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Comparative Study on Selected Anthropometric Measurement of National and State Level Women Soccer Players

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ABSTRACT: The purpose of the study was to compare selected anthropometric measurement of national and state level women soccer players. For the purpose of the study thirty two (32) National level and State level women soccer players of which Sixteen (16) of each level with age ranging from 14 to 19 years of age were selected from different clubs and academic institutions of Manipur, India. The selected anthropometrical variables were tested i.e. Height (Cm), Bodyweight (Kg), Thigh Girth (Cm), Calf Girth (Cm) and Leg length (Cm), with the following instruments; Stadiometer, Weighing machine and Freeman Steel tape. The descriptive statistic such as mean, standard deviation and mean difference were used. The data were analyzed by using descriptive statistics and independent t-test. The level of significance was set at 0.05 level. The result of the study showed that significant difference has been found with the following variables i.e. Height, Bodyweight, and Calf Girth.

Keywords: Anthropometric measurement, Height, Bodyweight, Thigh Girth, Calf Girth and Leg length.

INTRODUCTION

Anthropometry is the branch of Anthropology which is concerned with taking of measurements of human body. This definition has been confined to the kinds of measurements commonly used in associating physical performance with body build (Warren1974). Anthropometrical measurement focused on three areas growth measures, body type and body composition. The use of such measures help stop prediction of growth patterns and predictions of success in motor activities as well as assessment of obesity (Correlation1974). The major role for physical performance is partly dependent upon the physique and body composition of an individual (Bubruben1975).Measurements of body size include such descriptive information as height weight and surface area while measurements of body proportion describe the comparative of on height and weight and among length of various body segments. It has been found that top athlete in some sports tends to have those proportions that biomechanically and the particular performance

required (Early1982). Athletes for superior performance in any is selected on the basis of his physical structure and body size, which has proved to appropriate for high performance in the given sports (Tanner 1964) therefore this study has been undertaken with a view to find out the selected anthropometric measurement of national and state level women Soccer players. Football is played in accordance with a set of rules known as the Laws of the Game. The game is played using a single round ball (the football). Two teams of eleven players each complete to get the ball into the other team`s goal (between the posts and under the bar), thereby scoring a goal. The team that has scored more goals at the end of the game is the winner; if both teams have scored an equal number of goals then the game is a draw. In a typical game play, Players attempt to create goal scoring opportunities through individual control of the ball, such as by dribbling, passing the ball to a team-mate, and by taking shots at the goal, which is guarded by the opposing goalkeeper. Opposing players may try to regain control of the ball by intercepting a pass or through tackling the opponent in possession of the ball; however, physical contact between opponents is restricted. Football is generally a free-flowing game, with play stopping only when the ball has left the field of play or when play is stopped by the ref goal keeper. After a stoppage, play recommences with a specified restart.

AIM OF THE STUDY

The aim of the study was to compare the selected anthropometric measurements of national and state level women soccer players.

METHODS

Selection of the Subject: For the purpose of study thirty two (32) National level and State level women soccer players, aged ranged between 14-19 years, were randomly selected from different clubs and academic of Manipur, India. Among them sixteen were randomly selected from each level (National level sixteen and State level sixteen women soccer players). Player's were selected from especially different playing position of soccer that is forward and Defending players. Subjects Height, Bodyweight, Thigh-Girth, Calf Girth and Leg length (D K Kansal 2007), were measures as an anthropometric measurement by using Stadiometer, Weighing machine and Free man Steel tape. The Data were collected with the help of Lady Assistance and their coaches.

Design of the Study: Simple randomized group design method was used for the study. For the purpose of the study thirty two (32) National level and State level women soccer players, were selected as subject for the study. In this study the subjects (age ranged between 14 to19 years) were randomly selected from different clubs and academic of Manipur, India, as subjects of the study. The subjects were categorized into two equal levels on random basis consisting on sixteen subjects in each group.

STATISTICALANALYSIS

The gathered data were duly analyzed through statistical procedure using descriptive statistic and independent 't' test. First the normality of the data was checked through skewness and kurtosis then the parametric statistics independent t-test was used to compare the two means. The level of significant was set at 0.05 level of confidence.

