Chapter - I
INTRODUCTION

"For in the case of nutrition and health, just as in the
Case of education, the gentleman in the White Hall really
does know better what is good for people than
the people know themselves."

Jay, Douglas

Tribal communities form a small but an important and ancient group of our population. Tribes have been the original autochthonous inhabitants of our country, who were driven from the fertile plains to the more inaccessible, remote, inhospitable slopes, hills and forest by successive waves of invaders. (Singh, 1983)

It is well known that the tribal communities are closely knit and self contained social units and their comparative identity and isolation from the main stream of society would enable them to resist the forces of change much more effectively than open societies and thus to maintain social relationships and social behavior patterns and which are quite different from and, in many cases, out of conformity with those of the modernized segments of the society. It is also well known that the tribal societies are characterized by traditional values use of primitive technology and non-rational behavior patterns which are in congruent with the values, technology and behavior patterns of the modern world. (Kattakkayam J.J., 1983)

Tribal communities belong to different ethnological groups, profess diverse faith and are at varied levels of socio-economic developments and constitute an important segment of the population. (Sahni and Xirasagar, 1990)
The term 'tribe' for the laymen has 'connotations' and 'refined'. Hence, they are often referred to as 'savages', 'aborigines' etc. Pejoratively, least realizing that they are all members of organized societies, often well organized than those of the modern elite and having strict codes of conduct excelling that of ours. The social organization, life style, habitat, customs, practices etc. of the tribes are just a mere continuation of the life of the 'civilized' man, hundreds of years back. The only difference seems to be that the civilized man in his race towards progress has gone far ahead in technological sophistication and refinement forgetting his ancient style of life. The tribes due to segregation and lack of opportunity could not keep up the pace with the modern man. The condition of the tribal communities have become poor due to lack of communication and infrastructure facilities, improper management and organizational arrangements and above all the exploitation by non-tribal population. In spite of the fact that the country has made rapid progress and development, tribes have by and large remained primitive and underdeveloped technologically and economically because of their secluded habitat. (Rao et al., 1983)

It is known 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 physique and physical capabilities to perform physical and natural activities are tremendously developed.

The tribal areas of India are broadly divided into six groups. Viz; Central tribal, Western tribal region, Northeastern tribal region, Northwestern tribal region, tribal pockets and oceanic groups. (Sahni and Xirasagar, 1990)
According to Rao and Satyanarayana (1987) India had a variety of tribal population reflecting its great ethnic diversity. Demographically there are about 250 scheduled tribes with several subgroups speaking about 100 languages- dialects. (Mukhopadhyay and Mukhopadhyay, 1989)

The scheduled tribe population in India is 5.16 crores (Census, 1981) constituting about 7.53 percentage of the country’s total population. The tribal population, which forms 6.9 percentage of the country’s total population in India, is distributed across the different regions unevenly. Large intrazonal and inter zonal variations exists among the tribes in language, culture and ethnicity. The tribes of the southern zone are numerically small, semi nomadic, and more underdeveloped socially and economically than their counter parts in the eastern and central zones in the country. (Ushadevi M.A. 1983)

Despite the constitutional protection promised to the tribes in India, even after four decades of independence, they are the most backward ethnic group of India on the basis of the major indicators of development viz; income, literacy and health. (Singh, 1988)

As in other parts of the country, the tribes in Kerala constitute a weaker section of the population. Tribal concentration in Kerala is very low and they constitute only 1.10 percent of the total population. In all, there are 35 communities recognized as scheduled tribes in the state Tribal communities remaining at the pre agricultural stage of development and with low literacy rates are recognized as primitive tribes by the government of Kerala.
According to Bureau of Economics and Statistics (1976) the tribal population in Kerala constituted a weaker section of the community and is subjected to various types of exploitation for the past several generations. Their lifestyle consequently has been characterized by servitude, poverty and misery. The various tribal communities differ from one another in racial traits, language, social organization, economy, religious belief, customs and manner and are under the clutches of tradition.

The Western Ghats region that dominates the cultural geography of Kerala is an area where most of the tribes live. About seventy percent of the tribal population in Kerala resides in four districts viz; Wayanad (32.85%), Idukki (15.66%), Palakkad (11.05%) and Kasaragod (9.12%). (Krishnan, 1999)

According to a Survey conducted by forest department 1992, 17156 Scheduled Tribe families (in 671 settlements) live in forest (Government of Kerala, 1994). During the decade 1981-91 the rate of growth of tribal population in the state was 22.75% as against the general growth rate of 14.32%. The sex ratio of the tribal population was 996 females/1000 males. The total number of tribal households in Kerala as per 1991 census was 69441 and the highest number was in Wayanad district that is 23287.

