CHAPTER - I
INTRODUCTION

History is repleted with illustrations of people throughout the world who can consider physical prowess and strong, healthy bodies with vitating radiants for survival and power. Since the days of early Greeks, physical fitness has been an important objectives for physical education.

The poor performance in Indian athletes and sportsmen at the international competitions has been of great concern, specially to the coaches, physical educators and sports scientists. Efforts have been made to improve the standards of our sportsmen since long, however, little success has so far been achieved in this respect. There are numerous factors which are responsible for the performance of a sportsman. It has been noticed that the person's capacity for physical activities have influenced the performance of a sportsman. The desire to establish a scientific approach
to the development of physical fitness was the primary reason for the meeting of physical educators in 1885 that resulted in the birth of this profession.

The developing trends in the field of physical education have greatly enabled centralized techniques that provided for individual development. And the attractive rewards involved in sports, certainly call for greater competence in achieving the required supremacy by an individual. New insights to the field have made it possible for the growth of an individual concurrent to the required standard in the present relevant circumstances. In the modern context, the field of physical education and sports has imparted elegant knowledge and skill that has developed due to an impetus provided by the large strides in technology. Current birth of the field, such as Biomechanics, Kinesiology, Kinanthropometry, Exercise Physiology, Sports Psychology, Sports Medicine, etc. impart a sound basis to higher degrees of competence in contemporary societies.
To clearly perceive the athlete’s performance, various variable as a system operate, and the isolation of an accurate system with its numerous sub-system is a complex task. Such a complexity is simplified by recognizing the quantifiability of relationship. Such relationships are governed by variables existing within the system and though variables extended to the system too influence the system, their influence is truly external. With the advent of computing mechanics identification and isolation of governing criteria of such system, tends to be more viable.

Developing an individual’s physical fitness is one of the major objectives of the process of physical education. Physical fitness is one of the potential characteristics of every human being.

Physically fit citizens are a major asset for a strong nation, and hence physical fitness of the citizen should be a national and general concern. The time when Americans realised the need to develop the fitness standard of their citizens, specially youth, much research was carried out on youth fitness, and as a
result, they could take proper steps to develop youth fitness on a national scale. The outcome now is, the Americans are the strongest contenders in almost all sports activities at the international level. In India, physical fitness of youth is yet to be emphasized upon on a national scale though some positive steps, are being taken to make physical education and physical fitness programme mandatory at school level. But it is still inadequate for the upliftment of youth physical fitness in India. Therefore, many research programmes could be carried out in order to decipher this lacunae, with regards to physical fitness of Indian youth at the regional, state level and national level etc. If India desires to excell in the field of games and sports, the only short cut is to make the people fitness conscious and encourage them to regularly and scrupulously participate in physical fitness programmes. A high level of physical fitness is necessary for success in the field of games and sports, without which an individual will not be able to withstand the stress and strain
caused on the body. Regular participation in vigorous exercise increases physical fitness. Fitness means the ability to move and function within one's physical limitation. One can start at the lowest level, master it, and move up to next level, and perhaps to the highest, and thus achieve a level of maximum fitness. The level and degree of physical fitness of an individual has to be determined and accurately assessed to know at what intensity level one can perform safely.

Synthesis of the ability as well as the skill in performing a task are resultant in deciphering the evaluation of physical fitness. Distinction between ability and skill is that "ability refers to a more general traits of the individual which has been inferred from certain response consistencies (e.g. correlations) on certain kinds of tasks", and skill refers to "the level of proficiency on a specific task or limited group of tasks". Individual's ability is what he does, whereas his skill refer to the extend to which he can do the given task with ease and effort.

Bucher opines that "physical fitness includes more
than muscular strength",\(^3\) and further enunciates that physical fitness implies soundness of body organs such as the heart and lungs, a humanism that performs efficiently under exercise or work conditions, and a reasonable measure of skill in the performance of selected physical activities".\(^4\) To describe individuals physical fitness, it is not merely a single "strength" factor, but something more has to be accounted. In a broad sense, physical fitness has been elaborated as the "capacity of an individual to perform given physical tasks involving muscular efforts".\(^5\) Uppal defines physical fitness as "the capacity to carry out reasonably well various forms of physical activities without being unduly tired and includes qualities important to the individual's health and well being".\(^6\) Troester Jr, states that "physical fitness includes those qualities which will permit an individual to perform life activities involving speed, strength, agility, power, endurance, and to engage in various kinds of physical activities required of modern days
living including sports and athletics, and to be able to maintain optimum amount of fitness for the individual involved."

