CHAPTER I

INTRODUCTION

There is a recognised need for a physically fit nation. Fitness of the citizens is an index of the prosperity of the country. The standard of health and fitness of the citizens of a country would determine the productivity of a nation. Fit citizens are an asset and on the other hand weak people are a liability. Sports scientists, physical educators, sociologists and psychologists have all attested the need for virility and endurance of the nation. Youth of the country needs abundant health and ethical qualities of character. There is an emergent demand for physically fit citizens. In peace or in war — a fit nation is an efficient and productive nation.

Since the dawn of civilisation physical fitness has occupied a very important place in the lives of the human beings. Even the primitive man survived due to his physical prowess only. He needed fitness for food, shelter and protection from the hostile environment. Only the fittest survived, the weaker ones perished. Children were trained in various skills like running, jumping, wrestling etc. to enable them to get fit.
Ancient Greece, which is considered to be the cradle of civilisation, attached great importance to physical well-being and health of the people. Greek Philosopher, Aristotle stated that the body is the temple of the soul, and to reach harmony of body, mind and spirit, the body must be physically fit. Liberal Athenians as well as rigid Spartans attached great importance to physical fitness of their people.

Swami Vivekanand, the philosopher Saint of India advocated that our country wants muscles of iron and nerves of steel. He further stated that first of all our young men must be strong, religion would come afterwards. The ancient Indian system of Yogic exercises also emphasises physical well-being besides mental and spiritual attainments. The Ramayana and the Mahabharata testify that physical fitness was given lot of importance during those periods.

The recent advances in science and technology have resulted in innovations and inventions which have influenced human lifestyle in many ways. The work hours have been reduced. Automation in factories, farms, household, and many other areas of human endeavours have reduced physical involvement of the people. This means that modern working conditions lead to a sedentary life. For example, ordinary tasks of daily living no longer provide enough vigorous exercise to develop and maintain good muscle tone and cardiovascular fitness. The resultant easy-going life has its own consequences negatively related to the development and maintenance of physical fitness.
Cardiac conditions prey on the physically less fit and emotionally disturbed people. Business executives, the white collar employees of the sub-urban and urban set-up having less physical activity become gradually and progressively less fit. A constant and continual physical-cum-emotional stress built-up, acting cumulatively over the crucial period of life span proves fatal in the absence of physical fitness. The stress and strain of the fast life of the present era produce perceivable impact on the less fit.

Under these circumstances physical fitness demands are increasing in modern times. According to Barret (1974) physically fit persons lead longer lives, have better performance records and participate fully in life.

It is a physiological fact that the human organism needs stimulating exercise. When a body is subjected to regular muscular activity, requiring a vigorous stress on the heart, lungs, and muscles, the general efficiency of its physiological functions improve. There is no scientific evidence showing harmful effects of regular exercise on a healthy person. But abundance of research now strongly supports the theory that regular, vigorous exercise helps keep hearts healthy and may prevent Cardio-Vascular diseases. A fit person adjusts to increased physical demands and returns to a normal state more quickly than the unfit person. A physically fit heart beats at a lower rate and pumps more blood per beat at rest. As the result of regular exercise an individual's capacity to use oxygen
is increased (this means the ability to do more physical work is increased substantially). Although regular exercise is not a cure-all, it is a sound means for maintaining a high level of health. It is universally accepted that the physiological functions of the body improve with the use and decline with disuse. More specifically, the heart, lungs, and muscles become stronger and more durable if properly exercised.

Fitness, being broader concept, includes realization of potentialities to function efficiently and effectively over a longer period. This suggests that to function efficiently one must muster fitness in varied components of its totality—physical, mental, social, moral and spiritual (AAHPER, 1967; Jones, 1972). Wright (1968) emphasized attitudinal dimension of fitness when he concluded that fitness is as much an attitude of mind as a physical state. This dimension of fitness indicates body-mind relationship which have been a hotpot of philosophical deliberations. The discipline of physical education has made much advances in clarifying such relationships and has resulted in monitoring fitness of the human beings. Needless to say, still more empirical research leading to theoretical perspective is needed.

According to Clarke (1967) physical fitness is most appropriately considered as the ability to carry out daily tasks with vigour and alacrity without undue fatigue, with ample energy to enjoy leisure time pursuits and to meet unusual situations and unforeseen emergencies. Thus, physical fitness is
the ability to last, to bear up, to withstand stress and to preserve under difficult circumstances where an unfit person would be ineffective and would quit. The definition implies that physical fitness is more than "not being sick" or merely "being well. It is a positive quality, extending on a continuum from death to abundant life. Thus, living individuals have some degree of physical fitness, which is minimal in the severely ill and maximal in the highly-trained athlete. It varies considerably in different people and in the same person from time to time.

