

THE SIGNIFICANCE OF PHYSICAL ATTRIBUTES IN SPORTS WITH SPECIAL REFERENCE TO BASKETBALL

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Abstract

The material we used for this project were a basketball, notebook, pencil, inch tape and test subjects and a basketball court was the chosen place to conduct the activity. We chose 30 basketball players from X, XI and XII standards from different schools in Jaipur, Rajasthan who had represented their school in cluster tournaments. Next, we conducted an arm length test, arm strength test through push ups, palm size test and lastly three point shooting test. The students were instructed to shoot the ball into the basket in any fashion by keeping behind the three point line. Two trials each trials consist of 10 throw are given, with one point recorded for every basket scored. The better of the two trials was counted as the final score. Finally, we used Pearson's product moment correlation to compare the relationship between the variables and shooting ability. The result was positive.

Introduction

Sports are all forms of competitive physical activity which, through casual or organized participation, aim to use, maintain or improve physical fitness and provide entertainment to participants. Hundreds of sports exist, some require only two participants, and some need many individuals as a team.

"Sport" comes from the french word *desport* meaning "leisure", with the oldest definition in english from around 1300 being "anything humans find amusing or entertaining"

The French word for sport is based on the persian word *bord*, meaning "winning" or "win". The chinese term for sport, *tiyu* denotes physical training. The modern greek term for sport is *athlitismos*, directly relates with the english terms "athlete" and "athleticism".

Definition

The precise definition of what separates a sport from other leisure activities varies between sources, with no universally agreed definition. The closest to an international agreement on a definition is provided by Sports Accord, which is the association of all the largest international sports federations (including association football, American football, cycling, equestrian sports, baseball and more), and is therefore the *defacto* representative of international sport.

Sports Accord uses the following criteria, determining that a sport should:

- have an element of competition
- be in no way harmful to any living creature
- not rely on equipment provided by a single supplier
- not rely on any 'luck' element specifically designed in to the sport

They also recognize that sport can be primarily physical (such as rugby or athletics), primarily mind based (such as chess), predominantly motorized such as (formula 1), primarily co-ordination (such as billiards) or primarily animal supported (such as equestrian sports).

History and significance

There are artifacts and structures that suggest that the Chinese engaged in sporting activities as early as 2000 B.C. Gymnastics appears to have been a popular sport in China's ancient past. Monuments to the Pharaohs indicate that a number of sports, including swimming and fishing, were well-developed and regulated several thousands of years ago in ancient Egypt. Other Egyptian sports included javelin throwing, high jump, and wrestling. Ancient Persian sports such as the traditional martial art had a close connection to the warfare skills. Among other sports that originate in ancient Persia are polo and jousting.

A wide range of sports were already established by the time of Ancient Greece and the military culture

Significance

The results of this study will be useful in many ways such as in facilitating physical education teachers and coaches with a guideline for selection of basketball players and preparing a good team. The results may be helpful in order to frame the training program of school and university basketball players, the coaches will get to know where and which part to emphasize during training. The methodology used in this study could be used for self assessment by basketball players and it will help the physical educator and coaches in talent identification.

Importance of sports

The importance of sports and games is being increasingly recognized in India, from both the educational and social points of view. More and more

funds are being allocated for encouraging sports in schools, colleges and universities, in fact, sports have become an essential part of the curricula.

There was a time when only a few students, who were fond of games like hockey, football, cricket or tennis, were allowed special facilities. Now, regular programs are drawn up in all educational institutions to persuade as many students as possible, regardless of special aptitudes, to participate in games, and not merely watch matches occasionally to cheer up their favourite teams or attend the prize distribution functions at the end of a sports season.

Educationists and others have come to the conclusion that it is in the interest of society as a whole that adequate facilities should be provided, depending, of course, upon the availability of funds, for games and sports for the country's youth, both boys and girls. Sports encourage friendship and amity.

Several factors need to be taken into account in this connection. Physical fitness is of the utmost importance for everyone, young and old. Participation in games and sports invariably ensures good health, fitness and, generally, freedom from ailments of various types.

