Chapter 1

INTRODUCTION

In India various tribal communities are in different stages of development, but they are still backward in comparison to those who are so called civilized people. These tribals are aborigines of our country. They have been studied from a number of angles. The active life with lot of physical activity to earn their daily bread and butter is contributory to their physical development. The genetical potentiality in performing vigorous physical activity can be useful to excel in certain sports and games.

It is a matter of common knowledge that tribal lads are brought up in the lap of open natural space and outdoor setting of vigorous life. Because of this conducive environment, their physical capabilities in running, jumping, throwing and such other natural activities are tremendously developed.

Most of the tribal people are labourers. The main occupation of tribals are handicraft, wood work and selling fruits which are found in forest. Some of them are farmers also.
According to Majumdar¹ "A tribe is a collection of families or group of families bearing a common name, members of which occupies the same territory, speak the same language and observe certain taboos regarding marriage, profession and occupation have developed a well assessed system of reciprocity and mutuality of obligation."

It is true that physical activity has been part of the fundamental pattern of living for every creature that has ever lived on earth. For this reason the condition of a persons body must have always been of great concern. In primitive society there appears to have been very little organised, purposive instruction in physical education, although early people considered that a certain type of fitness was necessary for survival. The usual activities of labour, searching of food, dancing, hunting skills of archery, spear and rock throwing games were essential to the development of superior bodies with physical efficiency as a basic survival, need, muscle including the heart had to be strong vision had to be keen, body had to move fast and lift heavy loads.²

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¹D.N. Majumdar, Races and Culture of India, p. 356. cited in Cultural Herritage of India (Gwallior: Vivek Prakashan), p. 23.

Hence the fitness level of the tribal people are more with greater work efficiency.

When considering the physical fitness, attention must be given to body size and changes in the body's composition that are influenced by the physical activity. Relative amount of muscle, bone, fat, and the functional capabilities of cardio-vascular and respiratory systems have a pronounced influence on physical fitness.

"Two view points on physical fitness are represented by the following positions (i) Physical fitness is the body's state of adaptation to physical exertion and (ii) Physical fitness is represented by the body's capability to perform physical tasks. Actually one's performance reflects genetic potential, maturation, adaptation, skill and motivation." \(^3\)

Motor fitness is much more than physical fitness. The various components of motor fitness are speed, strength, endurance, agility, flexibility, speed of movement, balance, and coordination.

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Human motor performance is a composite of many variables. One of which is the structure of the body. The specific measurement of limb length, circumference, breadth and body build indexes can reveal the relationship between the anthropometry of the athlete and his motor fitness.

Certain anthropometric considerations, somatotype features and racial traits are identified as advantageous for performance in top sports.\(^4\),\(^5\)

An athlete for superior performance in any sport is selected on the basis of physical structure and body size he possesses.

The measurement of structure and proportion of the body is called anthropometry.

"Anthropometry consists of making external measurements of the human body. The results can be used to upraise body build, nutritional status and posture.\(^6\)


Measurements of body size include such descriptive information as height, weight and surface area, while measures of body proportion describe the relationship between height, weight and among length, width and circumferences of various body segments. It has been found that top athletes in some sports tend to have those proportions that biomechanically aid the particular performance required.\textsuperscript{7}

Thus sports anthropometry has developed as a special branch not only as a parameter of selective diagnostic procedure but also as a performance prediction tool.

Exercise physiology is one of the vital areas, the physiological traits depend upon the race, geographical and climatic conditions of human beings. Therefore, it is receiving spot light attention all the time. The study of exercise physiology is a continuous process in bringing out a champion athlete. Their skills vary considerably according to their physiological traits. Unlike physical differences, physiological differences are not so apparent, and consequently are not readily accepted especially when the lack of need.\textsuperscript{7}

characteristics prevent success. Understanding of the necessary characteristics required for success in a particular sport must receive major consideration both in matching athlete, with them best sports and in training an athlete for success in his chosen sport. Some physiological traits have long been associated with success in certain sports.

The haemoglobin content and endurance level differ from individuals to individuals. There are many factors which cause individual differences: that are (i) Body surface area (ii) Food intake (iii) Exercise (iv) Social and cultural factors (v) Genetic factors.

There are lot of differences between tribal and non-tribal students in every aspect of their life i.e. customs, rituals, eating habits, cultural style of living etc. Therefore, it is possible that there may be greater differences in body composition, haemoglobin content and endurance between tribal and non-tribal students.

Much has been learned, inside and outside the field of physical education, relative to size, proportions.

composition and functions of human body.

The physical characteristics and the genetical potentialities shown by the tribal students can be useful in excelling in certain sports and games.

Hereditary pre-disposition is estimated to be two third of the basis of top performance.⁹

In this competitive world numerous qualities are needed to become an ace player. Self devotion, perseverance sound physique, intensive training, missionary zeal are some of the essential requirements.

It is generally noticed that the young people residing in urban areas of the country lead a comfortable life are lethargic and less prone to physical labour and hard work; whereas the young men living in rural or tribal areas who are habituated to hard work from beginning of their life, would be more receptive to physical education for which they would have a natural aptitude.