RESULTS

Table-2: Descriptive Statistics of Selected Variables of National and State Level Women Football Players

Variables and Groups		N	Mean	Std. Deviation	Std. Error Mean	Skewness	Kurtosis	Max Score	Min Score
Height (cm)	National	16	158.56	4.760	1.190	-0.2609	-0.2608	166	150
	State	16	152.87	4.240	1.060	-0.182	-0.729	160	145
Weight (kg)	National	16	54.18	4.929	1.232	-0.266	-0.816	62	45
	State	16	51.06	3.108	0.777	-0.644	-0.954	55	45
Thigh Girth (cm)	National	16	45.75	2.816	0.704	-0.813	0.592	50	40
	State	16	44.06	3.316	0.829	0.062	-0.971	50	39
Calf Girth (cm)	National	16	31.18	1.973	0.493	-0.178	-1.108	34	28
	State	16	29.87	1.454	0.363	0.394	-1.108	32	28
Leg Length (cm)	National	16	87.31	2.056	0.514	-0.218	-1.174	90	84
	State	16	86.18	1.905	0.476	0.091	-0.158	90	83

Table-1 revealed the descriptive statistics of the selected variables of national and state level women soccer players.

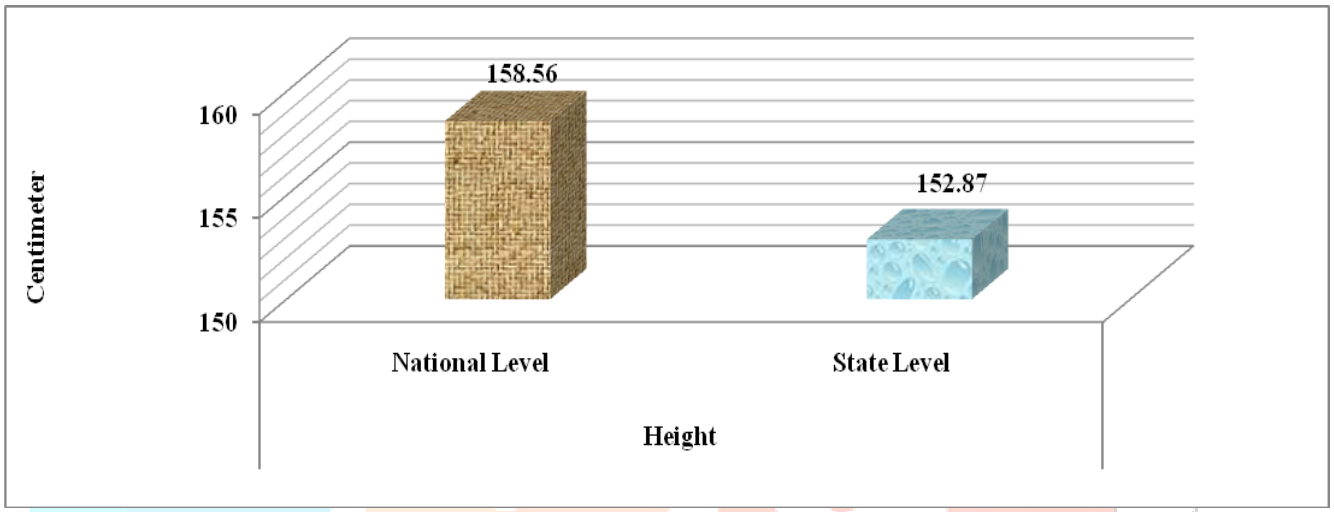

Figure- 1: Graphical Representation of Height for National and State level Women Soccer Player

