CHAPTER I
INTRODUCTION
“Health is like money, we never have a true idea of its value until we lose it”

Josh Billings

Fitness of man has always concern of everyone but the concept of fitness has been changing from time to time. The earliest human beings were mainly dependent upon their individual strength, vigour and vitality for survival and existence. They had to run and struggle in search for food, shelter and protection from hostile environment. With the growth of civilization, fitness was given new dimensions like physical fitness, health related fitness, motor fitness and wellness.

Physically fit citizens are the emergent demand of a nation as the fitness of the citizens is an index of the prosperity of the country. Healthy and fit citizens are nation’s best assets and weak ones its liability. It is, therefore, the responsibility of every country to promote physical fitness of its citizens because physical fitness is the basic requirement for most of the tasks to be undertaken by an individual in his daily life. If a person’s body is not kept fit and if he fails to develop physical prowess he is undermining his capacity for thought and work, which are of vital importance to one’s life and society in a welfare state.

It is admitted fact that physical fitness is an essential quality of man. A person who is physically fit feels superior and tends to be well adjusted. Without good health and fitness one cannot enjoy the blessings of nature and human life. The importance of health and fitness through the medium of physical activities can hardly be underestimated in the modern times especially when lifestyle is changing fast as a consequence of pursuit of materialistic philosophy. Tremendous urbanization and mechanization of daily routines, almost everywhere seemed to have resulted not only in ‘hurrying and scurrying’ but also depriving people of natural vitality, vigour, muscular power and prowess – so essential for a purposeful life.
Since the dawn of civilization, physical fitness has greatly contributed towards the strength of a nation as history points out that people and communities who cared for their bodies, through vigorous physical activities, remained strong and prosperous, whereas, those who neglected it waned and perished. The great Roman Civilization crumbled because its people took to luxury (Zeilgler, 1979).

Physical fitness is an inseparable part of sports performance and achievement. The quality of an individual sportsman’s fitness in terms of its utilitarian values is directly proportional to the level of performance. In the arena of international competition one can hardly differentiate the top notch contenders from one another in terms of levels of fitness. However, deciding factors sometimes remain with fitness in terms of its finer aspects. The longer one remains at high altitude the better his performance would be, but it never quite reaches the values that are obtained at sea level. It is also mentioned that the training at altitude probably enhances performance at sea level, but only in unconditioned non athlete individuals. For the high trained athletes, the training intensity required for the maintenance of a peak performance cannot achieve at high altitude.

Indian government after partition made physical education a part of education and many committees were appointed from time to time for the development of physical education and sports for the students of the country (NCERT, 1980). Physical education is no longer considered as mere participation in sports or recreational activities. In the modern parlance, it has been elevated to the level of an “activity science”, the science which deals with a complex analysis of various facets of human activities affecting the human organism physically, mentally and socially (Larson, 1982).

Fitness is the capacity of the heart, blood vessels, lungs and muscles to function at optimum efficiency. Fitness is a physical state of well being that allows people to perform daily activities with vigour, reduces their risk of health problems related to lack of physical activities, and establish a base of fitness for participation in a variety of physical activities. People can only fulfill their potential when their bodies are healthy and fit. Unfortunately, many people
in our society are not healthy and are not getting sufficient physical activity in order to become physically fit.

Fitness is a broad term denoting dynamic qualities that satisfy the needs regarding mental and emotional stability. But the term physical fitness denotes that the organic systems of the body are healthy and function efficiently, so as to enable the fit person to engage in vigorous tasks and leisure activities without much strain (Singh, 1971).

In the past, the normal routine of daily living required vigorous work and physical activity. Children did more walking for transportation and played outside more often. Today, concerns about safety many parents not allowing their children to play in their neighbourhood.

Machines, communication devices, computers, video games and other electronic conveniences have greatly diminished health enhancing levels of physical activity from our lives. Obesity has reached unprecedented levels among children and adults. Many children are not developing fitness habits nor do they value physically active lifestyle. Sedentary behaviours have become common place.

Fitness improves general health and it is essential for full and vigorous living. The physically fit child feels more alert and eager to do things. A weak child is a weak brick in the wall of the nation. The wealth of a nation depends entirely upon the health of every citizen of the country. Hence physical fitness of school children is major factor to be considered. So, school physical education programmes should include multifarious activities appropriate to each age group.

