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ANTHROPOMETRY AND ITS RELATION WITH FLEXIBILITY IN UNIVERSITY CRICKTERS

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ABSTRACT

Purpose of the study was to find out the relationship of flexibility and anthropometric characteristics. The subjects for the present study were selected from B.H.U. The total number of subjects for the present study was 20 male batsmen who participated in inter university cricket tournament. The data was collected during the morning sessions of B.H.U university cricket camp 2013-14. The level of insignificance chosen was 0.05. There was insignificant relation among male inter university batsman with flexibility.

KEYWORDS: *Flexibility, anthropometry, characteristics, cricket, batsman*

INTRODUCTION

Cricket is a bat and ball game played between two teams of 11 players. Cricket was first played in southern England in or before the 16th century. By the end of the 18th century, it had developed to be the national sport of England. The expansion of the British Empire led to cricket being played overseas and by the mid-19th century the first international match was held. ICC, the game's governing body, has 10 full members. The game is most popular in Australasia, England, the Indian subcontinent, the West Indies and Southern Africa

Tests of anthropometry include measurements of body size, structure, and composition. It is important to be aware of the effects of changes to these factors, and to be able to measure them. For most sports body size is an important factor in success, whether it is advantageous to be short, tall, heavy or light. The body composition, such as the amount of body fat and muscle mass, can also significantly affect sporting performance. We also have discussed anthropometric measurements and tests for a range of sports.

Flexibility is the range of motion in a joint or group of joints or the ability to move joints effectively. Lack of flexibility often causes muscular imbalances and leads to injuries in particular areas of the body. Without adequate range of movement through your joints and muscles, daily activities as well as sports performance can be significantly hindered. By making flexibility a priority in your lifestyle, pain symptoms and injuries can be kept to a minimum; yoga, gymnastics, karate, Pilates and ballet are physical activities that yield increased mobility across different planes of the body. Most people don't stretch to begin with, and those who do stretch can certainly improve their efficiency while doing so; range of motion is needed for long-term injury prevention Regardless of the stretching technique that an individual chooses to perform, there are guidelines that will enhance their success. An important concept to understand is that prior to stretching, the temperature of the joint and associated tissues must be elevated; muscles are like rubber bands, and without warming up the muscles prior to stretching them, the likelihood of an injury is increased, just as a rubber band would snap if it was to be stretched rapidly without gradually increasing the range of motion. An individual can increase the temperature of their muscle tissues, tendons, and ligaments by performing a general cardiovascular exercise, such as walking briskly or jogging for 5-10 minutes. After this is done, the muscles are more elastic, primed for a flexibility session.

METHODOLOGY

The subjects for the present study were selected from B.H.U. The total numbers of subjects for the present study were 20 male batsmen who participated in inter university cricket tournament. The study was taken on the basic of available literature on anthropometric characteristic, physical and their test finding of the related research studies keepers in the mind about specific purpose of the study of cricket players and Body weight, Standing height, Total arm length, Biacromial diameter, Elbow diameter, Knee Diameter, Upper arm circumference, Calf circumference were selected in anthropometric and physical characteristic. All the anthropometric characteristics were measured by anthropometric kit and physical characteristics were measured by different specific test. The Correlation design was used for the study. A single group of units of analysis was obtained preferably randomly; each individual was measured on all selected variables at more or less the same time. The data were collected at Banaras Hindu University camp at B.H.U Varanasi and Regional Sports Stadium sigra at Varanasi. Necessary instructions were given to the subjects before administration of the test. For analyzing data gather descriptive statistic as well as correlation was used for achieving the objectives of the study. The level of significance was set at 5%.

CRITERIAN MEASURES FOR ANTHROPOMETRIC CHARACTERISTICS

All the anthropometric characteristics were measured by anthropometric kit.
Body Weight- Weighing Machine
Standing Height-Steel Tape
Arm Length-Steel Tape
Biacromial Diameter-Anthropometric Compass
Elbow Diameter- Calliper
Knee Diameter- Calliper
Upper Arm Circumference-Steel Tape
Calf Circumference-Steel Tape
FOR PHYSICAL FITNESS
Speed- It was measured by 50 yard dash.

