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Indian Women's Football: Players Kinanthropometric Analysis

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Abstract – Anthropometry is the science of measuring the size and proportion of human body. kinanthropometric measurements are also used to determine body size differences, somatotyping and body composition. The kinanthropometry of physical characteristics are known to be of fundamental importance for individual development to achieve high level of performance in a specific sport (Prof. Zamirullah khan, 2016). Indian national women's football team was one of the best team of Asia in mid 70s and early 80s when they became runners up in 1980 and 1983 AFC women's Asian cup. But the team is yet to participate in Olympic Games and world cups. The reason which concerned me was the physical attributes of the players. A total of 24 Indian national women's football team players, who have represented India at various international tournaments, were chosen for the purpose of the study and for the analysis of data descriptive statistics was employed and important findings withdrawn are as follows. In this research it was found that the average age of the player's was 289 months (24.11 year)where the minimum and maximum age of the player was 220 months (18.33 year), 398 months (33.16 year).Where researcher obtained the average height of Indian national women football player was 157.96cms. Where the maximum heighted player was of 165.20cms and the minimum height of the player was 146cms. Mean leg length was 94.29cms. The average weight of women Indian soccer player's was 54.80kgs (minimum weight was 45.55 and the maximum weight was 72.60kgs). After investigation and analysis of selected kianthropometric variables the researcher obtained the results that Indian national women football players poses average (height 157.96cms, age 24.11 year, leg length 94.29 cms, weight 54.80kgs, BMI 21.95) and these parameters are less than those teams who are giving top class performance at the world level.

Key Words: Kinanthropometric Variables, Somatotyping, Body Mass Index

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1. INTRODUCTION

India is a land of great diversity and culture; one of the largest democracies in the world, the diversity is so vast that we also term it as Indian subcontinent. A country of almost 1.35 billion people which accounts around 17% of the world's population, then why we lag behind in major sports? And especially in football. Millions of people play football across the world. In many countries, it has been ranked as one of the top-level competition sports. Football involves frequent bouts of intense activities such as dribbling, passing, and shooting, these activities are coupled with short rest periods throughout a match duration that is typically 80-90 minutes.

Anthropometry is the science of measuring the size and proportions of the human body kinanthropometric measurements are also used to determine body size differences, somatotyping and body composition. The kinanthropometry of physical characteristics are known to be of fundamental importance for individual development to achieve high level of performance in a specific sport (Prof. Zamirullah khan, 2016). Each individual is unique in physical characteristics. Kinanthropometry examines the link between anatomy (structure) and performance (function) of physical characteristics for a particular sport (Singh & Malhotra, 1989).

Indian national women's football team was one of the best team of Asia in mid 70s and early 80s when they became runners up in 1980 and 1983 AFC women's Asian cup (Wikipedia the free encyclopedia). But the team is yet to participate in Olympic Games and world cups. What are the major reasons behind it? There can be many reasons behind it, but the one which concerns me is the physical attributes of the players. And there is limited scientific information available concerning the Kinanthropometrical characteristics particularly the Indian women football players. So it has driven me to analyse their kinanthropometric characteristics.

2. METHODS

A total of 24 Indian national women's football team players, who have represented India at various international tournaments, were chosen for the purpose of the study. The players were from different

regions of India. Permission for players sample collection was taken from their chief coach, physiotherapist and players own willingness. Sample measurements were computed and calculated by following international standards for anthropometric assessment (2006).

The following kinanthropometric variables were taken for the purpose of the study:

I. Standing height

II. Leg length

III. Weight

IV. BMI

V. Age

Tools used

1. Height was measured by Kinanthropometric rod set to the nearest 0.5cm.

2. Body weight was measured by weighing machine to the nearest 0.5kg.

3. BMI was calculated by Adolphe quetelet's equation.

3. ANALYSIS OF DATA, DISCUSSION AND CONCLUSION

Analysis of data

For the analysis of data descriptive statistics was employed and important findings withdrawn are as follows.

Table 1

Summary of studies reporting on N, Mean, SD, SE (Mean) for selected kinanthropometric Variable.

Variable	N	Mean	SD	SE(Mean)
Standing height	24	157.96	4.90	1.0009
Leg length	24	94.29	4.65	0.9510
Weight	24	54.80	5.71	1.1664
BMI	24	21.95	1.755	.3583
Age(months)	24	289.38	42.54	8.6840

From table 1 it is evident that

- Standard deviation is maximum for the age of the players, whereas minimum for BMI.
- Standard error of mean is the least for the BMI and whereas maximum for the age of the players.