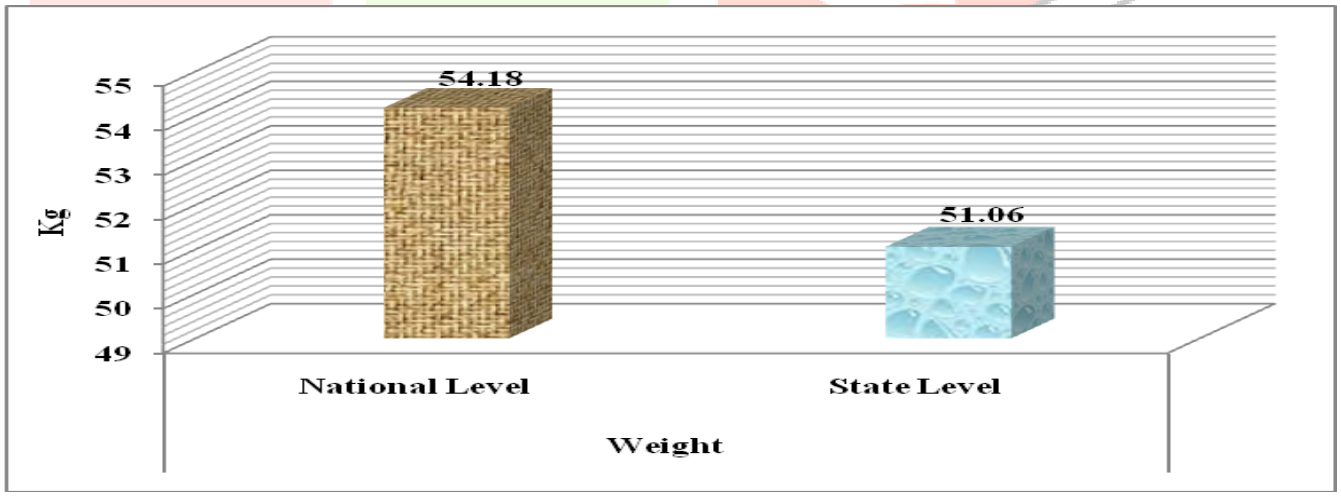

Figure- 2: Graphical Representation of Weight for National and State level Women Soccer Player

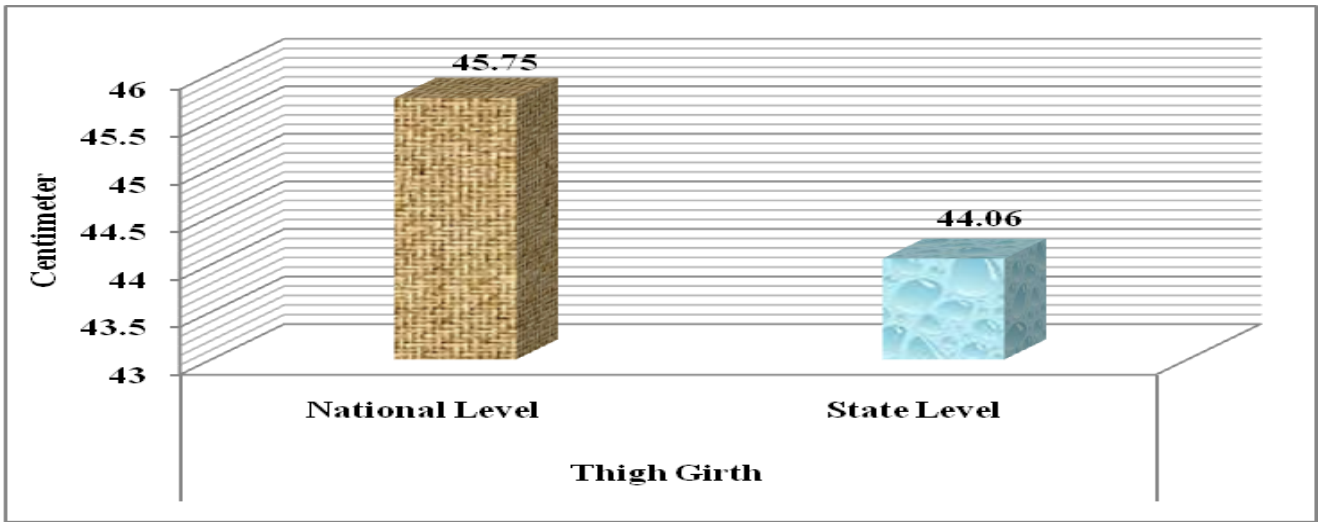

Figure- 3: Graphical Representation of Thigh Girth for National and State level Women Soccer Player