ADMINISTRATION OF ANTHROPOMETRIC CHARACTERISTICS

BODY WEIGHT: The subjects were allowed to wear vest and were made to stand at the centre of the weighing machine. The weight was recorded from the indicator of dial to a nearest half of kilogram.

STANDING HEIGHT: Subjects were made to stand erect without shoes against a marked scale on the wall. The heels, buttock, and back were touching the wall. The subjects were instructed to keep the heel together, head straight, and hold a full breath in while measurement was taken. A stiff hard board was held horizontally on the head and touching the scale marked on the wall. The subjects were asked to step out and readings indicated by the hardboard were recorded. This was repeated twice to ensure accurate measurement and heights were recorded to the nearest half a cm.

ARM LENGTH: Arm length was measured with the flexible steel tape. The subjects were made to stand erect, arm completely hung, relaxed by the side of the body and arm length were taken from the acromin process, the point just above the shoulder joint to the tip of the middle finger. The arm lengths were recorded to nearest half cm.

BIACROMIAL DIAMETER: The subjects were asked to stand erect with shoulder dropping a little forward. The investigator marked the acromial points with a skin marking pencil. While standing at the back of the subjects the tip of two crossbars of anthropometric compass made contract to acromial points. The distance between both the points of compass was measured by the steel tape.

ELBOW DIAMETER: Either in the sitting position or in the standing position the subjects were asked to bend their arms at an angle of 90 degree.

The forearms and upper arms made right angle while upper arms was in horizontal directions and forearms in the vertical direction. The tester stands opposite the subject and applied the two points of calliper to the outer edge points at the lower end of the humorous. The calliper made an angle of 45 degree to the axis of upper arm and forearm.

KNEE DIAMETER: The subject was asked to sit down on a horizontal surface with their lower leg hanging and having clothing on knees. The arms of sliding calliper of the anthropometric compass applied on the outer points of the condoyle of femur.

UPPER ARM CIRCUMFERENCE: Subjects were instructed to stand erect with arms hung loosely by the side of the body. Arms girth was taken with the help of flexible steel tape at the level of half way between the tip of the acromial process, a point just on the top of the shoulder and the elbow joint. These levels were marked on the skin first then the tape was placed around the arms so that it remains in light contact with the skin all around. The measurements were being recorded to the nearest half cm.

CALF CIRCUMFERENCE: Subjects were asked to place the foot on the stool with thigh parallel to the ground and calf girth was measured with flexible steel tape at the maximum circumference of the calf in a plane at right angle to its long axis. In this position the calf muscle remained quite relaxed. Calf girth was recorded to the nearest half cm.

ADMINSTRATION OF PHYSICAL VARIABLES

FLEXIBILITY This test is used to measure the flexibility of the back and leg (hamstring muscles) it is a kind of absolute and linear test of flexibility.

Equipment: a testing box or a flexomeasure and a yard stick.

Procedure: the subject was asked to remove shoe and place his feet against the testing box while sitting on the floor with straight knees. Now the subject was asked to place one hand on top of the other so that the middle finger of both hand are together at the same length. The subject was instructed to lean forward and place his hand over the measuring scale lying on the top of the box with its 10 inches mark coinciding with the front edge of the testing box. Then the subject was asked to slide his hands along the measuring scale as fast as possible without bouncing and to hold the farthest position for at least 1 second.

Scoring: each subject was given 3 trails and the highest score nearest to an inch was recorded and 10 inch were subtracted from the recorded reading to obtain the flexibility score which was compared with the standard given in the table.

ANALYSIS OF DATA AND RESULTS OF THE STUDY

The anthropometric characteristics as well as physical fitness present in relation to the University cricket players namely, the anthropometric characteristics a Body Weight, standing height, Total arm length, biacromial diameter, Elbow diameter, and the following physical fitness components flexibility were collected on 20 male batsmen of inter university level Cricket players with age ranging from 19 to 28.