Hunter elaborately defines physical fitness as 'work capacity, the total functional capacity to perform some specified task requiring muscular efforts; considers the individual involved, task to be performed, quality and intensity of effort; are aspect of total fitness; involves sound organic development, motor skill, and the capacity to perform physical work with biological efficiency." 

Physical fitness is infect, the involvement of muscular movement or a series of movements in co-ordination with cardio-respiratory system of an individual to perform any kind of task. Such task performance is also governed by numerous inherent determinants, on being isolating such inherent determinants at various times which provides for the growth of the physical fitness discipline, at the other hand the performance of an individual is deemed to be enhanced and appropriate.
Physical fitness does vary from one individual to another, it varies in accordance with the nature of a person, whether he is sedentary or athletic. As we see individual differences in characteristics of phychological studies. The individual is as the morphological constitution which is formed by the manifestation of genetical endowment, and as a result of adaptation processes to environmental effects. There may be some generalised facts of individual fitness in a group, but each individual will differ in one or other way as far as physical fitness is concern. For example, speed, is a common factor in every one, the level of speed one possesses is of the specific quality of an individual.

Evaluation has been defined as "the process of giving meaning to measurement by judging it against some standard". "The art of judgement scientifically applied to some trait, quality, on characteristic in the universe according to some predetermined standards". Test are instrumental and are techniques in teaching and
learning processes involved, in objectively classifying heterogenous traits of students, knowing the necessities and lacunae of students, evaluation of instruction and programme, and grading of students etc.

Mathew is of the opinion, that the "measurement of strength, power and speed are simple and direct, often yielding more reliable results than measurement involving personality, intelligence and attitude". Thus objective assessment of physical fitness through physical variable is possible, the concept of organism and individual needs are factors involved in measurement and quantification.

The significance of enormous researches carried out in the U.S.A. have given the impetus to the academic spectrum of physical education. Physical education involved pioneering studies on Authropometric measurement and an excellent weightage placed on strength tests since 1988. The pioneering work of C.H. McCloy at the university of Iowa (see Barrow and McGee) wherein he developed achievement test scales is worth mentioning. Other eminent personalities who have
contributed significantly in the field of measurements are H.H. Clarke, F.R. Rogers, David Brace, D.A. Sargent, etc.

To date, the studies like the construction and standardisation of physical fitness test batteries are going on which were started around 1940. The use of factor analysis as a research techniques provided ample opportunities for the growth of knowledge in the field of measurement, specially with respect to physical fitness. Factor analytic approach as a mode "to create a precise and systematic order among a great number of variables, classifying certain similarities and differences according to a logical mathematical rational". And to further enunciate "factor analysis is the logical outgrowth of the testing method and can be applied in fields where concepts composed of many elements are used and where the experimental method can not be readily applied because of complex nature of the concept."

Physical fitness differs from one area to the
other. The physical fitness of East Indians may differ from that of the West or North or South Indians. Physical fitness may depend on the nature of work to be performed. It may be office work related, to carry out office work efficiently; it may be sports related, to win laurels; it may be dance related, to attain optimum grace in dancing; it may be health related, in the form of maintaining physical well being and being free from diseases; and so on. Physical fitness is a comprehensive phenomenon which can be precisely defined or identified with reference to a pertinent group or aspect, rather than in general terms.

There are numerous factors that may influence physical fitness of an individual, like the environmental conditions, nutritional set-up, topography, heredity, living style, etc. People living at high altitudes may differ in their fitness when compared to people living in low altitudes. Different climatic conditions may affect physical performances. Food habits certainly act upon individual’s fitness.

The Indian institutional set-up plays an important
role in identifying the problems of the physical fitness level of school going children. Some schools have no play fields' some do not have facilities; some are confined only to class room teaching, etc. In some school, even physical education teachers are not appointed or even not available for appointment.

Many physical fitness test batteries for various levels including men, women, boys, girls, children, etc. have been reported by Americans and other developed countries. Very few studies were reported in India pertinent to construction of specific physical fitness test for particular games, regions, state, etc., Not a single physical fitness test batteries have been reported in North East States. Keeping these facts in view, the construction of Physical Fitness Test for Higher Secondary Boys to our standard and the setting up norms in grading the physical fitness level of Higher Secondary Students is deemed very necessary. hence, the researcher feels that it is necessary to take up the present study.
Statement of the Problem

Studies pertinent to the present investigation and some classic studies have observed that physical fitness differed significantly from continent to continent, country to country, place to place and varied from time to time. Some eminent physical education scientist who have contributed in the field of measurements are Knuttgen\(^{15}\) (1961), Kraus and Hirschland\(^{16}\) (1954), Miyashita and Sadamoto\(^{17}\) (1987), etc. Considering the differences and significance, the investigator has proposed this study "Developing Physical Fitness Test for Boys of Higher Secondary Levels of Assam State".