Physical fitness to the human body is like a fine-tuning to an engine. It enables us to perform up to our potential. Fitness can be described as a condition that helps us look, feel and do our best. More specifically, it is “The ability to perform daily tasks vigorously and alertly, with energy left over for enjoying leisure-time activities and meeting emergency demands. It is the ability to endure, to bear up, to withstand stress, to carry on in circumstances where an unfit person could not continue, and is a major basis for good health and well-being” (Singh, 2001).
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Schools have the potential to improve the health of young people by providing instruction in physical education that promotes enjoyable lifelong physical activity. Diseases and health problems resulting from an inactive lifestyle have their origins early in life. This is when an active lifestyle should be established. Fitness begins at birth and should continue throughout a person’s life. Physical activity and fitness behaviours should be a normal and necessary part of everyone’s life.

The complex nature of physical fitness can best be understood in terms of its components such as cardio-vascular endurance, strength, flexibility and muscular endurance. In addition to these components of physical fitness there are many other factors which contribute to physical fitness including heredity, living standard, nutrition, hygienic conditions, environmental and climatic factors etc.

Fit people make a fit nation. The term fitness includes physical fitness, physiological fitness, mental fitness, cardio-vascular fitness, social and spiritual fitness. Physically fit people are able to withstand fatigue for longer periods and are better equipped to tolerate physical and mental stresses. Hence, both, men and women, the young and the old should participate in sports activities to grow physically fit and healthy.

Physical fitness is a thing which one cannot afford to neglect. It is a major factor that determines the output of a person’s life. Life will be miserable and unsuccessful without good health; a life without physical fitness is like “a ship without a radar.” One who is physically fit enjoys robust health, has a fine physique and satisfactory levels of social and emotional adjustments. Fitness represents the capacity to live most vigorously and effectively with one’s own resources.

Realizing the vital role of physical fitness in the lives of ordinary citizens, Govt. of India, at various levels, has developed schemes through which the fitness of its citizens may be improved across all ages. National physical fitness programme launched by Govt. of India which was implemented through state governments, was one such programme. Recently the media has played very important role in making people aware about the value of physical fitness. This
has resulted in a large majority of citizens, specially youth, joining health clubs and becoming aware of the value of physical fitness. This has also been encouraged as a result of many fitness programmes being shown on the television.

“Physical fitness refers to the organic capacity of the individual to perform the normal task of daily living without undue tiredness or fatigue having reserve of strength and energy available to meet satisfactorily any emergency demands suddenly placed upon him” (Singh et al., 2000).

There is no universally agreed upon definition of fitness and of its components. In the present context we are particularly interested in what is now referred to as health-related fitness, i.e. in the physical and physiological components of fitness that have an impact more directly on health status.

**Health Related Fitness and Health Related Physical Fitness**

Health related physical fitness consists of those components of physical fitness that have a relationship with good health. The components are commonly defined as body composition, cardio-vascular fitness, flexibility, and muscular strength endurance. However, the degree of development of each varies with the type of physical activity.

On the other hand, health-related physical fitness is defined as the ability to perform strenuous activity without excessive fatigue, showing evidence of traits that limit the risks of developing diseases and disorders which affect a person’s functional capacity. Health and physical fitness is important to everyone and should be stressed by physical educators and medical people alike (Tancred, 1987).

Health-related fitness refers to the state of physical and physiological characteristics that define the risk levels for the premature development of diseases or morbid conditions presenting a relationship with a sedentary mode of life. (Tancred, 1987) Important determinants of health related fitness include factors such as body mass for height, body composition, subcutaneous fat distribution, abdominal visceral fat, bone density, strength and endurance of the abdominal and dorso-lumbar musculature, heart and lung functions, blood pressure, maximal aerobic power and tolerance to sub maximal exercise, glucose
and insulin metabolism, blood lipid and lipoprotein profile, and the ratio of lipid to carbohydrate oxidized in a variety of situations.