According to Mathur and Nair (1983) and Mukhopadyay (1989) the economy of the tribal people have a varied nature starting from food gatherer, hunter, shifting cultivators, farm labors and settled plough cultivators with primitive technology and are devoid of most of the skills required for a modern life for their economy.
The school going age is a dynamic period of physical growth and development when children undergo mental, emotional and social changes (Koshi et. al. 1970). According to the authors, the school children being a vulnerable section of the population are in need of health promotion, health appraisal and health restoration. Puri et. al. (1984) reported that children constitute the most precious resource of a country and utmost care must be exercised to promote their health and protect them from diseases.

Wayanad, one of the 14 districts in Kerala is situated in an elevated picturesque mountainous plateau on the crest of westernghats. The district came into existence in November 1980. Wayanad was inhabited exclusively by tribes’ folk only until 17th century. Attracted by the fertility of land, streams of people from the neighboring states of Karnataka and Tamilnadu and from Southern parts of Kerala migrated to Wayanad since the beginning of the 18th century. In migration led to growth and expansion of settled agriculture in the valley and made sharp changes in the socio-economic fabric of the area.

Wayanad is a major pocket of tribal concentration in Kerala. The scheduled tribes population according to 1991 census was 1,14,969 in Wayanad, which was 35.82% of the total tribal population in the state. About 19.83% of the total tribal people in Wayanad district is scattered in Mananthavady, 17.75% in Sulthanbathery and 13.73% in Vythiri Taluks (Census of India 1991). About 97.9% of the tribal population resides in rural areas. Major communities are Paniyars, Kurichchiars, Kurumars, Kattunayakar and Adiyans. More than 77 percent of the tribes of 35 district communities are concentrated in Wayanad, Palakkad and Idukki districts. (Government of Kerala, 1992)
Paniyars are habitants of Paighat, Calicut (Kozhikode) and Cannanore Districts. They are aboriginal agristic slaves of ten social who live at high elevations where there are plantations and rice cultivation. Greater numbers have their houses in the Mananthavady and Vythiri taluks. The name is the modified form of the Malayalam word 'Panikkar' (laborer). They are a daring tribe famous for hunting tigers and panthers with spears and nets and in these operations they rival the hamron lion hunters of Africa. They resemble the African tribes in their curly hair and thick lips. They are short and their complexion varies from dark to darker shades of brown. Paniyars eat all that is available even carcass, but not jackals and vultures. Rice is their principal diet and when that is not available they consume wild roots and herbs, which they collect. They have been noticed to eat rat, snakes, fish, prawns, land crabs and the black monkey is a delicacy. They believe that a diet of crabs prevents baldness and gray hair. Paniyars are the largest group of illiterate and primitive tribes in Kerala. Paniyars have very poor huts near farms and plantations where they are employed. According to census 1991, Paniyars population in Wayanad was 49705 of which 24315 was male and 25390 was females.

Kurichchians are habitants of Kannore and Calicut (Kozhikode) Districts. There is a location in Wayanad known as Kurichiat, where the rebel Kurichians are said to have assembled to fight the British. Their name said to have originated from 'Kurichi' the name of a day on which they have programmed to hunt, or perhaps from 'kuri' (external mark), which they make as their chest and foreheads with holy ashes. The name may be the contribution of the Kanarese words 'Kuri' (hill) and 'chian' (people) to connote people of the hills. Their complexion varies from light to dark brown and panikkathies
(woman) are of a lighter complexion. Both sexes are of longitudinal, robust have curly or wavy hairs. Man are tall and have their long hair tied in a knot on the side of the head, but now the advanced younger generation crop their hair. At present women are greater in number. There are many who are socially economically and culturally advanced. They avoid eating beef and bison meat, but alcohol is very welcome. The hut of the Kurichian is usually on the top of the mountain or a high hill near his own parcel of land. The Kurichchiars are principally agriculturist engaged in ponam (shifting) cultivation.

