International Journal of Physical Education and Sports Sciences
Vol. 14, Issue No. 2, April-2019, ISSN 2231-3745

Kinanthropometric Analysis of Intervarsity Women's Hockey Players

Sandeep Kumar*

M.P.ED Student at Department of Sports Biomechanics, LNIPE Gwalior

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 women hockey players are ranked 9th in the world in spite of availability of required resources and .653 billion female population in the country. Indian women hockey team participated in the Olympic Games twice, once in the Moscow in 1980 where the team secured 4th position and again at Rio de Janeiro, Brazil where the team secured 12th rank with not even a single win. (Wikipedia the free encyclopedia).The reason which concerned me about improvement of performance was the physical attributes of the players.A total of 62 Women hockey players, who reached in the semi-finals of All India Inter-Varsity hockey championship 2018-19 held at Kalinga Institute of Industrial Technology Bhubaneswar, were chosen for the purpose of the studyand for the analysis of data, descriptive statistics was employed and important findings withdrawn were aboutthe average age of the players' which was 250.61 months (20.88 years) and the minimum and maximum age of the players' was 220 months (18.33 year), 282 months (23.5 years). Average height of Intervarsity Women hockey player'swas 158.73cms. Where the maximum heighted player was of 168cms and the minimum heighted player was of 146cms. Mean leg length of player's was 93.50cms. The average weight of women hockey player's was 55.63kgs (minimum weight was 45.55kgs and the maximum weight was 72.60kgs).The researcher found Average BMI as 22.08 whereas the Maximum BMI was 26.70 and Minimum was 18.40.and these parameters differs from those teams who are giving up top class performance at the world level.

Key Words: Kinanthropometric Measurements, Body Mass Index, Height and Body Weight

----------♦----------

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 hockey. Millions of people play hockey across the world. In many countries, it has been ranked as one of the top-level competition sports. Hockey 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 60-70 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.

Indian women hockey players are ranked 9th in the world in spite of availability of required resources and .653 billion female population in India. Indian women hockey team participated in the Olympic Games twice, once in the Moscow in 1980 where the team secured 4th position and again at Rio de janeiro, Brazil where the team secured 12th rank with not even a single win. (Wikipedia the free encyclopedia). The team is yet to deliver a strong performance in Olympic Games and world cups. What are the major reasons behind it? There may 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 Kinanthropometric characteristics particularly the Indian women Hockey players. So it has driven me to

analyse kinanthropometric characteristics of All India Intervarsity women hockey players.

MATERIAL AND METHODS

A total of 62 Women hockey players, who reached in the semi-finals of All India Inter-Varsity hockey championship 2018-19 held at Kalinga Institute of Industrial Technology Bhubaneswar, 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 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.

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	62	158.73	5.16	0.65
Leg length	62	93.50	4.23	0.53
Weight	62	55.63	4.81	0.61
BMI	62	22.08	1.68	0.21
Age(months)	62	250.61	15.67	1.99

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 Variable

Variable	Skewness	SE (Skewness)	Kurtosis	Minimum	Maximum	Range
Standing height	-0.488	0.304	-0.007	146	168	22
Leg length	-0.031	0.304	-0.691	85	102	17
Weight	0.371	0.304	1.401	45.55	72.60	27.05
BMI	0.268	0.304	0.244	18.40	26.70	8.30
Age(months)	0.092	0.304	-0.847	220	282	62

From table-2 it can be seen that

- Skewness value more than twice its standard error indicates a departure from symmetry. But from the above Skewness and Standard error values in the table it can be seen that there is no departure from symmetry.
- 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 Weight and BMI had positive kurtosis values (1.401, 0.244), this indicates that less variation existed among above mentioned parameters. On the other hand, Standing height, leg length and Agehad negative kurtosis value (-0.007,-0.691,-0.847), which indicates that the distribution is platykurtic and it can be interpreted that the subjects Standing height, leg length and Ageweremore variable around its mean value.

