



## A COMPARATIVE STUDY OF KINEANTHROPOMETRIC MEASUREMENTS OF VOLLEYBALL AND BASKETBALL PLAYERS

**Mardikar M.**

P.G.T.D. of Physical Education, R.T.M.N.U., Nagpur (M.S.) India

**Abstract:** “Sports, by their very nature are enjoyable, challenging, all absorbing albeit requiring certain amount of skill and physical conditions. With the rapid development of sports into a highly organized and intensely competitive social phenomenon, there is a clear-cut classification of sports on the basis of intensity and level of participation namely the recreation sports, health and conditioning sports and competitive sports. Competitive sports are again ranked according to the level of intensity of competition involved. The highest level of competition in which the intensity of play raises the pulse rate of the player to approximately 180 beats per minute is designated as top sports. The sports have developed in to distinct scientific discipline in it self as each nation is varying with other to produce top class players to win laurels in international competitions. Considerable research is devoted to identify the factors those will be predictive of achieving high level of skill in a given sports with proper coaching. It is rather very difficult if not impossible for everyone to achieve the height of world fame. However, if one is destined to achieve such heights, it will become evident in early stage itself that the athlete, person or players is born with certain attributes and gifts, without which a real great success is not probable or possible.

**Keywords:**

**Introduction:**

Evolution of man is the result of constant physical struggle against the forces of nature. Primitive man had to develop running, jumping, climbing, throwing and swimming, for the up-keep of his body and for saving his life when attacked. Therefore struggle for existence used to be the law of nature. That is why the study of physical structure and performance is considered important when competitive performance is based on physical actions in the field of sports. Sports, being natural human phenomenon, have the potential of providing means of self-expression for people. Sports are 'product' as well as process. As product, it emphasised on win at all cost; but sports as process stressed upon the aesthetic value of performance. Kane (1970) viewed that sport has become an integral part of society with wide social acceptance and popularity. Today, the scientific approach in the sports field has resulted in remarkable improvement in human efforts. The scientific trend in sports is to proceed in a specific manner to achieve top-level performance. The achieved success in sports gives a great sense of fulfillment and satisfaction to the player, society, and nation as a whole. Play, game and sports have got note-worthy place in social life. Sport via game, is one of the ongoing

achievement of society. Sports in the form of its super organizational structure, with its other concomitants, have a close and undetectable linkages with other social structures like economy and politics to mention a few. The institutionalization of sports in the modern world has emerged as a social process influencing various aspects of social life of man. The competitive spirit which emanates from the sports has got new dimensions as it is not only excellence in performance which gratifies but it is glorification of national ideologies which support the super structure of sport. It is but natural to find sports leading to international ,r turmoils political, economic, racial, ethical, organizational etc. Sports talent research is very recent and promising field of interest in Indian sports. After getting unsatisfactory and depressive results in the national and international sports competitions. Indian sports has got a backward thrust and encouraging sports scientists to search for sports talents in every nook and corner of our country. The Govt. of India has been providing all facilities for this purpose. Many researchers in India are, at present trying to find out a way out to identify sports talents and many sports scientists have opined that sport

talent should be identified on the basis of athlete's morphological set up etc.

It is now well known that morphological characteristics play an important role in the performance in sports. For better performance in the particular sport, specific morphological characteristics are required. In this context many studies are available. There are still certain games, which require more research work to understand the morphological characteristics in them. Performance in games and sports depends not only upon psychological, sociological physiological and scientific training of the individual but physique and body composition also affect it considerably. Though the training is equally important imparted at higher level of competition where training is given to all individuals, suitable physique and body composition is of fundamental importance. Various studies have been conducted on the relationship between human structure and physical performance but they are almost entirely limited to the male athletes.

Many reports in this area refer to anthropometric characteristics, that distinguish top class players in specific sports, however no study seems to have been done on analyzing variables amongst National level, University Level, College level of Volleyball and Basketball Women Players and also compared with non players (women).

300 players of Volleyball, 300 players of Basketball and 300 Non-players were the (out of 300 players, 100 players were of National level, 100 players of University level and 100 players of Collegiate level) subjects of scrutiny.

Further another 300 students were selected purposefully at random who did not play or participated in any other sports from the students of Nagpur University who formed the non players group. A study was under taken to analyse selected anthropometric variables of players and non-players.

A comparative study of selected anthropometric variables was made between

players and non-players and also between Volleyball and Basketball players.

This analysis is done by analyzing the variance of group mean of selected anthropometric variables followed by modified 't' test to determine the significance of pairs of group means and 'F' test to determine the significance of within 3 groups and then variances is statistically established. The level of significance chosen was 0.01 level.

The work described in the thesis is broadly divided into five chapters. The thesis opens with chapter one as an Introduction to the subject matter detailing the importance of the anthropometric measurements.