Also, unless the human body is kept smooth, trim and in an overall fit condition, even the brain will refuse to co-operate after some time. Actually, physical fitness is essential for proficiency in studies and for winning distinctions in examinations. Ailing bodies do not make for sharp brains. Exercise in some form or another is necessary, and sports provide an easy method to ensure such fitness.

Regular participation in sports provides a healthy channel for diversion of energies. Wherever students and other youth participate in sports regularly, misdirection of youthful vigour is much less and the tendency to indulge in indiscipline and mischief is curbed.

Young people have surplus energy, and if this is fruitfully utilised, the foundations are laid for a healthy society, where people are fully aware of the need for discipline, co-operative effort, team spirit, the cult of sportsmanship, of joint devotion to the achievement of a common goal in collaboration with others. They also learn to cultivate the vital quality of learning how to work together, to become not only good winners, but also good losers.

According to sociologists, "society gains in many ways when the government encourages sports and games everywhere, provides playgrounds, the necessary equipment and other facilities, and rewards outstanding sportsmen, so as to encourage others also to play games. The crime graph dips, which means that the incidence of general crimes decrease because the right spirit and the right approach to things is developed on the playground.

Those who violate the rules, play foul or exceed the permissible limits, or indulge in tactics that are unfair, are promptly pulled up by the referee or the umpire. Anyone who refuses to mend his ways or to repeatedly violate the rules is ordered to quit the field and is replaced by another player. This helps to inculcate the habit of respecting the judge and of observing the rules.

In any case, the relatively poor show of our athletes in international competitions does not weaken the case for encouraging sports which help to lay the foundations of a healthy, sound society. The cost is returned several- fold.

Research in the field of sports

Hoffman in his study aimed to look for the best relation between leg length and frequency of sprinting stride taking into account length of his legs. The measurement was taken exclusively during the competition. The result showed that the leg length is connected more with the athletes running than his height.

The purpose of **Joseph's** study was to find out whether there is any relationship of selected anthropometric and strength variable to speed performance. Twenty four male sprinters of the Lakshmibai National Institute of Physical Education, Gwalior who were undergoing regular training at the college track and preparing for collegiate and intervarsity athletic meet were selected as subjects for the study. The study results show that there is a significant relation of leg power, abdominal strength, thigh girth, calf girth, height and leg length to speed performance.

Thomas studied the relationship of motor components and anthropometric variables to the velocity of basketball throw. Motor fitness components chosen were wrist strength, waist and shoulder flexibility, speed of movement of arm. Anthropometric variables were upper arm length, lower arm length and total arm length with height, sitting height, weight and leg length. 25 male basketball players in the profession of physical education were chosen as the subject for the study. Analysis of the data showed that there is a significant correlation between the velocity of long and hook basketball passes and the anthropometric variables.

Dey T.S. made an attempt to find out whether at certain levels of achievement, sportsmen participating in different games were characterized by distinct anthropometric measurement, and to find out proportionate ratio of segmental and total body measurement required for a particular game. For this study, 12 players from each sport i.e., swimming, basketball, handball, table tennis were selected from the top first four standing teams of National school games. The results of the study have indicated that a) Basketball players have significantly more height, arm length, leg length, thigh girth and weight as compared to handball, swimming and table tennis players, b) Handball players possess more height, leg length, thigh girth and weight as compared to

swimmers and table tennis, c) Arm length, arm girth of swimmers is more as compared to handball and table tennis players.

Sisodiya Singh Aman conducted a study to determine the relationship between anthropometric measurements and the playing ability in basketball. 50 male and 50 female basketball national level players of Rajasthan state were selected as subject for the study. The study exhibited an insignificant relationship with field goal speed test (basketball playing ability) and with throw for accuracy at the chosen level but the value of product moment correlation is quite high which may be understood that the size of body may contribute to basketball playing ability when combined with other variables. The finding of study showed a not so significant relationship between body weight and basketball playing ability which attributed to the fact that basketball players do not require bulky body which may hide the performance of the players. The findings reveal that insignificant relationship exists between Leg length and Field ball speed test and dribble test (basketball playing ability), no significant relationship was found with throw ball accuracy. The data was analyzed by using Pearson's product moment correlation (r) for assessing the relationship of basketball playing ability to selected variable of anthropometric measurement.