Obesity has long been recognized as an important aspect of human health and the AAHPERD (1980) has included body composition assessment in its health oriented physical fitness test. High percentage of body fat decrease the ability of cardio-respiratory system to supply oxygen to various parts of the body, thereby lowering one’s cardio-respiratory endurance capacity. Fat causes poor performances in the area of cardio-respiratory endurance because it not only places an over load on the circulatory system and heart to pump more blood to a large vascular system, but fat also acts as dead weight in the body (thus offering extra resistance to movement) while contributing nothing to muscle contraction (Shaver, 1982).

Rink (1985) is of the view that cardio-vascular endurance is a key factor in health related fitness and is important to many sports performances and related activities. For general health and fitness, muscular work should consist of well co-ordinated rhythmical movements which are specially designed more for organic and functional promotion than for mere muscular development, agility and skill.

Cardio-vascular endurance is also frequently referred to aerobic exercises. The word “aerobic” means “with oxygen”. Whenever an activity requires the utilization of oxygen to produce energy, it is considered an aerobic exercise. Cardio-vascular or aerobic exercises are walking, jogging, swimming, cycling, cross-country, rope skipping, aerobic and dance. Only aerobic activities will enable an individual to develop cardio-vascular endurance. Aerobic exercise is especially important in the prevention of diseases associated with cardio-vascular system. In addition, regular participation in cardio-vascular endurance activities helps an individual to achieve and maintain ideal body weight (Brar et al., 2005).

Cardio-vascular endurance is the ability of lungs, heart and blood vessels to deliver adequate amounts of oxygen and nutrients to the cells to meet the demands of prolonged physical activity.
Fattirolli et al. (2003) in their study on Physical Activity and Cardiovascular Health and concluded that a sedentary lifestyle has definitively demonstrated to be one of the major risk factors for cardio-vascular events as outlined by the American Heart Association. There is mounting evidence in the scientific literature that physical activity and physical fitness have a powerful influence on preventing coronary heart disease. Moreover, protective effects of physical activity have been demonstrated for non-insulin-dependent diabetes, hypertension and obesity. A continued, moderate exercise improves muscular function and strength, the body’s ability to take and use oxygen (maximal oxygen consumption or aerobic capacity) and improves the capacity of blood vessels to dilate in response to exercise or hormones. Also muscular strength and flexibility improve after exercise programme as well as the ability to perform daily activities, preventing disability particularly in aged people. Cardiac Rehabilitation programmes including formal exercise improve quality of life reducing stress and anxiety after an acute coronary event and reduce long-term mortality by 20-25%. Recently published recommendation of Expert panels defined exercise as a key component to health promotion and disease prevention and delineated the intensity of exercise desired.

Body composition is also an important area in heath related fitness. Knowledge of body composition provides an excellent opportunity to teach the students, the role of direct exercise in the maintenance of proper body weight and its effect on obesity and disease.

Uppal et al. (1984) stated body composition to be a vital factor along with physical fitness components which contribute to athletic performance. According to them body composition changes as a result of training and they have reported that there was decrease in total body fat, slight change in lean body mass and a decrease in total body weight as a result of training.

Maintenance of health by regular physical activity seems to have become popular with the public of all age groups and with increased knowledge on the role of body fat in health related physical fitness, management of obesity is considered crucial in health promotion. Health and physical fitness envisage a life
to the full and show how everyone can help himself in securing vitality as well as longevity. The glorious feeling to feel well can be achieved by what one eats, by the exercise one does and by the way one reacts to life.

Clarke (1975) declared that one of the aims of exercise and training is to cause changes in body composition. The individual may employ weight lifting exercises to become stronger, in which he is seeking to enhance muscle hypertrophy, which seeks to increase the quantity of lean tissue. Whether or not the fat content reduction depends on the combination of energy expenditure and caloric restriction, it is entirely conceivable that a balance could be affected between the gain in lean weight through hypertrophy and the loss of fat weight through mobilization of the adipose tissue. Thus the exercise regimen could actually result in no change in total body weight, pointing out the carefully evaluated body composition. Much the same can be said of the person who claims that he weighs the same, but the ratio of fat to lean content may have altered considerably.

The human body can be divided into two parts: lean weight (muscle, bone, and internal organs) and fat weight. For good health, the body should maintain a proper ratio of one to the other. Obesity is an excessive accumulation of fat weight. Low levels of activity, resulting in fewer calories used than consumed, contribute to the high incidence of obesity. Young people are more obese now than ever before. Obesity is associated with many risk factors of coronary heart disease, stroke, and diabetes. Reversal of these risk factors can be achieved by reducing an individual’s total body fat. Exercise along with proper diet by observing good nutritional principles relating to lowering personal consumption of saturated fats, sweets, and excessive calories are important lifestyle changes that individuals must make.