The term Kurumar means one who tends sleep. Thurston (1990) states that the principal occupation of the Kurumar is woodcutting and the collection of product produce. Kurumar man looks distinctive in his shawl and turban, while a woman bears a typical tattoo marks. Their mother tongue is a dialect of Kannada, but the script used and the language spoken with others is Tamil. Rice is the staple food for the community. Though they are non-vegetarians, beef and pork are not eaten. The man consumes alcoholic drinks occasionally. These days the Kurumar eat more pulses and vegetables than they did earlier. Smoking and chewing beta leaves is common among them. Traditionally, the Kurumar reared goats and sheep, but now they have switched over to an agricultural economy. Child labor also exists in the community. Kurumar population in Wayanad according to the 1991 census was 22813 members out of which male population was 11520 and female was 11293.

The tribal communities in Kerala stand at unequal levels of socio-cultural developments and the economy from time immemorial, has remained forest based, Kurichchiars and Kurumars and traditional cultivating communities and paniyans are
non-cultivating communities. Most of the tribal pupils being first generation leavers
their home, environment are not congenial for education. Their dwelling lack facilities
for study - no study room, no furniture, not even proper food.

In the tribal belt of Wayanad district, the number of children attending schools is
less than 3% of the tribal population in the area. (KIRTADS). Census 1991 shows that
Kurichchiar population in Wayanad was 9868 males and 9543 females with a total of
19411.

Only 66% of children enrolled in standard 1 reach standard V11; not much
difference exists as between girls and boys among the tribe folks, the respective figures
being 67% and 66%. On the average about 35% of the tribal children in the district
enrolled in standard 1 drop out from schools before reaching standard V1. (Krishnan,
1999)

There are also inter community differences in literacy levels among tribes folks in
Wayanad. In the case of Paniyars, it is only 2.5%; for Kurichians and Kurumans 13.01%
and 20.32% respectively. It is found that some of the Kurichians and Kurumans have
college educated and technically qualified persons. (Krishnan, 1999)

Traditionally tribal economy is essentially a substance economy. Family is the
basic unit of the tribal society. Each tribe has its separate dwelling locations. A group of
families belonging to a particular tribal community has a common dwelling place and a
common leader who acts as a priest, judge, doctor and administrative head, all blended
into one
The average size of the tribal household is 4.44%. It is observed that 58.4% of the households has a family size of 1-4 members. 36.8% has a family size of 5-7 members and 4.8% have 8-10 members. More than 90% of tribal communities nuclear type families only 10% are following joint family system. About two-third of the expenditure of the family is incurred in food. Educational expenditure is on the average less than 6%. Kurichchians have distinctly different expenditure pattern. They spend a lower percentage on food and a high percentage on education than other tribal communities. (Krishnan, 1999)

Physical fitness has an important role in the lives of people when people were living in communion with nature. Their efforts to earn the livelihood and to save themselves from adverse conditions and other animals that co-existed with them required lot of natural physical activity. The primitive people never heard about the terms physical fitness and nutrition. They obtained a great deal of it from their day today life. The active life is a matter of common knowledge that tribal lads are brought up in the lap of open natural space and out door setting of vigorous life. Because of this conductive environment, their physical capabilities in running, jumping, throwing and such other natural activities are tremendously developed.

Physical fitness is the ability to handle the task performed in everyday life without enough energy in reverse to enjoy leisure pursuits and deal with emergencies (Safrit, 1995). Defines fitness as a physical state of well being that allows people to perform daily activities with vigor, reduced their risk or health problems related to lack of exercise, and establish a base of fitness for participation in a variety of physical activities. (Ratliffe and Ratliffe, 1994)
Physical fitness has become popular-almost faddish. Some people believe it will prevent them from becoming ill, even though the evidence for this believes is sketchy. Others believe it will make them thin, even though exercise alone does not usually burn off enough calories fast enough to transform their bodies before the approaching bathing suit season. Still others believe physical fitness activities will rehabilitate them from conditions or ill health even though they are unwilling to tolerate the commitment required in terms of time and energy. (Green Berg, 1989)

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 person’s body must have always been of great concern. In primitive society there appears to have been very little organized, purposive instruction in physical education, although early people considered that a certain type of fitness was necessary for survival. The usual activities of labor, 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. (Zeigler, 1977)

Health and Physical fitness have a vital role in the life of a man from time in memorial. The marked deterioration in the physical fitness of the people is due to the present automation and a sort of mechanized day-to-day life. Promotion of physical fitness in children has long been accepted as a worthy goal. Through out the 20th century, physician, educators and political leaders, has expressed support for fitness programme for children.
Physical fitness is a matter of fundamental importance to individual well-being and to the progress and security to the nation. It is the basis for all other forms of excellence. With increased mechanization there has been a corresponding decrease in the number of tasks that require expenditure of energy. Sufficient vigorous exercises are not done to develop and to maintain adequate levels of physical fitness. Many individuals must rely on various forms of exercises to attain an acceptable level of physical fitness. (Hockey, 1973)

Physical fitness and positive life style habits may reduce mortality rate and premature illness. Unfortunately the present way of life does not provide required physical exertion to maintain adequate health to the human body.