Singh Vikram conducted a study where they compared selected motor fitness variables among male basketball, volleyball and handball players. The study was conducted on 36 subjects with age ranging 18 to 25 for the comparison of selected Motor fitness variables among male basketball, volleyball and handball players from Purvanchal University. The variables selected for the study were Motor fitness variables (agility, co-ordination, static balance and dynamic balance). One way analysis of variance (ANOVA) was used to find out the significant difference among the three groups. The LSD post hoc test was used to find the significant difference

in paired means. It was concluded that there was significant differences between basketball, volleyball and handball players in motor fitness (agility, co-ordination, and dynamic balance) variables. There was no significant difference in static balance among basketball, volleyball and handball players at .05 level of significance.

Orientation to Basketball

The game of basketball had its origin at the International Y.M.C.A. training school at Springfield Massachusetts, U.S.A. in 1891. It was invented by Dr. James Naismith by combining some element of soccer and rugby into a new game with a set of 13 rules only. From such a beginning it has evolved into a graceful game and in the present day basketball is fast aggressive and attractive sports for spectators.

Basketball today with its increasing popularity has become intensive and competitive. Basketball the American invented game which has spectator support all over the world, made its way into India through the Americans missionaries during 1930. However, in India it has not been able to achieve any spectacular success in the international competitions.

This poor performance could be attributed to lack of facilities and absence of advancement of scientific coaching. Correct learning of skill is possible only when the learner possesses adequate strength, endurance, flexibility and agility.

A high level performance in basket ball not only required certain physical qualities like speed, endurance, explosive power, agility etc. but also a good physical structure. Under modern condition especially related to training for sports and games with a focus on superior performance adequate importance is given to physique and body build of each athlete.

In modern sports the anthropometric measurement and their relationship with various motor traits are importance guidance for the coaches and athlete themselves for making training schedule and for classification of student into different groups according to their age, ability etc.

Several factors such as age, experience, height and weight influence the selection of players for National Basketball Team.

Extensive research studies on the physical built of basketball players have been conducted in different parts of the world. Genetic and anthropological studies have been conducted on Olympic basketball players and useful findings have been recorded. Several countries give weightage to these while selecting their national team for international competition.

Along with physiological characteristics the structural requirements are equally essential for the players who expect to be good rebounders or shooters in basketball, standing height and height palm reach make the performance of this part of the game much easier for the taller players.

Strength is one of the most important components of physical fitness, which effects the performance in all activities in some form or the others. If a player does not have good size and strength, the best way to achieve them is through a well planned weight training program. Most coaches recognize the need for general body strength in a basket ball player.

Strength training has long been accepted as a means of improving performance and preventing injury and most coaches have made it an integral part of their overall conditioning program during the off season. Since performance depends upon explosive power, speed of movement and an aerobic muscle endurance, any athlete who hopes to maintain his pre-season strength level must continue working at it during the season.

For better performance in sports, coaches usually consider physique and physical fitness of the sportsman. It is always a great task for coaches to specify the aptitude of their trainees for different positions in games or sports. A measurement and physical variable play a very vital role in most of the games and sports. Certain anthropometric configurations, somatotypes, and racial traits are identified as advantageous for performance in specific sports.

Strength is a vital factor on which the sports performance depends. Depending upon the magnitude and type of resistance to be tackled in various sports, the sports man of different games need different level and type of strength to achieve good performance. Therefore, the teacher of physical education and coaches while selecting their teams for participation in tournaments give due consideration to the skill possessed by their players and at the same time they give due weightage to various anthropometric measures such as height, weight, leg strength, hand length, girth etc. Usual concept which physical education teacher and coaches have that a player who is tall, who has a broad chest and who has a sufficient weight will be more fit as compared to a player short in height and lean and thin. Teacher of physical education and coaches very frequently remark that a good tall sports man is better than a good, short sports man. In basketball grouping of athlete must be done on a physiological development basis.

The present investigation was therefore undertaken to gain a better understanding of the importance of selected strength variables and anthropometric variable on shooting ability in basketball.