Flexibility is a health related component of physical fitness that relate to the range of motion available at a joint. It helps in synchronizing the various movements. However, flexibility is an essential part of life even to a common man, who can avoid possible injuries resulting from a fall while performing his daily chores. It has been a common belief that a high degree of flexibility is
necessary in all endeavours. Greater amount of flexibility decreases the expenditure of energy and reduces the resistance while performing gymnastic movements (Hellenic Olympic Committee, 1970).

Muscular strength is an evident force requirement for sports activity. The amount needed for various kinds of sport is variable; however, contemporary authorities agree that the primary source of human force is strength. Strength is the ability to overcome resistance or to act against resistance. Strength speed should not be considered a project of only muscular contractions. It is, in fact, a product of voluntary muscular contractions caused by the neuro-muscular system. In different movements, strength appears in some combination with the duration and speed of movement that is, in combination with endurance and speed abilities (Singh, 1991).

Weak abdominal muscles can promote health-related problems by contributing to a disalignment of the spine. When weak abdominal muscles add strain to the lower back muscles, low back problems can result. Research studies conducted to investigate ways to provide relief to people who suffer from back pain have demonstrated that improving the endurance of the abdominal muscles can decrease the incidence and severity of the pain.

Many daily activities place a great deal of strain on the muscles. Physical inactivity can also contribute to the risk factors that promote back problems. This means that these problems can be reduced or limited through improved physical fitness. Physical inactivity contributes to a loss of flexibility for the lower back and the hip flexors. Sitting for long periods of time promotes a sedentary existence which will result in a loss of flexibility. Individuals with a sedentary lifestyle who perform occasional physical labour are at high risk for developing back problems. Physicians prescribe specific trunk and thigh flexibility exercises-stretching for their patients with lower back problems, supporting the value of stretching exercises to prevent low back problems.

Flexibility is evaluated by having students perform the sit and reach test, which measures the flexibility of the hamstring muscles and the lower back.
Flexibility is practiced each day by having students perform appropriate stretching exercises during the pre-activity warm-up.

Physical fitness programmes should be so designed as to achieve this balance and to improve each component of health. A healthy heart can obtain many benefits from a good conditioning programme. Research has shown that the heart of a trained person has a smaller acceleration of pulse rate than that of the untrained person.

Health and fitness afford the people an opportunity to live longer and they add to the quality of each day of life. To enjoy an optimum state of health and physical fitness, exercise is quite necessary. Exercises are helpful in maintaining an organically sound body from birth to death. Health and physical fitness are certainly applicable to the old saying made in connection with exercise, “if you do not use it, you lose it”.

To sum up we can say that physical fitness deals with working capacity of the individual without excessive fatigue, whereas health related fitness is concerned with the physiological characteristics of a person that defines the risk levels for premature development of diseases. Health related physical fitness deals with both the aspects physical as well as physiological. In other words, it is concerned with the performance of individual to do physical activities and also with the development of inner system which oppose effectively the development of disease and disorder in the functional capacity of a person.

Health related physical fitness, as such, is a much wider and more significant concept than the idea of mere physical fitness of human body. All the sports programmes and physical fitness programmes designed for school students by the government authorities should, therefore, aim at achieving health related physical fitness for young students as well as for men and women.

Regular exercise as well as proper diet, abstention from smoking, proper amount of sleep and relaxation will help us to lead more healthful and hopefully more productive life. To develop and maintain health related fitness, children need exposure to wide variety of sports and fitness activities. Children and youth
will hopefully develop interest in the types of physical activities that will promote and maintain physical fitness throughout adult life.