Many research findings have shown that physical inactivity and negative lifestyle habits are a serious threat to an individual’s health. Movement and activity are basic functions needed by the human organism to grow, develop and maintain health. However, physical activity is no longer a natural part of our existence. We live in an automated world where most of these activities that used to require strenuous physical exertion can be accomplished by machines with the simple pull of a handle or push of a button. (Hoeger, 1990)

We live in a labor saving highly mechanized society, which is eliminating more and more physical exertion from our everyday life. Health is the first input in human development, which is essentially concerned with the well being of the common man. In recent years the overall concept and definition of physical fitness have been undergoing some significant changes, particularly in relationship to health related functions. (Williams, 1995)
The American Medical Association defines fitness as the general capacity to adapt and respond favorably to physical effort. This implies that individuals are physically fit when they can meet ordinary as well as un-usual demands of the daily life safely and effectively without being overly fatigued and still have energy left for leisure and recreational activities. Physical fitness can be classified in to two categories: health related fitness and skill related fitness. (Hoeger, 1990)

One of the key factors determining success in sports is the ability to exercise and train specific human energy system to optimize genetic potential. Athletes developed sports related fitness, that is, fitness specific to their sports such as speed power and appropriate motor skills. Proper physical training may also enhance one’s health status by developing health related fitness; each includes cardio vascular respiratory fitness, optimal body weight and adequate muscular strength and endurance, and flexibility. (Williams, 1995)

Certain physiological and biochemical characteristics, whether inherited or acquired, have a better prognosis than others. In this sense we may speak collectively of an individuals health related or physiological fitness, and link this to both activity patterns and health out comes. Among the variables contributing to health related physical fitness the traditional markers of aerobic fitness (that is peak aerobic power, aerobic capacity, and anaerobic threshold) are all important. Other significant items include cardio pulmonary variables (resting heart rate, the blood pressure at rest during exercise, the electro cardio graphic response to exercise, and static and dynamic lung volumes), body composition (body mass) in relation to height, the percentage and
distribution of the body fat, muscle mass and tendon and bone structure) and biochemical indices (blood sugar, lipid profile, and measures of immune function). (Shephard, 1994)

Health related definition of fitness is usually measured by components related to risk factors for disease. These components are often identified as muscular strength and endurance, flexibility, aerobic capacity and body composition. (Safrit, 1995)

Since the concern of positive health extends to all ages, it is recommended that a persons be tested periodically on health related physical components. Periodic testing will emphasize the importance of an active lifestyle to achieve and maintain low amount of fat, high levels of cardio respiratory function, and sufficient muscular strength and muscular endurance, and flexibility in the lower trunk and posterior high areas for health. low back function. (Safrit, 1995)

Health related physical fitness as a scientific body of knowledge that links the positive effects of regular, vigorous exercises with the prevention of degenerative diseases. Health related physical fitness components are those development which enrich one's health and on the other hand which are related to certain diseases. The components include cardio vascular endurance, muscular strength and endurance, muscular flexibility and body composition. (Baumgartner, 1987)

Health-related fitness requires desirable levels of cardio-vascular fitness, percentage body fat, flexibility, and endurance. These help to prevent the incidents and severity of degenerative types of disease and increase work efficiency. Cardio-vascular fitness refers to the efficiency of heart and lungs. Muscular strength and endurance is the capacity of the muscles to work against the resistance for a longer time. Flexibility is the
ability to move a joint freely through its complete range of movement. Percentage body fat refers to the proportion of an individual’s total body fat. (Russell, 1983)

The newer health-related fitness tests can be used not only to evaluate physical fitness, but also to provide a means of integrating the cognitive aspects of health into physical education. Topics covering heart disease, obesity, nutrition and exercise physiology can be integrated into the curriculum. For example, measuring a student’s body composition provides an excellent opportunity to teach students the role of diet and exercise in the maintenance of proper body weight and the effect of obesity on disease. (Baumgartner, 1987)

The motor fitness and health-related physical fitness philosophies have not always been clearly distinguished from one another. In fact, historical professionals and the lay public alike have tended to merge the two. It often seems that physical educators and others have espoused health-related strength and endurances, flexibility and body composition.