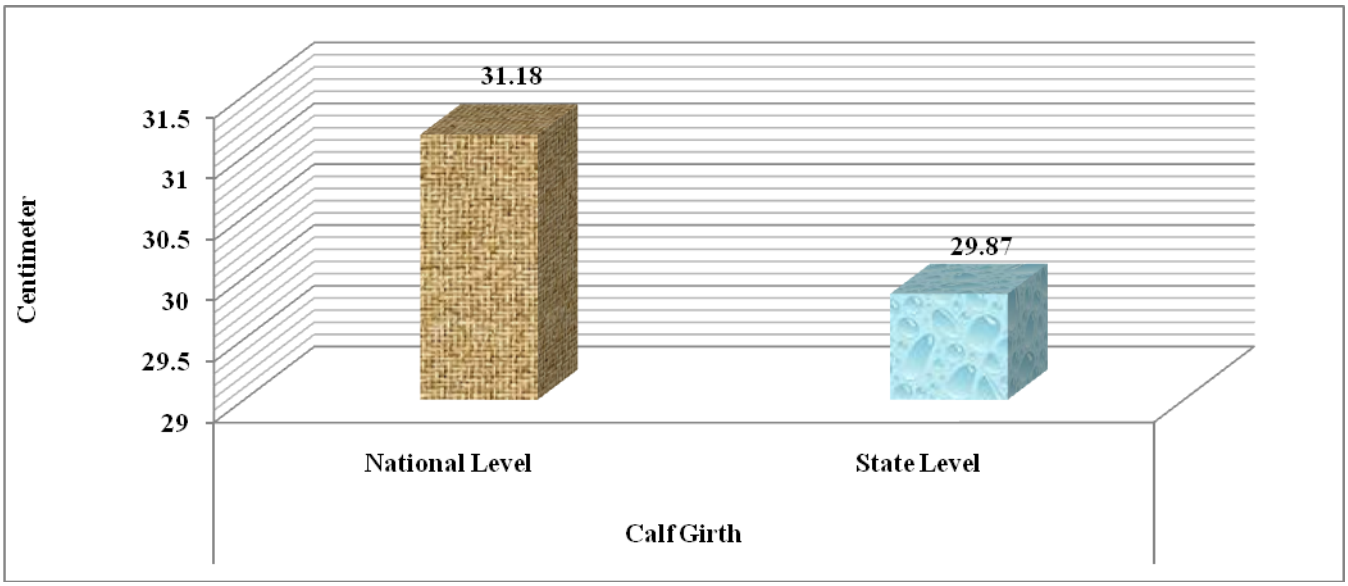

Figure- 4: Graphical Representation of Calf Girth for National and State level Women Soccer Player