Environment is also an important aspect for the mode of doing work which varies from place to place. It is generally seen that people living in hilly areas have to face more physical work as compared to people staying in plains. The daily life work under difficult conditions itself act as a load and demands a physiological change for adaptation in such an environment. The area of investigation under present study was Kandi and Non-Kandi area of Punjab state. The word Punjab is derived from a combination of two words i.e. ‘Punj’ and ‘Aab’. The word ‘Punj’ means Five and Aab means water, so Punjab stands for land of five rivers. These five rivers namely, Sutlej, Beas, Ravi, Chenab and Jhelum used to flow in Punjab. Punjab is a land of “Sadhus and Saints”, “Rishies and Munies”, “Heers and Ranjhas” but the ravages of time have reduced Punjab to a land of three rivers as only three rivers now flow through its territory. In ancient times the territorial jurisdiction of Punjab extended over large areas but presently it is confined to 20 districts.

The rivers Ravi and Sutlej separate it from Pakistan on the west. In the east it has Himachal Pradesh, Southern districts of Punjab touch the desert regions of Rajasthan and its northern region is surrounded by Shivalik Hills. Punjab is a triangular state. It is a broad in the south and tapers towards the north. There are three main rivers in Punjab i.e Sutlej, Beas and Ravi. They flow throughout the year and are used for irrigation and power generation purpose. The state can broadly be divided into three zones viz. Doaba, Majha and Malwa.

The north eastern region of Punjab is hilly. It covers narrow belt, 6 to 10 km, broad at the foot of shivalik hills. Three snow fed rivers namely Sutlej, Beas and Ravi originates from here. The northern parts of Hoshiarpur, Gurdaspur and Ropar districts are in this region. The hilly area begins from this region and merges into Himachal Pradesh. The region has low mountains. They are a part of shivalik ranges. The width of this hilly region varies from 100 to 200 miles. The region is criss-crossed by rivers, streams and chaos causing soil erosion. All the three rivers of Punjab flow through this region. Soil is rocky here. Compared
to plains, the region has more rain. Being hilly region it is less hot in summer and colder in winter. Rice, maize, potatoes and groundnuts are produces in this region. Wheat is the main Rabi crop of the region. Agricultural productivity is low. The region is covered with forests. Along the full length of this hilly region, there is a belt called ‘kandi Area’. It has rocky soil. The region is neither totally mountainous nor plain. It suffers from shortage of drinking water and other problems. But with the help of World Bank, a pilot project has been launched in this area i.e “Kandi Area Project” and strenuous efforts are being made for the development of this area. Kandi Area (Sub-Mountain area) lying on the North-East of the motelled road running from Chandigarh to Pathankot via Sahibzada Ajit Singh Nagar, Roopnagar, Balachaur, Garshankar, Hoshiarpur, Dasuya, Mukerian and Dharkalan block in Gurdaspur district (Govt. of Punjab Letter No. 322-SMAC-1(DAC)72/119 dated January 16, 1973). Non- Kandi area (Plain Area) covers large parts of Punjab constituent the plains. It is situated south of mountainous area. A large tract of Punjab constitutes the plains. The plains are formed by the soil brought by the rivers. As such the soil is very fertile. It is a granary of food grains and is 200 meters above sea level. It comprises the districts of Amritsar, Barnala, Bathinda, Faridkot, Fatehgarh Sahib, Firozepur, Jalandhar, Kapurthala, Ludhiana, Mansa, Moga, Mukatsar, Patiala, Sangrur and TarnTaran. The present study was designed to assess the health related physical fitness status of school boys and would provide norms of health related physical fitness for school boys of kandi and non- kandi areas of Punjab state.

**Statement of the problem**

The problem thus selected for research related to “Comparison of Health Related Physical Fitness among Boys of Punjab State Kandi and Non- Kandi Area”

**Objectives of the study**

1. To compare Health Related Physical Fitness components between Kandi and Non- Kandi area boys.

2. To find out Health Related Physical Fitness differences among various age groups of Kandi area boys.
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3. To find out Health Related Physical Fitness differences among various age groups of Non-Kandi area boys.

4. To develop Health Related Physical Fitness norms for different age groups of Kandi area boys.

5. To develop Health Related Physical Fitness norms for different age groups of Non-Kandi area boys.

6. To develop norms for total sample of Kandi and Non-Kandi area boys in case of insignificant differences between these groups on Health Related Physical Fitness.

Hypotheses of the study

1. There would be no significant differences on the variable Health Related Physical Fitness of Kandi and Non-Kandi area boys.

