Deba Pasad Sahu
*Assistant Professor & Head,
Department of Physical
Education, Mahishadal Girls'
College, West Bengal, India.*

Comparative study on body segments and BMI between cricket players and hockey players

Deba Pasad Sahu

Abstract

In the world history, sports was a popular organization and important as today. It has been an interesting aspect for human amusement and a cultural phenomenon at great magnitude. Scientific investigation into the performance of sportsman has been playing an increasingly important role to attain excellence of performance in different sports. Now the sportsman has been able to give outstanding performance because of involvement of new scientifically substantiated training methods and means of execution of sports exercise such as sports techniques and tactics. The purpose of the study was to investigate the difference on body segments and BMI between cricket players and hockey players. 20 male college level batsmen in cricket were selected from Burdwan district, Hooghly district of West Bengal and 20 male college level Hockey players were selected from North 24 pgs, Kolkata and Jalpaiguri district of West Bengal as the subjects for this study. The age of the subject was 18-22 year. Height, Weight, BMI Leg Length, Arm Length for selected anthropometrical variables of the study. Student 't' test was applied to calculate the collected data at 0.05 levels of significance. The result showed that there was a significant difference between male college level cricketer and male college level Hockey players of Height, BMI, Leg Length, Arm Length and no significant difference between Cricketer and Hockey players of Weight.

Keywords: Anthropometric variables, Cricketer, Hockey Player, Height, Weight, BMI Leg Length, Arm Length

1. Introduction

Anthropometry is the study of the measurement of the human body in terms of the dimensions of bone, muscle, and adipose (fat) tissue. There are numerous factors which are responsible for the performance of a sportsman. The physique and body composition, including the size, shape and form are known to play a significant role in this regard. At present, sportsman for superior performance in any sports is selected on the basis of physical structure and body size. Structural measurement includes anthropometric measurement which consists of objective measurement of structures such as height, weight, width, depth and the circumference of the various part of the body. The anthropometric measurements most commonly used for assessing nutritional status are height, body weight, mid-arm circumference and triceps skin fold thickness (Blackburn, *et al*. 1977). A decrease in lean body mass is a characteristic of aging regardless of energy intake (Forbes, 1976).

Anthropometry has a rich tradition in sports sciences and sports medicine. Though, in different times, different terms were used like dynamic anthropometry, sports anthropometry, biometry, physiological anthropometry, anthropometrical, kinanthropometry etc. by scientists to establish some relationships between the body structure and the specialized functions required for various tasks (Koley, 2006). In fact, it is well established that each individual is unique. The extent of human variability is so enormous that no two individuals can ever be exactly the same. There are two fundamental causes for this variation. One is the genes inherited from parents and the other is the infinity of environment which acts upon individuals from cradle to grave. Therefore, scientists have always been fascinated by the phenomenon of human variation. In the populations, the law of chance operates as a whole and people in general tend to fall along a curve of normal distribution on all traits (Koley & Sandhu, 2005). With the innumerable variety of human physique, it has become a generalized consideration that some sports events are more suitable to individuals with specific physique than others (Reco-Sanz, 1998; Wilmore & Costill, 1999; Keogh, 1999). It has been well established that specific physical characteristics or anthropometric profiles indicate whether the player would be suitable for the competition at the highest level in a specific sport (Claessens *et al*., 1999;

Correspondence:
Deba Pasad Sahu
Assistant Professor & Head,
Department of Physical
Education, Mahishadal Girls'
College, West Bengal, India.

Bourgois *et al*., 2000, 2001; Reilly *et al*., 2000; Gabbett, 2000; Ackland *et al*., 2003; Slater *et al*., 2005). These anthropometric and morphological parameters are the sensitive indicators of physical growth and nutritional status of the athletes for their maximal performances (Wilmore & Costill, 1999; Chatterjee *et al*., 2006).