According to Russel R. Tate (1985) health-related physical fitness is the ability to perform strenuous physical activity with vigour and without excessive fatigue, and demonstration of physical activity traits and capacities that are consistent with minimal risk of developing hypokinetic diseases.

In brief, physical fitness is an integral part of total fitness and this is being gradually recognised as a vital element in good living. In a charter, UNESCO (1978) while stressing importance of physical fitness, proclaimed that everyone has a right to participate in physical education and sports irrespective of race, colour, sex, religion and political affiliations. This simply implies that physical fitness is essential for everyone because everyone is expected to perform his optimum throughout one's life.

According to Edmundson (1953) there are degrees of fitness. The fitness of a healthy man of eighty years age is something entirely different from that of a young sportsman. Physical fitness refers to the ability to carry out daily tasks with vigour. That means the degree of fitness one has to develop and maintain would depend upon its utility. The needs of the individual are to be taken care of. An athlete preparing for international competitions would need much more fitness than a
class room teacher. All professional such as doctors, engineers, executives and others need physical fitness, however, the degree of fitness required would vary depending upon the profession of the person concerned.

Johnson (1966) is of the opinion that fitness should be considered to exist on a continuum or scale, ranging from very low levels to maximum levels. The various levels will be controlled entirely by the individual and is affected by the amount and kind of regular physical activity and his mental and emotional states.

Factors which determine the state of fitness are many, but more important among them are age, sex, and life style. Cooper (1970) emphasises that age is not a major obstacle to fitness. One can remain fit in every age bracket. As the person gets older his involvement in physical activities is reduced, the efficiency of his heart and lungs also decreases. To maintain fitness, the amount and intensity of exercise taken should be to the extent that undue fatigue is not caused. Wrong type of activity or over-exertion can have disastrous results. Cooper sums-up well stating that exercise is the medicine that keeps countless people alive. But like all medicines, it must be taken according to prescription.

Sex is another important determinant of physical fitness. Different types of exercises are required for men and women due to their structural differences. Generally, women are
smaller in size than men. Their arms and legs are proportionally shorter, trunks longer and the pelvis broader. Usually women's heart is smaller in size and so is the lung capacity. Women have less blood circulating, less haemoglobin and fewer red blood cells as compared to men. These anatomical and physiological differences should be kept in view when developing physical fitness programmes for either sex.

Another important factor to determine the level of fitness is the person's life style. Some professions and jobs are of sedentary nature and the people engaged in such occupations normally do not go for any physical activity. Gradually they become unfit, which results in illnesses and even premature deaths. Unfortunately even the leisure time pursuits of majority of people in India are of passive type such as watching T.V., movies, musical concerts etc. Physical fitness level of the people is at its lowest ebb and this is a serious problem.

Whatever a person's life style, he can maintain a required level of fitness provided he is keen to be fit. What he needs is to know what aspects of being fit are missing from his life and accordingly engage himself in appropriate physical activities. Wright (1968) has very appropriately summed up that the human body is part hydraulic pump and closed circuit water system, part telephone exchange and part heat engine. It responds to careful driving and periodic checks. Look after it well and it will keep you young for years. Abuse it and it will let you down.
Why is it essential to develop and maintain good muscle tone or cardiovascular and respiratory fitness? The effective functioning of these bodily activities will enable a person to maintain a healthy, strong, fit body throughout his life. Malfunctioning of these activities may well result in physical deterioration and even death. To check this deterioration people ought to be fit physically as well as mentally. Jokl (1959) suggests that regular exercise will fulfill these requirements by acting as preventive medicine. He further emphasised that those who maintain physical activity have better performance records, less degenerative disease, and probably a longer life expectancy than the general population. There is no doubt that proper physical activity, as part of a way of life, can significantly delay the aging process.

A person can not have absolute physical fitness without mental fitness. To buttress this point Edmonton (1962) pointed out the interdependence of body and mind. A body that is physiologically unsound has an effect upon the mind and vice-versa. The body-mind relationship has been considered important since the Greek times and the benefits of physical activity have been advocated by many.

There appears to be a direct relationship between personal appearance and physical fitness levels. People look better when they are physically fit than when they are unfit. Regular participation in a well-designed exercise programme can play a
very important part in weight control, which obviously contributes towards the improvement of personal appearance. Exercise increases muscle tone, and the muscular development further improves body carriage and postural poise.