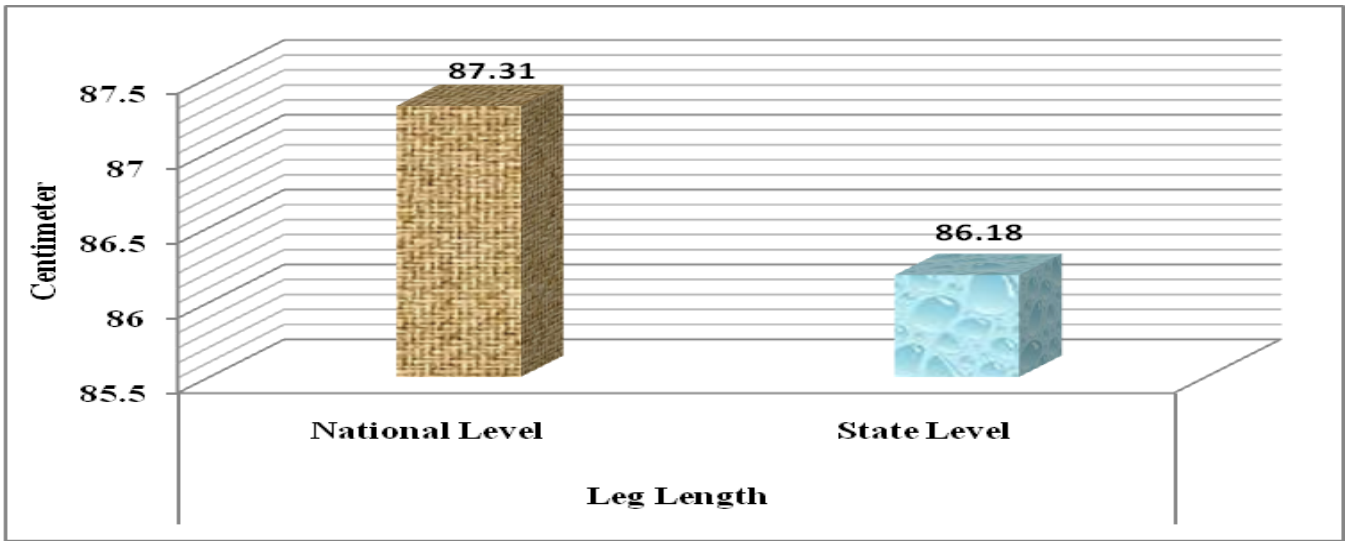

Figure- 5: Graphical Representation of Leg Length for National and State level Women Soccer Player

Table-2: Independent t-Test between National and State Level Women Football Players on the Selected Variables							
Variable	Groups	df	Mean	Mean Difference	Std. Error Difference	t-value	Sig. (2-tailed)
Height (cm)	National	30	158.56	5.69	0.627	**3.568**	0.001
	State		152.87				
Weight (kg)	National	30	54.18	3.12	0.687	**2.145**	0.040
	State		51.06				
Thigh Girth (cm)	National	30	46.31	3.25	0.477	1.551	0.131
	State		43.06				
Calf Girth (cm)	National	30	31.18	1.31	1.634	**2.141**	0.040
	State		29.87				
Leg Length (cm)	National	30	87.31	1.13	1.420	1.605	0.118
	State		86.18				
*Significant at 0.05 level, Tabulated t 0.05 (30)=1.69							

Table-2 expressed the independent t-value of the selected anthropometric measurements between national and state level women soccer players. For anthropometric measurements the t-value of height, weight, thigh girth, calf-girth and leg length were 3.568, 2.145, 1.551, 2.141 and 1.605 respectively. The table also shown that the significant differences exist on height (0.001), body weight (0.040) and calf girth (0.040) as their "t" values were higher than tabulated t value and the table also revealed that the insignificant difference were found on thigh girth (0.131) and leg length (0.118) as their t values were lower than the tabulated t-value.

There is positive correlations between body mass, height, leg length for the elite and non-elite players (Sedano, S., et al., 2009). Elite female soccer players have 168.57 ± 6.96 (Hight in cm), 60.61±7.53 (Body Weight in kg), 51.60 ± 3.62 (Thigh Girth in cm), 35.19 ± 2.12 (Calf Girth in cm) and 81.77 ± 4.91 (Leg Length in cm) respectively by Idrizovic, K. (2014). Ingebrigtsen, J., et al., (2011) state that anthropometric and physiological differences exist between playing positions in elite female soccer players. This may be the reason, in the present study average height of the national soccer players 158.06 cm was recorded which is better than State players 152.43cm. Here researcher believed that due to biological, environmental and genetic makeup of the players may be causes of obtaining grater height (Dubois, L., et al., 2012). Rather it can be said that in the adolescence stage (14 to 19yrs) height is increase steadily and obtained near top height than other growth stage (Ajmer S., et al., 2007). Leg lengths of the National players were found better than state soccer players. Leg length also increases due to increasing over all height of the players and development of lower limb is quicker than upper limb (Gunnell D., 2001). Calf girths of the National players were found better than state players. Research believed that due to strenuous practice and exercise aspect of the players Calf muscle hypertrophy is occurred. This may be the reason the circumference of the calf girth is increase and bring significance difference between national and state level players.

CONCLUSION

On the basis of the result it might be concluded that the national level women soccer players are higher in height, body weight and calf girth state level women soccer players.

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