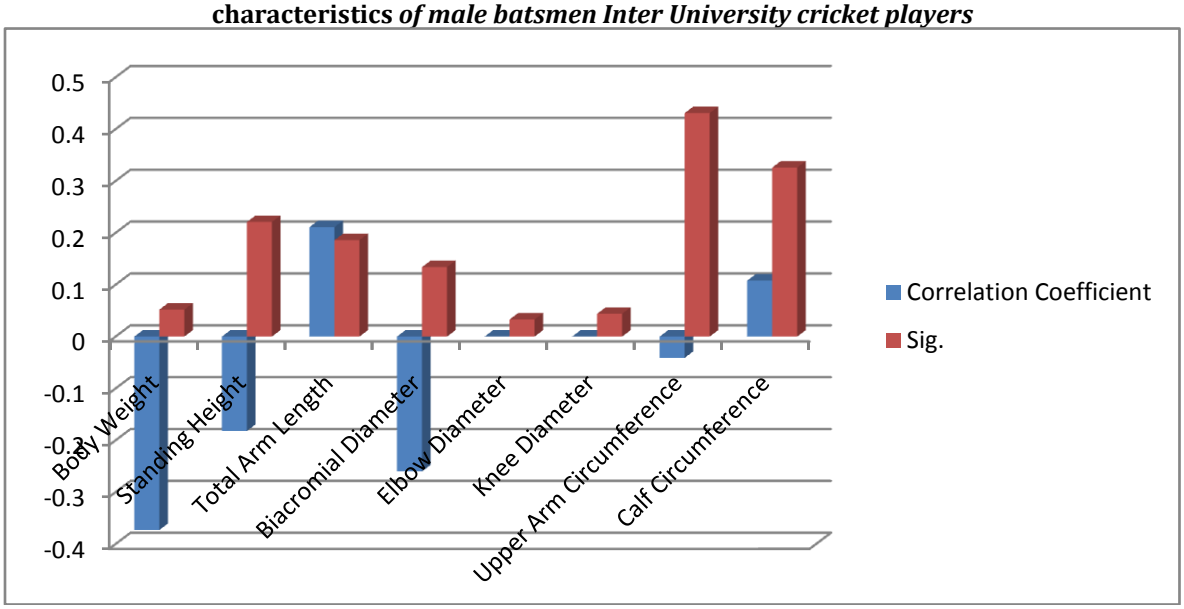
Table 1- Correlation of flexibility and Selected Anthropometry* characteristics *of male batsmen Inter University Cricket Players

Selected Physiological Variables	Correlation Coefficient	Sig.
Body Weight	-.373	.052
Standing Height	-.182	.221
Total Arm Length	.211	.186
Biacromial Diameter	-.260	.134
Elbow Diameter	-.420*	.033
Knee Diameter	-.392*	.044
Upper Arm Circumference	-.041	.431
Calf Circumference	.108	.326

**$p < .01$ & * $p < .05$

Table 1 revealed that significant positive relationship was found between Flexibility and Elbow Diameter ($r = -.420^*$, $p < .05$) Flexibility and Knee Diameter ($r = -.392^*$, $p < .05$) In case of Body weight($r = -.373$, $p > .05$) Standing height($r = -.182$, $p > .05$), Total arm length($r = .211$, $p > .05$), Biacromial diameter ($r = -.260$, $p > .05$), Upper arm circumference ($r = -.041$, $p > .05$), and Calf circumference($r = .108$, $p > .05$), an insignificant relationship was found as the value of coefficient of correlation was insignificant at 0.05 level.

Graphical Presentation of Correlation Coefficient and Sig. in relation to Flexibility with Anthropometrics characteristics of male batsmen Inter University cricket players



DISCUSSION OF FINDINGS

Anthropometric measurement is a means of studying the bodies shape, size and composition. Anthropometry can be a very vital factor to determine the performance of an athlete. Different Anthropometrical requirements are for different games. As far as cricket is concerned specific Anthropometrical characteristics are required for different areas of the game. That is batting, bowling and fielding. Today cricket has become an important athletic activity, specifically by the introduction of one day and Twenty-Twenty cricket.