Table 2

Summary of studies reporting on Skewness, SE (skewness), Kurtosis, Minimum, Maximum and Range for selected Kinanthropometric Variables.

Variable	Skewness	SE (Skewness)	Kurtosis	Minimum	Maximum	Range
Standing height	-.520	.472	.064	146	165.20	19.20
Leg length	-.098	0.472	-1.022	85	102	17
Weight	1.216	0.472	2.907	45.55	72.60	27.05
BMI	0.460	0.472	1.307	18.40	26.70	8.30
Age(months)	0.522	0.472	0.482	220	398	178

From table 2 it can be seen that

- Skewness value more than twice its standard error indicates a departure from symmetry. Owning to this principle body weight is positively skewed as its value is 1.216 which is more than twice its standard error (2x0.472). Thus it can be interpreted that that the performance of the subjects body weight is more on the lower side.
- For a normal distribution, kurtosis value is 0. If for any variable the value of kurtosis is positive, its distribution is known as leptokurtic, which indicates low level of data fluctuation around its mean value whereas negative value of kurtosis indicates large degree of variance among the data and the distribution is known as platykurtic.

From the study it is evident that standing height, weight, BMI and age had positive kurtosis values (.064, 2.907, 1.307, 482), this indicates that less variation existed among above mentioned parameters. On the other hand, leg length had negative kurtosis value (-1.022), which indicates that the distribution is platykurtic and it can be interpreted that the subjects leg length was more variable around its mean value.

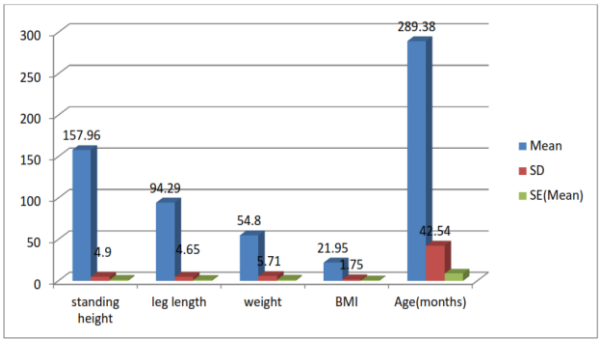

Figure 1. Mean, SD, SE values for Indian national women football players Standing height, Leg length, Weight, BMI and Age

DISCUSSION OF FINDING

To investigate the study descriptive analysis was used on Indian women's football team, where researcher found the mean difference amongst the players (Leg Length, Standing Height, Weight, BMI and Age). Kinanthropometric measurements are the most basic indirect method of assessing body composition (Masaharu kagawa, 2006). It describes body mass, size, shape and level of fatness, height of

athlete has significant effects on performance (F. Alburquerque, 2005). Similar study was conducted on women's football: player characteristics and demand of game where they found the average age of the top for most successful teams in FIFA women world cup 2011 were (Japan, USA, Sweden and France) with their average age between 26-28 years (Barreira, 2016). Average height of all the teams in FIFA women world cup 2011 was 168 cms. In FIFA women world cup 2011 the tallest team was Germany with average Height of 173 cms. and lowest average height was 163 cms.(Japan).Tallest Individual was of Height 187 cms and her playing position was Defence and shortest Height was 152 cms and she was mid fielder (vanessa Martinez-Lagunas, 2014).

In our research we found that the average age of the player's was 289 months (24.11 year)where the minimum and maximum age of the player was 220 months (18.33 year), 398 months (33.16 year).

Where researcher obtained the average height of Indian national women football player was 157.96cms. Where the maximum heighted player was of 165.20cms and the minimum heighted player was of 146cms. Mean leg length of player's was 94.29cms.the average weight of women Indian soccer player's was 54.80kgs (minimum weight was 45.55 and the maximum weight was 72.60kgs). Another aspect of body composition i.e., body mass index (BMI) which is useful also in monitoring the treatment of obesity (WHO, 1998). Physical parameters of a sportsman has a higher influence on the performance ,however there may be significant disadvantages posed by resultant mass and size that might be an obstacle to the players performance.

Researcher was able to find out the average BMI as 21.95 whereas the maximum BMI was 26.70 and minimum was 18.40.

CONCLUSIONS:

After investigation and analysis of selected kianthropometric variables the researcher obtained the results that Indian national women football players poses average (height 157.96cms, age 24.11 year,leg length 94.29 cms, weight 54.80kgs, BMI 21.95) and these parameters are less than those teams who are giving top class performance at the world level. To have the best performance of Indian women team researcher reveals that during talent identification height and leg length should be given preference and one should consider about the age of the player as an important parameter during team selection. During training session BMI and weight should be under the given range. It may improve overall performance of the Indian women's football team.

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