During youth period growth and development have a greater pace. A retarded pace of growth and development during this period should be of great concern to everyone. Ideal place for development of the youth is the nation's educational institutions and sports are a viable means. India is passing through a very delicate and sensitive period. Thirty-nine years of our independence have not given us the desired results in the field of sports. Our overall performances at international level competitions are very poor. With the exception of a few events, that too very occasionally, we are on the lower rungs even among the Asian countries. Even small countries with very less population get higher rankings than our populous country of almost 800 million people. The reasons attributed to our dismal performances in the international competitions are many. To the mind of the researcher one of the major cause of our failures is the lack of fitness among our youth. The crux of the truth is a bitter fact that no systematic and scientific methods are followed to improve the fitness of our youth in the educational institutions. Time allotted to Physical Education and Sports is inadequate and that too is not utilised properly. Physical Education periods are generally considered "Khel-Tamasha" (unorganised play) time. Students go out in the play field and play as they please. Most
of the educational institutions do not have required infrastructure for games and sports. Funds for the purchase of sports equipment etc. are meagre. Attitude of the most of the authorities in the schools and colleges towards sports is also not encouraging. All these factors put together pile-up hinderances in our physical education programmes.

**Overview of Physical Fitness in India**

After attaining independence in 1947, the Government of India also became conscious about the health and fitness of her citizens. University Education Commission (1950) was the first commission to point out that the colleges and universities in the country did not have adequate facilities and trained staff to cater to the physical education needs of the students. The commission recommended planned programme for the development of physical fitness of the youth of the country.

At national level, an Advisory Board of Physical Education and Recreation was constituted by the Ministry of Education, Government of India in the year 1956. A National Plan of Physical Education and Recreation (1955) was also finalised which suggested norms for physical efficiency tests. The first All India Seminar on Physical Education for Principals of Physical Education Institutions (1959) recommended that the motor ability tests prescribed in the National Plan be conducted all over the country to determine their validity so that proper norms for different age groups can be prepared. It was also recommended
that the Krums-Weber and the Canadian Fitness Tests also be validated for use in India by establishing suitable norms for our people.

A seminar for the Principals of Physical Education Colleges held at YMCA College of Physical Education, Madras in 1958 and a workshop on curriculum development in physical education at Lakshmibai National College of Physical Education, Gwalior in 1971 contributed significantly in bringing out the importance of physical fitness. As an outcome of the meetings of Central Board of Secondary Education, a committee under the chairmanship of late Principal S.D. Chopde, prepared a curriculum for secondary schools which was later on adopted by the board. On its recommendations physical education was introduced as a required common subject in the three year course of Higher Secondary Schools.

Under the new national education policy of 10+2+3 system physical education is an elective subject for 11th and 12th grade students of +2 stage. At the University level, three universities in Punjab have introduced physical education as an elective subject at undergraduate levels.

Union Ministry of Education and Social Welfare introduced National Physical Efficiency Drive in the year 1959. The aim of the drive was to inculcate interest among the youth towards physical fitness. It was also aimed at providing the youth the opportunity to participate in a physical fitness testing programme which would help them to assess their physical efficiency level.
The programme of the drive consisted of suitable physical fitness tests drawn separately for men and women. These tests were further divided into categories for Juniors and Seniors. Each battery of the tests had three standards laid down from moderately easy to fairly difficult. The highest standard being the "three star", the next "two star" and the easiest being "one star." There were seven items from which a participant, up to the age of 35, required to select any five. For persons above 35, any three items were to be selected. The standards of achievement in each item for Juniors, Seniors and for persons above 35 were laid down separately for men and women. In the year 1962 a scheme of conducting National Award Competition to declare the best five persons in each age group was also introduced.

With the aim of putting the scheme on more scientific lines and sound footing it was entrusted to Lakshmibai National College of Physical Education, Gwalior in the year 1972. In the year 1979 nation-wide data were collected and the standards for one, two and three stars were revised. Same year the scheme was renamed as National Physical Fitness Programme (NPFP) in order to give it the status of an ongoing programme, rather than limiting it to a mere drive. "Adult Fitness Programme" and a sub-Junior category were also added. In spite of all these efforts the fitness programme made only a "fringe impact" and failed to generate desired momentum. Due to its failure to create the expected impact, a review committee under the
Chairmanship of Dr. K.K. Tiwari, was appointed in the year 1982 to make assessment of the progress made by the scheme and to suggest ways to make it more popular and meaningful.