Batting is one of the important area of the cricket game. A batsman requires perfect eye hand coordination, eye leg coordination and great reflexes. These coordinative abilities are also dependent on Anthropometrical measurement of the batsmen body to some extent. Batting not only requires coordination and reflexes but also a high level of endurance especially during running between the wickets hence here also comes the role of the anthropometry of the body.

The findings of the present study clearly indicate that there is a significant relationship of flexibility with the Anthropometric characteristics. This may be attributed to the fact that flexibility of anybody is highly dependent on anthropometric characteristics hence a significant relationship was clearly evident in cases of the batsmen in the cases of strength endurance, speed, agility. There was no significant relationship found in the batsmen. This may be due to the fact that the batsmen chosen for the present studies were of University level and might have gone through similar kind of training that is required for batsmen of this level.

Summary

At present competitions are highly competitive and challenging. Human beings by nature are competitive and ambitious for their excellence. Thus this can only be possible and achieved through scientific, systematic and planned sports training as well as channelling them into appropriate games and sports by finding out their potentialities. Physical fitness components and anthropometric characteristic of an athlete plays a vital role in channelling them into their specialized fields. These elements help out to find the potentials of the players as well as help in exploring their hidden reserves. Anthropometric measurement consists of objective measurement of structure and functions of the body. The measurement of the structure includes items such as weight, total height and width, the depth, the circumference of the chest etc. The measurement of functions includes such as pulse rate, arterial and venous, blood pressure, muscles strength, basal metabolic rate, estimation from cardio-vascular posture and breathing capacity etc. Physical fitness is the sum of five motor ability namely speed, strength, flexibility, endurance, and agility. These fitness components are the basic pre-requisites of human performance depend to greater extent on these abilities. Physical fitness is the capacity to carry out our various reasonable well forms of physical activities without being unduly tired.

In the present scenario the game of cricket gets totally commercialized. Today lot of money, different types of playing format, conditions, and

tournaments are introduced in the game of cricket. Now cricketers play more no. of matches and face a high risk of injury. Achieving and maintain the high standards and fulfilling the spectator demand became difficult. So it is very much required that the players achieve high level of physical fitness and should be trained according to their anthropometric characteristics.

Physical fitness are the most important contribution factors for the better performance in all sport and game so is in cricket the game of cricket require considerable amount of physical fitness and mastery of skill. A cricket player ought to process specific speed strength power agility endurance in abundance so as to term and master the technique of the game.

The study revealed that the data was found between Flexibility and Body Weight (r = -.048, p>.05) Flexibility and Standing height (r = -.080, p>.05) Flexibility and Total arm length(r = .281,p>.05), Flexibility and Biaromial Diameter(r = .025, p>.05), Flexibility and Elbow Diameter(r = .160, p> .05), Flexibility and Knee Diameter (r = -.041, p>.05), Flexibility and Upper arm circumference (r = -.130, p>.05), Flexibility and Calf circumference(r = -.262, p>.05), an insignificant relationship was found as the value of coefficient of correlation was insignificant at 0.05 level.

CONCLUSION

Based on the findings and within the limitation of the study, it is concluded that the male inter university batsman in cricket have good anthropometry characteristics and have insignificant relationship with Flexibility.

Recommendations: It is recommends that:

- A study may be conducted with the subjects belonging all over India.
- Similar study may be conducted with the application of more variables.
- A similar Study may be conducted to include other variables which can be found out by both intensive and extensive research study.
- Similar type of study may be repeated by selecting larger sample with larger geographical area.
- Study may also be conducted by selecting variables, which have been not covered in the present study.
- Biomechanical Research is needed to investigate how this anthropometric characteristic occurs so that appropriate interventions can be developed.
- Continued research is required to provide scientific evidence for batting workload guidelines.
- Further study is required to determine the reason why players who play cricket infrequently suffer more injuries.

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