- Delimitation

1. The study was confined to the higher secondary school boys of the age group of 16 years to 18 years of Assam State.

2. The study was further confined to the following Physical Fitness components.

   a) Muscular Strength,
b) Muscular Endurance,
c) Cardio-respiratory Endurance,
d) Speed,
e) Power,
f) Flexibility,
g) Agility.

**Limitations**

1. While administering the test items, the climatic conditions, students behaviour, their physical capacity, their health conditions, etc. were beyond the control of the investigator and hence were considered as a limitation in this study.

2. Proper care has been taken to use the available standard equipments. The instrumentals errors may also be a limitation for this study, but consistent calibration has been attempted.
Hypothesis

It is hypothesized that the test developed will stand the criteria of scientific authenticity, administration feasibility and educational application and will help in assessing the Physical Fitness of Boys of Higher Secondary Schools of Assam State in particular and Boys of Higher Secondary Schools in general.

The Definition and Explanation of Terms

Physical Fitness

Clarke and Clarke define physical fitness as the "ability to carry out daily tasks with vigour and alertness, without undue fatigue, and with ample energy to engage in leisure pursuits and to meet emergency situation". The definitions given by Bucher (1983), Mathews (1978), Hunter (1966), etc. are already cited in the introduction. Physical fitness pertinent to this study would be the performance of higher secondary boys on different test items.
Test

According to William,22 the dictionary meaning of the word test is "the application of fixed principles to the person or thing tested and consideration of how for he or it, confirms to a chosen standard".

Ebel,23 define "a test is a general term used to designate any kind of device or procedure for measuring ability, achievement, interest and other traits".

Muscular Strength

Barrow and McGee,24 define muscular strength as the "capacity of the individual to exert muscular force".

Mathews, 25 defines it as the "force that a muscle or group of muscles can exert against a resistance in one maximum efforts".

The most suitable definition would be Basco and Gustafson26 (1983), according to whom "strength is the muscular force utilized in creation or prevention of movement".
**Muscular Endurance**

Mathews\(^2^7\) defines muscular endurance as the "ability of muscle to work against a moderate resistance for a long period of time". Endurance is the result of a physiological capacity of the individual to sustain movement over a period of time.

**Cardio-respiratory Endurance**

Phillips and Hornak\(^2^8\) define cardiorespiratory endurance as "the ability of the circulatory and respiratory system to adjust to vigorous exercise and to recover from the effect of that exercise".

**Speed**

Barrow and McGee\(^2^9\) define speed as the "capacity of the individual to perform successive movements of the same pattern at a fastest rate".
**Power**

Barrow and McGee\(^{30}\) define power as "the capacity of the individual to bring into play maximum muscle contraction at the fastest rate of speed".

**Flexibility**

Barrow and McGee\(^{31}\) define flexibility as the "range of movement in the joint".

**Agility**

Barrow and McGee\(^{32}\) define agility as the "ability of the body or parts of the body to change directions rapidly and accurately".

**Objectivity**

Basco and Gustafson\(^{33}\) define objectivity as the "consistency of agreement among scores with respect to the quality or correctness of a performance".
Reliability

Basco and Gustafson refer reliability to "the degree to which a test constantly measures a given factor". This is not to say that the factor is necessarily the one that the test or other measurement instrument is thought to measure.

Validity

Basco and Gustafson\textsuperscript{35} define validity as "the estimate of the degree to which a test measures the factor or factor for which it was designed".

Norms

Mathews\textsuperscript{36} defines "a norm is a standard to which an obtained score may be compared.

Significance of the Study

The study is deemed significant for the following reasons:

1. The study will provide an impressive tools for
measuring the physical fitness levels of boys of higher secondary level of Assam State.

2. (a) The physical education teachers can make use of this test to evaluate their students as also their instruction patterns. (b) The study may also help the physical education teachers and coaches to adopt specific physical fitness conditioning programme by understanding the level of fitness among the higher secondary level boys.

3. The test can be used by the coaches in order to know the physical capacity of a player while relating potential competitors.

4. The study may help the school administrators in better formulating of future physical education programmes.

5. The study may help to find the relationship of age with respect to physical fitness of higher secondary school boys.
6. The study may reveal the possible combinations of multivariate analysis for further studies.

7. The study may help in better understanding of the established test items.

8. Regional level standards of physical fitness of higher secondary level boys could be identified and standardised.

9. The study may throw new light on the field of measurement highlighting the need for and direction of further research.

2. Ibid.


30. Ibid.

31. Ibid.

32. Ibid.


35. Ibid.