Since 1947 there had been efforts to promote physical education in order to improve the fitness of the youth. Government of India established Lakshmibai National College of Physical Education in Gwalior in 1957 and Netaji Subhas National Institute of Sports in 1961 in Patiala. These institutes train personnals in physical education and sports who are employed by various agencies to promote fitness and excellence in sports. Now, since the government has realised the importance of physical education and sports at various levels, a separate Ministry of Sports has been established at the Centre. An another important agency Sports Authority of India has been added to strengthen the hands of the government in promoting sports schemes in the country. Many state governments have also started giving encouraging attention to fitness, sports and physical education programmes.

It shows that there is a general awareness about the place of fitness in day-to-day life of each citizen and central government and state governments are picking up pace gradually to cater for this area, which has suffered from a total neglect. Unfortunately, no definite efforts have been made to formulate scientific evaluation procedures. With the introduction of physical education as an elective subject under the new education
policy, it is essential to prepare norms for objective assessment of the physical fitness of the student population.

Statement of the Problem

The primary purpose of the study was to evolve physical fitness norms on various items of Fleishman Fitness Battery for male students of Panjab University, Chandigarh.

Sub Problem

The secondary purposes of the study were:

1. To compare performances of various age groups covered under this study on the different items of physical fitness test battery.

2. To compare performances of university male students belonging to rural and urban areas on the physical fitness test battery items as given by Fleishman.

Delimitations

1. The study was delimited to the male students of the colleges affiliated with Panjab University, Chandigarh.

2. Subjects for the study were the sampled students of Pre-University, B.A. Part I, II and III classes in the age groups of 17 to 22 years.
3. There are various tests of physical fitness which exist in the literature. However, in this study only test items included in Fleishman battery were adopted for construction of norms as the test items included in this battery cover all the essential components of physical fitness.

Limitations

1. As it was not practically possible for the investigator to conduct tests on the selected subject, lecturers in Physical Education working in various colleges were requested to help in the conduct of tests in their respective colleges. Even though every attempt was made to standardise the testing procedures, yet the variations that might have occurred due to the fact that the help of various individuals was sought, was considered as a limitation of the study.

2. Further the tests could not be conducted to the sampled population on the same days, and during same hours, the diurnal variations might have had their effect, was also identified as another limitation of the study.

Definitions of the Terms

Given below are the terms used in this study and their operational definitions are provided.
Norms

"An experimentally derived index which enables teachers to compare the achievement or status of their students with those of a similar group. Norms are often assumed to be representative of some larger population."

(Barrow and McGee, 1979)

"A norm is a standard to which an obtained score may be compared."

(Mathews, 1978)

"Norms are values considered to be representative of a specified population."

(Johnson and Nelson, 1982)

For the purpose of this study the definition given by Barrow and McGee (1979) has been used as operational.

Flexibility

"Flexibility may be defined as the range of the movement in a joint."

(Barrow and McGee, 1979)

"Flexibility is usually interpreted as the range of motion at a particular joint, measured in degrees."

(Mathews, 1978)

"Flexibility is the ability to execute movements with greater amplitude."

(Hardayal Singh, 1984)
"Flexibility is the ability to perform movements with a wide range (amplitude)."  
(Harre, 1982)

"It is the range through which a joint moves."  
(Clarence, 1974)

"It is the capacity to perform joint actions through a wide range of movements."  
(Dick, 1980)

"Flexibility is the ability of an individual to move the joints through a maximum range of motion without undue strain."  
(Miller and Allen, 1982)

"Flexibility as a component of physical fitness, is the ability of an individual to move the body and its parts through as wide range of motion as possible without undue strain to the articulation and muscle attachments."  
(Johnson and Nelson, 1982)

We can conclude that flexibility is the functional capacity of the joints to move through a full range of movement and so is closely related to the maintenance of muscular strength and endurance. The length of muscles, ligaments and tendons largely determine the amount of movement possible at each joint. In other words flexibility is the ability to move joints, to bend, stretch, and twist them easily. To be specific
Definition given by Johnson and Nelson has been used in this study.

**Agility**

"Agility is the ability to change direction of the body, or its parts rapidly."

(Clearance, 1974)

"Agility is the physical ability which enables an individual to rapidly change body position and direction in a precise manner."

(Johnson and Nelson, 1982)

"Agility is the ability to change the direction of the body or parts of the body rapidly."