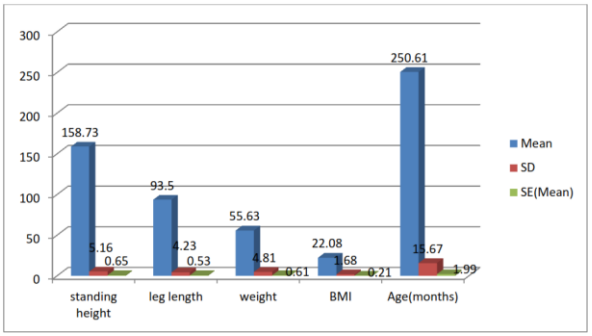

Figure1. Mean, SD, SE values for Women Hockey player's Standing height, Leg length, Weight, BMI and Age

DISCUSSION OF FINDING

The physique of an athlete is considered to be an important determinant of the success and in top level sport(monilka sanwariya, 2019).To investigate the study descriptive analysis was used on Women's

hockey player's, 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).

In this research it was found that the average age of the players' was 250.61 months (20.88 years)where the minimum and maximum age of the players' was 220 months (18.33 year), 282months (23.5 years).Height has been a debated variable over the years in hockey performance; few researchers neglect its dominant role whereas other's mention it(C.M. Calò, 2009). The average height of Australian women hockey player's was 172.13cms which was ranked 1st in the world(wikipedia) and the average height of Belgium women hockey player's was 169.72cms, which was ranked 2nd in the world(wikipedia). Researcher obtained the average height of Intervarsity Women hockey player's was 158.73cms. Where the maximum heighted player was of 168cms and the minimum heighted player was of 146cms. Mean leg length of player's was 93.50cms.

The average weight of women hockey player's was 55.63kgs (minimum weight was 45.55kgs and the maximum weight was 72.60kgs). Another aspect of body composition i.e., body mass index (BMI) which is also useful 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. Body Mass Index values for female hockey players' in London Olympics 2012 was 21.90(topendsports.com, 2019) and in Rio de Janeiro Olympic games it was 21.7(topendsports.com, 2019)Researcher was able to find out the average BMI as 22.08 whereas the maximum BMI was 26.70 and minimum was 18.40.

CONCLUSION

After investigation and analysis of selected kianthropometric variables the researcher obtained the results that All India Intervarsity women hockey players'poses average (height158.73cms, leg length 93.50cms) and these parameters are less than those teams who are giving top class performance at the world level. To have the best performance of Women team researcher reveals that during talent identification and team selection height and leg length may be given preference and one may consider about the age of the player's 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 Women hockey players at the Intervarsity level.

REFERENCES

C.M. Calò, S. S. (2009). Body composition of Italian female hockey players. Biology of Sport.

F. Alburquerque, F. S. (2005). Kinanthropometric assessment of a football team over one season.Eur J. Anat, pp. 17-22.

Masaharukagawa, D. K. (2006). Differences in the relationship between BMI and percentage body fat between Japanese and australian-caucasian young men. British journal of nutrition, pp. 1002-1007.

Monilka Sanwariya, S. K. (2019). A Study of Anthropometric Variables, Back strength and Performance. International Journal of Health Sciences & Research .

Prof. Zamirullah Khan, N. A. (2016).Kinanthropometric profile and performance of athletic track events in relation to different runners. Journal of education and practice, pp. 106-108.

topendsports.com. (2019). Retrieved November 11, 2019, from Google: https://www.topendsports.com/sport/hockey/anthropometry.htm

vanessa Martinez-Lagunas, M. n. (2014). Women's football: player characteristics and demands of the game. Journal of sports and health science 3, pp. 258-272.

wikipedia. (n.d.). Retrieved November 11, 2019, from wikipedia.org: https://en.wikipedia.org/wiki/Australia_women%27s_national_field_hockey_team

wikipedia. (n.d.). Retrieved November 11, 2019, from wikipedia.org: https://en.wikipedia.org/wiki/Belgium_women%27s_national_field_hockey_team

Wikipedia the free encyclopedia.(n.d.). Retrieved November 11, 2019, from Wikipedia.org: https://en.wikipedia.org/wiki/India_women%27s_national_field_hockey_team

Corresponding Author

Sandeep Kumar*

M.P.ED Student at Department of Sports Biomechanics, LNIPE Gwalior

kumarsandeep4028@gmail.com