#### **Methodology:**

The subjects, the criterion variables and procedure of measuring them and the techniques of analysis of collected data are described in this chapter. The purpose of this study was to collect scientific evidence to determine desirable physical characteristics of Volleyball and Basketball Sportswomen and to know the specific area of their excellence in sports.

Only registered players of recognised and affiliated clubs (for state level players) were subjects of this investigation. Only state level, University level and collegiate level players were considered for this study. By a careful study of kinesiological and mechanical analysis of various physical measurements, the following anthropometric variables were selected, as they are likely to contribute for the development of skill.

1. Arm Length, 2. Upper Arm Length, 3. Lower Arm Length, 4. Palm Length, 5. Palm Width

#### **Analysis of Data :**

The statistical analysis of selected anthropometric variables of players and non-players has been derived. Interpretation of the data and analysis of the study has been covered.

Table-1. Comparison of means of selected Anthropometric Measurements at National Level

Sr. No.	Variables	Mean		Difference	Standard Error	't' ratio
		Volleyball	Basketball			
1.	Arm length	68.83	73.70	4.87	0.4188	7.0187
2.	Upper Arm length	30.27	31.89	1.62	0.2334	5.7599
3.	Lower Arm length	38.55	41.75	3.20	0.3840	6.0941
4.	Palm length	18.83	19.84	1.01	0.2234	4.4337
5.	Palm width	9.50	10.50	1.00	0.7097	4.0383

Table-2. Comparison of means of selected Anthropometric Measurements at University Level

Sr. No.	Variables	Mean		Difference	Standard Error	't' ratio
		Volleyball	Basketball			
1.	Arm length	68.46	64.36	4.10	0.4188	5.2656
2.	Upper Arm length	30.34	29.71	0.63	0.2334	1.8314
3.	Lower Arm length	38.32	34.66	3.66	0.3840	6.2789
4.	Palm length	16.34	17.77	1.43	0.2234	5.7238
5.	Palm width	8.08	7.37	0.71	0.7097	3.2071

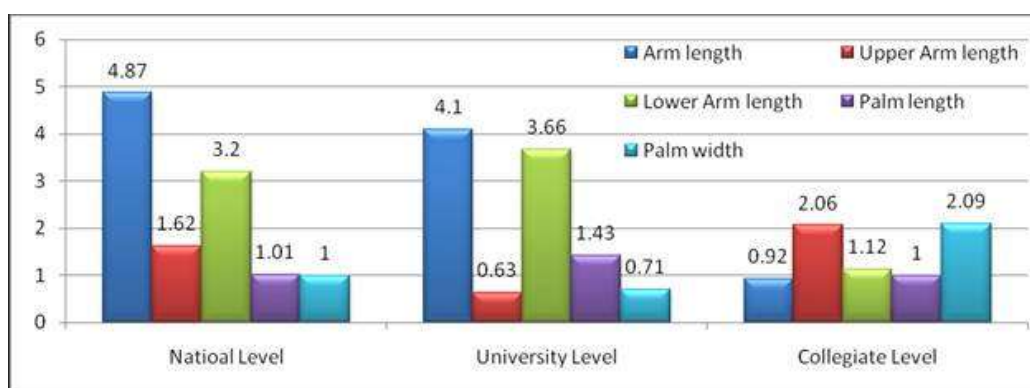
Table-3. Comparison of means of selected Anthropometric Measurements at Collegiate Level

Sr. No.	Variables	Mean		Difference	Standard Error	't' ratio
		Volleyball	Basketball			
1.	Arm length	71.09	70.17	0.92	0.4188	2.1965
2.	Upper Arm length	32.16	30.10	2.06	0.2334	8.8259
3.	Lower Arm length	38.90	40.02	1.12	0.3840	2.9166
4.	Palm length	18.27	17.27	1.00	0.2234	4.4763
5.	Palm width	9.51	7.42	2.09	0.7097	2.9447

\* Significant at 0.01 level of confidence.

Critical value of 't' ratio = 2.58

Graph-1. Comparison of mean differences of selected Anthropometric Measurements at National, University and Collegiate Level



### Conclusions:

From the study of Anthropometric Measurements of Volleyball players, Basketball players. Total arm length is the subtraction of styloid height from acromial height. The difference of lower arm length and upper arm length also found statistically significant. Regarding lower arm

lengths, the bone continues to grow even after the age of 18 years, hence they show variances amongst all the three groups. The Basketball players longer arm length than the Volleyball players because they need more lever advantages than Volleyball players. Palm length depends upon the length of the arm. Significant difference was

found in player. Amongst the players Basketball players have slightly longer palm length than Volleyball players. Amongst the players Volleyball players have more palm width than Basketball players.

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