Cricket is the most popular sport in commonwealth countries and one of the most popular sports in the world. The performance of cricketers is enhancing day by day, old records are broken and new records are forming; scores are reaching new heights, it is due to high intensity training of the players which help them to perform well. Today is the modern competitive cricket era. Every cricketer is in race to excel others, and cricket competitions have become a fundamental mode of human expressions as they are one of the very important functions by which national and international recognition and prestige is gained. From its very simple form, cricket has emerged in to highly organized activity of Indian society and it has become a complex social and cultural phenomenon. Sports has permitted most of our social Institutions including education, Economics, Art, Politics, Law, Mass Communication and International Diplomacy.

Hockey is one of the many sports derived from pre-historic man`s delight in stick and ball games which gave the world such varied pursuits as the English Cricket. Hockey become popular in India when the British Regiments played the game in India and introduced it in the British Indian Regiments who quickly picked up the game. India reigned supreme in the game of male hockey for decades together. The performance of the player is totally depending on physique of player which is concerned in the field of anthropometric. Field hockey is an intermittent endurance sport involving short sprinting as well as movement with and without ball (Manna *et al*., 2009).

Successful performance in field hockey is influenced by morphological and anthropometric characteristics such as body size and composition, functional parameters (physical capacity) (Scott, 1991; Singh *et al*., 2010) and fitness (Nikitushkin & Guba, 1998). Apart from hockey, reports on anthropometric characteristics and physiological variables were available in handball (Zapartidis *et al*., 2009; Koley *et al*., 2011a), Cricket (Koley, 2011; Koley & Yadav, 2009), and softball (Koley & Santhosh, 2011).

2. Statement of the problem
The purpose of the study was to compare the differences on body segments and BMI between cricket players and hockey players.

3. Methods
The objective of the study was to investigate the difference on body segments and BMI between cricket players and hockey players. 20 male college level batsmen of cricket were selected from Burdwan district, Hooghly district of West Bengal and 20 male college level Hockey players were selected from North 24 pgs, Kolkata and Jalpaiguri district of West Bengal as the subjects for this study. The age of the subject was 18-22 year.

To compare the Height, Weight and BMI, arm length, leg length Body weight was measured with the help of weighing machine, Standing height, arm length and leg length was measured with the help of stadiometer and BMI was measured with the help of the (Weight/Hight^2) formula.

To compute all the results Students 't' test was employed at 0.05 level of significance.

4. Finding

Table 1: Mean, Standard deviation and 't' test in Height, Body Weight, BMI, Leg Length, Arm Length between Cricketer and Hockey players.

Variable	Cricketer (Mean)	Hockey Player (Mean)	Cricketer (S.D)	Hockey Player (S.D)	't' Ratio
Height(Inches)	64.65	66.20	1.34	1.51	3.88*
Body Weight (Kg)	68.42	68.10	2.25	3.15	.36 NS
BMI	25.65	24.27	1.29	1.39	3.13*
Leg Length (Inches)	34.10	35.57	3.03	1.25	3.26*
Arm Length (Inches)	28.65	30.02	1.40	1.56	2.91*

$Tab_{0.05}$-(38) = 2.021, *=Significant, NS= not significant

Table 1 shows that the mean and standard deviation of Cricket players and Hockey Players on Height (Inches) has been found 64.65±1.34 and 66.20±1.51, in Body Weight (Kg) has been found 68.42±2.25 and 68.10±3.15, in BMI has been found 25.65±1.29 and 24.27±1.39, in Leg Length (Inches) has been found 34.10±3.03 and 35.57±1.25, in Arm Length (Inches) has been found 28.65±1.40 and 30.02±1.56. The 't' value of Height, BMI, Leg Length, Arm Length are 3.88, 3.13, 3.26, 2.91 are significant at 0.05 level of significance but Body Weight is .36 is not significant at 0.05 level.

Fig 1: Comparison of mean, standard deviation between cricket players and hockey players.