In the draft on National Policy on Education, special programmes for tribal areas have been encouraged as under:

"Special Schools with hostel in all the backward and tribal areas for talented sportsmen and women should be established out of central government's fund for integrated development of these areas.\textsuperscript{10}

Keeping in view the urgency of catching the sports probables at a younger age, the tribal lads also can be considered.

\textbf{Statement of the Problem}

The purpose of the study was to establish the relationship of anthropometric and physiological variables to motor fitness of tribal and non-tribal students at different age levels and sex. Also to find out the difference between tribal and non-tribal students in motor fitness.

\textbf{Delimitation}

1. The study was delimited to the tribal and non-tribal students of Bastar District (Madhya Pradesh) only:

2. The study was further delimited to the students of three age groups of 11, 13 and 15 years.

3. For the purpose of this study the following Motor fitness tests, Anthropometric and Physiological variables were selected.

Motor Fitness

U.C.N. Motor Fitness Test

1. Vertical Jump.
2. Chinning.

Anthropometric Variables

Absolute Anthropometric Measurements

1. Height.
2. Weight.
3. Sitting Height.
5. Upper Arm Girth.
6. Fore Arm Girth.
7. Thigh Girth.
9. Leg length.
10. Thigh length.
11. Fore leg Length.
Relative Anthropometric Variables

1. Ponderal Index.
2. Crural Index.

Physiological Variables

1. Vital capacity.
2. Air flow rate
3. Peak flow rate.
4. Resting heart rate.
5. Blood pressure.
   i) Systolic.
   ii) Diastolic
6. Haemoglobin Content.

Hypothesis

On the basis of available literature, research findings and the scholar's understanding of the problem it was hypothesised that:

There will be significant correlation between anthropometric, physiological variables and motor fitness of tribal and non-tribals at different age levels and sex.
A significant difference may be observed between tribal and non-tribal students in their motor fitness.

Definitions and Explanation of the Terms

Motor Fitness

Motor fitness is a limited phase of general motor ability with emphasis placed on underlying elements of vigorous physical activities, but do not include the primary elements of coordination and skills.\textsuperscript{11}

Anthropometry

Anthropometry consists of making external measurement of the body. The results can be used to upraise body build, nutritional status and posture.\textsuperscript{12}

Anthropometric measurements are dimensions of the structure of the human body taken at specific sites to give measures of length, girth and width.\textsuperscript{13}


\textsuperscript{12}Meyors, Measurement in Physical Education, p. 258.

\textsuperscript{13}Donald K. Mathews, Measurement in Physical Education 5th ed. (Philadelphia: W.B. Saunders Co. 1978) p. 79.
Vital Capacity

The maximum volume of gas that can be expelled from the lungs following a maximum inspiration is called vital capacity.\textsuperscript{14}

Peak Flow Rate

The basis of Peak expiratory flow for monitoring the ventilatory function were the amount of air and maximum rate of flow during an expiration followed by a deepest possible inspiration. This can be measured with a peak flow meter.

Resting Heart Rate

Measurement of heart rate when an organism is under physical and mental rest can be termed as resting heart rate.

The distention of the arterial walls at the beginning of systolic ejection of blood is not confined to aorta but travels down the arteries as a wave followed by a wave of recoil. The arteries that lie close to the body such as the radial artery of the wrist, the arrival of the wave of the distension and subsequent recoil may

be felt as a distinct throb of the pulse which offers a convenient method of counting the heart rate.\footnote{Lawrence E. Morehouse and Agustus T. Miller, *Physiology of Exercise* (Saint Louis: The C.V. Mosby Co. 1976), p. 69.}

**Blood Pressure**

Clarke\footnote{H. Harrison Clarke, *Physical Fitness Research Digest* (Washington D.C: Presidents Council on Physical Fitness and Sports, October, 1972), p. 89.} mentions that the blood pressure is the pressure exerted on the walls of the arteries as the blood pumps through the body.

The driving force moves blood through the Circulatory System. Systolic pressure is obtained when the blood is ejected into the arteries. Diastolic pressure is obtained when the blood drains from the arteries.

**Systolic Blood Pressure**

Pressure exerted by blood during the systole.

**Diastolic Blood Pressure**

Pressure exerted by the blood during diastole.

**Haemoglobin**

Haemoglobin is the oxygen carrying pigment of...
the blood, the principal protein in the erythrocyte.\textsuperscript{17}

Body Fat

Fat is the most variable tissue in the body and is distributed throughout the body primarily under the skin and in the abdominal cavity.\textsuperscript{18}

Significance of the Study

The study will be of significance in the following ways:

1. The findings of the study may help to spot the talented boys and girls from the tribals and non-tribals to train them in future.

2. The findings of the study may help the sports scientists and coaches to assess, classify, understand and prepare the tribal and non-tribal athletes according to their capabilities.

3. The study will help the physical educators to prepare the correct physical education programme.


\textsuperscript{18}Zeigler, Physical Education and Sport: An Introduction, p. 79.
separately for tribal and non-tribal schools.

4. The study may reveal the relationship of motor fitness of tribal and non-tribal students of both the sexes at different age levels to their anthropometric and physiological capacities.