PROCEDURE AND METHODOLOGY

Selection of Subjects: Subjects were randomly selected. 30 male students were selected with lottery method. All the players were from high school (X TO XII) cluster level. All the 30 male basketball player were from different schools of Jaipur, Rajasthan.

Selection of Variables: The important anthropometric characteristic and required physical variable, which are desirables for better performance in basketball such as arm strength, arm length and palm size.

Criterion Measure: Different instrument were used to measure various dimensions. Dimension of the palm was taken with a measuring tape and unit of measurement was centimeter. Arm strength was measured by push ups, measuring tape was used to measure arm length and unit of measurement used was centimeter.

Procedure for administering the test: The test in all selected variables was administered on the basketball court, assessing the arm strength and three point shooting test were conducted in basketball court.

In order to obtain data on selected variable, the tests were conducted as follows:

Arm length: This test was conducted on a basketball court and a normal measuring tape was used for this purpose. Subjects were allowed to stand in relax position with arms fully extended. Measurement was taken of the distance between the shoulder joint and

to the top of the third finger. The score of arm length was recorded to the nearest centimeter.

Arm Strength Test: The subject was told to straighten his arm, front leaning resting position. From this initial position they were asked to lower the body, until the chest touched the mat and came back to the initial position. Number of push-ups were completed till the subject was exhausted in his score.

Palm Size: Subject was told to stretch the palm fully. The length was taken from bottom of middle finger to midpoint of interstylole line. Width is measured from natural concavity near palmer- digital crease to midpoint of bottom of thumb and lateral index finger.

Three point Shooting Test: The student was instructed to shoot the ball at the goal in any fashion from behind three point line. Two trails, each trail consisting of 10 throws were allowed, with one point recorded for every basket scored. The better of the two trials was counted as the final score.

Statistical Technique: To determine the relation of, arm strength, palm size and arm length seperately with performance of throw shot was established by using Pearson's product moment correlation.

S.NO.	Arm length (cm)	Palm size (cm ²)	Arm strength (kg)	three point shooting performance
1	77	199.5	24	4
2	80.5	215.25	29	7
3	80	220	32	6
4	79	200	28	6
5	83	218	31	7
6	76	230	26	5
7	80	210	31	6
8	82.5	235.75	34	6
9	73	184.5	22	4
10	83	225.75	30	7
11	82.5	225.5	38	7
12	78	241.5	19	5
13	84	225	33	8
14	83	210	30	7
15	85	260	40	8
16	81.5	225.5	29	6
17	74	236.25	22	5
18	78.5	214.5	33	6
19	84	253	36	7
20	79	204.5	19	4
21	83	210	31	6
22	81	205	25	5
23	91	264	21	9
24	77	209	29	7
25	83.5	225.5	41	8
26	82	231	36	8
27	81	218.5	35	6
28	80	214	43	9
29	77	2210	31	6
30	76	205	27	5

Descriptive Statistics

	Mean	Std. Deviation	N
ARM LENGTH	80.5	3.67658	30
PALM SIZE	220.8833	17.93916	30
ARM STRENGTH	30.1667	6.25925	30
SCORE	6.3333	1.37297	30

Conclusion And Recommendation: The purpose of this study was to investigate the relationship of arm strength, arm length and palm size to the performance of three point shooting ability in basketball. Thirty male students from different schools of Jaipur (Rajasthan) India those who are in high school and represented their schools up to at least cluster level basketball were selected as the subjects for this study. The average age of the subjects were 18 years ranging from 16 to 19 years. The dependent variable was performance of three point shooting in basketball(10 throws) and independent variables selected for this study were arm strength, arm length and palm size .

The palm size and arm length and arm strength

measurements of the subjects were taken on different basketball courts. The data was analyzed by using Pearson product moment correlation(r) for assessing the relationship of basket ball three point shooting ability to each of the selected anthropometric measurements and physical variables. The level of significance chosen was .05.

Within the limitations of the study following conclusions may be drawn:

- Three point shooting performance in basketball had significant relationship to arm strength, arm length and palm size.
- It is possible to predict basketball three point shooting performance on the basis of arm strength, arm length and palm size.

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