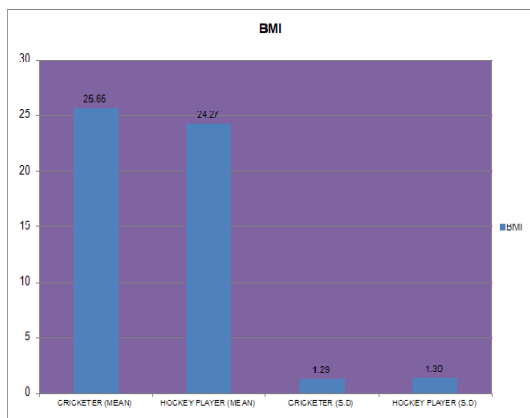**Fig 2:** Comparison of mean, standard deviation between cricket players and hockey players.

Fig 3: Comparison of mean, standard deviation between cricket players and hockey players

Fig 4: Comparison of mean, standard deviation cricket players and hockey players.

Fig 5: Comparison of mean, standard deviation between cricket players and hockey players

5. Discussion

It is observed that there has been significant difference of Height, BMI, Leg Length, Arm Length between the Cricket players and Hockey players but no significant difference in Body Weight.

Professional hockey players are required to cope up with advanced developments in field hockey, such as the artificial playing surface, new stick material, and the interchange rule which has in turn increased the number of physiological and technical demands on these players (Boyle *et al.*, 1994). Specific type of training programmed is required for players as per their playing positions as well as their playing conditions.

In this study, it was found that there is a significant difference in height, the Hockey players had shown superior than the Cricket players due to the effect of strenuous training program and was useful to generate more forces on them during the game.

The demand of skill development in their training schedule and also during the play which effect on the result or may be the tallest may engage themselves in Hockey.

Anthropometric dimensions and morphological characteristics play an important role in determining the success of a sportspersons. The importance of passing, length arm has been stated by an athlete and players who have long arm might do well to use the better grip because it provides better control over the skill. Studies about the advantage of showing lengthy

arm as "the longer the arm the greater the movement impaired to the object, thrown at the instant which left from the hand". The longer the power arm of the lever, the greater the amount of force, the shorten the power arm in relation to the length of the weight arm, the smaller is the movement of force, but the more immediate in action. The advanced of having long arm as "if a player's or athlete arm and legs are long can use them effectively and can apply force through a longer arm and this have greater speed.

BMI is the more effected by height rather than weight so it significant in result. Weight is effected by genetically factor and economical factor those who have engage them self in cricket are higher economical condition.

6. Conclusion
- ➢ Significant difference found in Height of Cricket Players and Hockey Players
- ➢ No Significant difference found in Weight of Cricket Players and Hockey Players
- ➢ Significant difference found in BMI of Cricket Players and Hockey Players
- ➢ Significant difference found in Leg Length of Cricket Players and Hockey Players
- ➢ Significant difference found in Arm Length of Cricket Players and Hockey Players

7. References
1. Walter Kroll. An Anthropometrical Study of Some Big Ten Varsity Wrestler. Research Quarterly 1954.
2. Barry LJ, Jack KN. Practical Measurement for Evaluation in Physical Education 2012.
3. Verma JP A Text Book on Sports Statistics.
4. Rico-Sanz J. Body composition and nutritional assessments in soccer. International Journal of Sport Nutrition 1998; 8:113–123.
5. Wilmore JH, Costill DL. Physiology of Sports and Exercise. Edn 2. Champaign, Human Kinetics, 1999.
6. Keogh J. The use of physical fitness scores and anthropometric data to predict selection in an elite under-18 Australian rules football team. Journal of sport Science and Medicine 1999; 2:125–133.
7. Calsh I. Throws and Jumps in Sports. New York, John Willy and Sons Inc., 1971, 82.
8. Tanner JM. The Physique of Olympic Athlete, London, Lea and Febager Inc, 1986.
9. Bunn JW. Scientific Principles of Coaching. Englewood Cliffs, New Jersey: Prentice Inc., 1972, 80.
10. Lawther JD. Sports Psychology, (Englewood Cliffs, New Jersey, Prentice Hall Inc., 1972, 163-164.