A person with a good level of health related fitness should show a body mass that is close to the actual ideal value, with a low percent body fat an adequate muscle mass, strong but flexible tendons and bones with an adequate mineral content. In general excessive body mass has a negative impact on health related fitness. It is easy to progress from the concept of an ideal body mass to the parallel concept of an fat mass that maximize health related fitness. A person’s life style includes many individual behaviour that can affect health status. Favourable attributes include in taking of regular meals, physical activity of appropriate intensity, frequency and duration and adequa periods of sleep. (an average of 7-8 hours each night). (Shephard, 1994)
According to current thinking in the physical education profession, physical fitness is either health-related or performance-related. Health-related physical fitness is concerned with the development of those qualities that offer protection against disease and frequently are associated with physical activity. For example, certain physiological and psychological factors often affected by physical activity are thought to cause some degenerative disease, such as obesity and coronary heart disease. Thus, health-related physical fitness is important to everyone and should be stressed by physical educators. Performance-related physical fitness is associated with those qualities conducive to better performance in sport and other physical activities, such as those requiring strength, endurance, agility, and speed.

The components of both health-related and performance-related physical fitness are similar, for example, cardiovascular function, body composition, strength and flexibility. However, the degree of development of each varies with the two types of physical fitness. Compared to health-related fitness, a more extensive development of these components may be required to achieve an appropriate level of performance-related fitness. Performance-related fitness is often associated with sport, for example, athletes may need to develop the fitness component of strength to a greater degree (performance-related fitness) than average citizens interested in improving and maintaining their health. Children’s fitness has the same goals as an adult fitness, but it applies to the needs of children and youth, according to their level of maturation. It is specifically developed for children rather than an adaptation of an adult model.
The health of a person is influenced by very many factors such as heredity, environment and nutrition. Hereditary factors are those, which are inherited from one’s ancestors and could not be controlled. In order to obtain the optimum health of a child all these related factors should be considered. The changes in body’s composition and the size of the body should be considered while entering into the term physical fitness. Relative amount of muscle, bone, fat and functional capabilities of cardio vascular and respiratory systems have an important influence on physical fitness.

Anthropometry consists of making external measurements of the human body. The results can be used to upraise body build, nutritional status and posture (Mayors, 1974). According to W.H.O 1965 anthropometric indices are useful, sensitive, practical, accurate and reliable as indicators of nutritional status of a community. These indices were used extensively over the past several decades to assess the nutritional status of children in developing countries (Cooper and William, 1982). Several authors have reported the importance of anthropometric measurements as a simple, useful, practical and as the accepted method to study the nutritional status of individuals. (Jelliffe, 1966; Hamill et al, 1979; Mc Laren et al, 1984; Vijayaraghavan, 1987; Sharma and Kalia, 1990).

It is important to assess both body weight and percent body weight because they provide two related pieces of information about a person’s body composition. Body weight is easy to measure and once some one has an understanding of a desirable body weight for his or her frame, weight can be used to monitor changes in body composition. The shortcoming of using only body weight is that the lean weight component, frame
size, and muscle development are not accurately considered. Two individuals of the same size, gender, and age may weigh the same, but have different levels of lean mass and body fat. (Baumgartner and Jackson, 1991)

Skin fold thickness are related to total body fatness through their association with total subcutaneous fat. Where the ratio of a given set of skin fold is closely related to total subcutaneous fat and where the subcutaneous fat is closely related to other fat depots and the relation between skin folds and total body fatness should be fairly close. (Lohman et al., 1988)

Anthropometry is not merely an ensemble of techniques and measurements but it is powerful method for description and analysis of body size, shape, form and proportion. It has been extensively used to quantify and analyse human growth and as such it has become an important specialization not only in anthropology and human biology, but also of sports sciences, nutrition, medical sciences, aerospace engineering, operational designing, psychology and numerous other sports sciences. The measurements of various dimensions of human body have long been used by different researchers all over the world for different purposes. In the simplest form these measurements are used to describe the human body during various stages of post-natal developments that is from birth to old age and also to study these changes during pre-natal period of growth, that is from conception to birth. The researches in the field of human growth and development, axiological anthropometry as it is referred at present, use these anthropometric measurements to precisely study the age specific changes in the main body segments and the components of these segments. Through these changes the amount and rate of growth
can be assessed for a specific child for a group of individuals at community or national level to formulate the respective health standards to assess the growth of child at both the level. (Nath, 1993)