(McCloy and Young, 1954)

"Agility is revealed by the ability of the body or parts of the body to change directions rapidly and accurately."

(Barrow and McGee, 1979)

"Agility is the ability to exercise a fine co-ordination of the movements of the head, feet and hands as well as the ability to relax the muscles, which produce a conscious tuning of the muscle tone."

(Harre, 1982)
Explosive Power

"It is the capacity of the individual to bring into play maximum muscle contraction at the fastest rate of speed."

(Barrow and McGee, 1979)

"One's ability to get his body mass moving in the shortest period of time is a measure of power."

(Mathews, 1978)

"It is the ability of an athlete to overcome resistance by a high speed of contraction."

(Harre, 1982)

"The ability to release maximum force in the fastest possible time, as in the vertical jump, the broad jump, the shot put, and other movements against resistance in a minimum of time."

(McCloy and Young, 1954)

"It is a combination of force (strength) and velocity (speed). It is the ability to apply force rapidly."

(Clearrence, 1974)
Explosive power defined by Barrow and McGee (1979) has been considered for use in this study.

Co-ordination

"The ability of the performer to integrate types of movements into specific patterns."

(Barrow and McGee, 1979)

The above mentioned definition has been considered appropriate for use.

Strength Endurance

"Strength Endurance is the athlete's tolerance level against fatigue in strength performance of longer duration."

(Harre, 1982)

"Strength Endurance is the ability or capacity of the whole organism to withstand fatigue."

(Dick, 1980)

It can be defined as the ability of the muscles to apply force repeatedly or to sustain a contraction for a period of time. In other words, it is the ability to apply strength and sustain it.
Definition given by Harre (1982) has been considered operational for this study.

**Cardiovascular Endurance**

"Cardiovascular endurance, also referred to as cardiorespiratory endurance and circulatory endurance, is a kind of physiological fitness demonstrated through an adjustment of the heart and lungs to prolonged physical exertion."

(Willgoose, 1961)

"Cardiovascular endurance is the ability of the circulatory and respiratory systems to adjust and to recover from the effects of exercise or work."

(Johnson and Nelson, 1982)

Hockey (1977) defines cardiovascular endurance as the maximal amount of work that an individual can perform over an extended period of time.

"Endurance is the result of a Physiologic Capacity of the individual to sustain movement over a period of time."

(Barrow and McGee, 1979)
"It is the ability which enables the sportsman to do a sports activity effectively without getting tired and to recover quickly from fatigue during and after the activity."

(Hardayal Singh, 1984)

"Endurance in sport is defined as the athlete's capacity to resist fatigue."

(Harre, 1982)

"Endurance is defined as resistance to fatigue and quick recovery after fatigue."

(Clearence, 1974)

Cardiovascular Endurance defined by Hardayal Singh (1984) has been accepted and used.

Significance of the Study

Panjab University, Chandigarh was the first university in the country to introduce Physical Education as an elective subject at undergraduate level. Now some more universities in this region have also included Physical Education in their curriculum at degree level. Evaluation is an essential aspect of any educational venture and so is true for Physical Education. To determine the effectiveness of any programme it is essential to evolve a standard procedure to measure the achievement level.
No efforts so far have been made to formulate scientific evaluation procedures. For any evaluation procedure, where the performances can be obtained in terms of numerical scores, it is necessary that a norm or standard scale be available to interpret such scores, without which the scores may not convey much meaning. The present study, therefore, will be of great significance as it will provide physical education teachers the norms to grade their students on the basis of their performances in the Physical Fitness Tests. It will also help the students to know their own level of achievement in relation to the group, thus motivate the students to raise themselves to higher percentage levels in comparison with their fellow students.

Physical Education teachers are entrusted with the responsibility of looking after the development of the most precious product i.e. the youth. During their growth and development period it is essential to know their physical fitness status before giving any physical education programme to them. Sports teachers who propose dangerous and vicious activities for unconditioned youngsters are ethically and legally culpable. This study would provide norms to determine the fitness status of the students and help the teachers to plan physical education programmes accordingly.

No two individuals are alike. Individual differences make every Physical Education class a heterogeneous group. Therefore, no one programme of Physical Education can be ideal
for all, unless the strengths and weaknesses of the individuals are known to the teacher. With the availability of norms, the sports teachers in colleges can determine the fitness status of the students and know the exact needs of each individual. Thus a norm serves the purpose of a barometer to indicate the state of affairs with respect to physical fitness of the students. This study will be very useful in this area.