2. There would be no significant differences on the variable Health Related Physical Fitness of different age groups of Kandi area boys.

3. There would be no significant differences on the variable Health Related Physical Fitness of different age groups of Non-Kandi area boys.

Delimitations of the Study

1. The study was delimited to the boys of Kandi and Non-Kandi areas of Punjab state. Kandi area consists of five districts of Punjab namely Sahibzada Ajit Singh Nagar, Roopnagar, Shaheed Bhagat Singh Nagar, Hoshiarpur and Gurdaspur and Non-Kandi area consists of rest of the districts of Punjab state.

2. The study was delimited to the age groups of 13-16 yrs and it was further delimitated to class 8th, 9th and 10th.

Limitations of the Study

1. The test itself has some limitations which served as limitation of the study.
2. Other variables such as interest, attitude, co-operation, home environment, daily- routine, motivation and diet could not be controlled and served as another limitation of the study.

**Definition/Explanation of terms used**

**Health**

“Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity”(WHO, 2002).

**Physical Fitness**

“Physical fitness refers to the organic capacity of the individual to perform the normal task of daily living without undue tiredness or fatigue having reserves of strength and energy available to meet satisfactorily any emergency demands suddenly placed upon him” (Nixon, 2010).

**Health Related Fitness**

“Health related fitness refers to the state of physical and physiological characteristics that define the risk levels for the premature development of diseases or morbid conditions presenting a relationship with a sedentary mode of life” (Bourchard and Shepard, 1993).

**Cardio-respiratory Function**

Cardio-respiratory function is the ability of the individual’s circulatory and respiratory system to resist fatigue while effectively support vigorous muscular activity (Clayne,1980).

**Muscular Strength**

Refers to the amount of force a muscle can produce with a single maximal effort. Size of muscle cells and the ability of nerves to activate them are related to muscle strength (Scott, 2008).

**Muscular Endurance**

Muscular endurance is the ability of a muscle or group of muscles to sustain repeated contractions against a resistance for an extended period of time (Quinn, 2011).
Flexibility

Flexibility refers to the ability of your joints to move through a full range of motion. Having flexibility in your muscles allows for more movement around the joints and you can achieve this with a basic stretching workout. Stretching after your workout, when your muscles are warm and pliable, is a great way to increase flexibility and keep your body protected from injury (Waehner, 2008).

Body Composition

Refers to the proportion of fat and fat-free mass in the body. Those with a higher proportion of fat-free mass to a lower proportion of body fat have a healthy body composition (Scott, 2008).

Norms

A norm is a standard to which on obtained score may be, compare. Test that have an accompanying set of norms are much more useful than those that to it (Mathew, 1978).

Kandi Area (Sub-Mountain area)

The area lying on the North-East of the motelled road running from Chandigarh to Pathankot via Sahibzada Ajit Singh Nagar, Roopnagar, Balachaur, Garshankar, Hoshiarpur, Dasuya, Mukerian and Dharkalan block in Gurdaspur District is Sub-Mountain area (Govt. of Punjab Letter No. 322-SMAC-1(1AC)72/119 dated January 16, 1973).

Non-Kandi Area (Plain Area)

A large parts of Punjab constituent the plains. It is situated south of mountainous area. It comprises the districts: Amritsar, Barnala, Bathinda, Faridkot, Fatehgarh Sahib, Firozepur, Jalandhar, Kapurthala, Ludhiana, Mansa, Moga, Mukatsar, Patiala, Sangrur and TarnTaran.

The parts of five districts such as Sahibzada Ajit Singh Nagar, Roopnagar, Shaheed Bhagat Singh Nagar, Hoshiarpur and Gurdaspur falls under Kandi and Non-Kandi areas.
Significance of the study

The study would be useful to understand the Health Related Physical Fitness status of Kandi and Non-Kandi area boys. The study would further be helpful in understanding the Health Related Physical Fitness differences between Kandi and Non-Kandi area boys. The study would also play an important role in developing the Health Related Physical Fitness Norms for different age groups of Kandi and Non-Kandi area boys. The study may provide a useful tool for selection, identification, classification and placement of students for various games and sports. The study would further be useful for the physical educators, trainers and coaches who are preparing different athletes / teams for various sports competitions. It would enhance the awareness of Health Related Physical Fitness among the school population.