level (2.67)

Body height has shown highly significant t test value (4.52) at 1% level between senior and junior footballers. Mean sitting height and SD values were examined 89.97 ± 2.66 & 84.47 ± 4.77 cm of senior and junior football players having range values (upper and lower limit) of 93.80 to 85.50 & 93.40 to 75.20 cm respectively. Sitting height has shown highly significant t test value (4.60) at 1% level between senior and junior footballers. Mean leg length and SD values were examined 82.97 ± 5.10 & 79.71 ± 4.69 cm of senior and junior football players having range values (upper and lower limit) of 95.80 to 69.90 & 90.20 to 70.20 cm respectively. Leg length was examined highly significant t test value (4.35) at 1% level between senior and junior footballers. Average upper arm girth and SD values were examined 26.26 ± 2.08 & 21.49 ± 1.86 cm of senior and junior football players having range values (upper and lower limit) of 30.40 to 22.60 & 25.50 to 18.70 cm respectively. Upper arm girth was observed highly significant t test value (5.003) at 1% level between senior and junior footballers. Mean forearm girth and SD values were investigated 24.01 ± 1.55 & 20.97 ± 1.66 cm of senior and junior

Arm span was observed highly significant t test value (4.49) at 1% level between senior and junior footballers. Mean hand span and SD values were noticed 21.69 ± 1.50 & 21.75 ± 1.25 cm of senior and junior football players having range values (upper and lower limit) of 25.20 to 18.40 and 24.80 to 19.30 cm respectively. Hand span was examined highly significant t test value (4.13) at 1% level between senior and junior footballers. Mean foot length and SD values were examined 24.93 ± 1.01 and 25.56 ± 1.28 cm of senior and junior football players having range values (upper and lower limit) of 27.10 to 22.30 and 28.30 to 24.10 cm respectively. Foot length was observed highly significant t test value (4.16) at 1% level between senior and junior footballers. The present study has shown similar results with Reilly *et al.* (1990), Reeves *et al.* (1999), Sodhi and Sidhu (1984) and de Garry *et al.* (1974) studies.

Conclusion

1. The senior football players were found heavier for body weight and taller in stature with respect to junior (U-17) football players respectively.

2. The senior football players were examined larger values for sitting height and leg length with respect to junior (U-17) football players respectively. The change in sitting height was found more (5.50cm) and less for leg length (2.26cm).
3. The senior football players were observed larger values for upper arm, fore arm, thigh and calf girth with respect to junior (U-17) football players respectively. The change in all girths was recorded 4.00 to 7.00cm between both groups.
4. The senior football players were recorded higher values for arm span (10cm) and slightly higher for hand span (0.06cm) with respect to junior (U-17) football players respectively.
5. The senior football players were examined smaller mean value for foot length with respect to junior (U-17) football players.
6. All eleven anthropometric parameters were recorded significant differences between senior and junior (U-17) football players.

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