Another important aspect of this study pertains to the assessment of nutritional status with the help of body measurements. This aspect is more aptly referred to as nutritional anthropometry. Rao (1996) defines Nutritional anthropometry as the measurement of human body at various ages and levels of nutritional status and it is based on the concept that an appropriate measurement should reflect every morphological variations occurring due to significant functional change.

Nutritional anthropometry deals with the measurement of physical dimensions and grows composition of the human body at, different age levels during the post natal period of growth and degree of nutrition. It has been observed that the environmental factors, especially nutrition plays a major role in influencing growth of a child than the genetic composition or other biological factors. The physical dimensions of the body are influenced much more by the nutrition than other factors during the period of rapid growth, that is, the early child hood period. Certain specified body measurements can provide useful information regarding certain types of malnutrition in which body size and gross body composition.

Nutrition is the focal point for health and well-being. The problems of poverty, safe drinking water, environmental hygiene and poor literacy contribute to problems of nutrition and public health. Malnutrition is an ecological problem that does not occur alone. (Bamji et. al., 1996)
The science of nutrition studies the relationship of foods to optimal health and performance. Ample scientific evidence has long linked good nutrition to overall health and well-being. Proper nutrition signifies that a person's diet is supplying all of the essential nutrients to carry out normal tissue growth, repair and maintenance. It is also implies that diet will provide sufficient substrates to obtain the energy necessary to work physical activity and relaxation. The essential nutrients required by the human body are carbohydrates, fats, protein, vitamins, minerals and water.

The effectiveness of many physical education programmes are related to various basic traits found in boys and girls including their nutrition, body size and physique type. Many of these traits related to the heredity, others such as body weight, have hereditary implications but may also be affected by environmental influences, including the nature, and amount of exercise, nutritional practices and health habits.

The prevalence of obesity is increasing in most parts of the world and becoming one of the major global public health problems. Although the components of energy balance have not been adequately estimated over time, available evidence suggests that the increase in obesity is the result of reduced physical activity. Increases in physical activity have been shown to be strongly associated with improving physical fitness and body composition. Indeed, nutrition and physical activity should be considered an integral part of fitness and good health, and should be encouraged in all age groups, particularly early in life. The question is no longer centered on the health benefit of increasing physical activity, but rather creating self-awareness and behavior changes in individuals. Hence, effective intervention programs are needed that foster long term changes in physical activity. Among various interventions, the Nutrifit program was
recently conducted in Thailand and found to improve health related fitness in children. The development of more effective interventions and approaches is a major challenge in this field today.

The relation between two aspects of fitness i.e., physical fitness and proper feeding is inseparable. Modernization also changed drastically our food habits. We must give more attention to body size and changes in body's composition that are influenced by physical exercise. (Stull, 1980)

According to Swaminathan (1983) "If health is considered as an important part of development and progress, and if nutrition is considered as a measure of health, it is necessary for planners to understand the situation regarding food and nutrition and health among tribal people".

India is a country of villages in which about 70 percent of people reside, their income levels are low and about one third live below the poverty line. While poverty is a limiting factor in buying enough food, rampant malnutrition is not entirely due to poverty. There is widespread ignorance about the essentials of childcare including nutritional requirements and the common foods that supply the necessary nutrients. The determinants of malnutrition to be poverty, poor socio economic status, inadequate food intake, ignorance, false beliefs, traditions, caste, poor living condition and faulty food habits.

Nutrition is the focal point for health and well being. The problems of poverty, safe drinking water, environmental hygiene and poor literacy contribute to problems of nutrition and public health. Malnutrition is an ecological problem that does not occur
alone. India has been reported to have the highest percent of moderately and severely under weight children, when compared to selected Asian countries, as reported by Grant.

Gupta (1995) has further reported that most mothers have very little idea about how much food a child needs for adequate growth and nutrition, hence inadequate feeding practices leads to malnutrition. Malnutrition is not only a problem of food supply but also behavioral determinants affecting child feeding and rearing (Devi, 1998). This fact is endorsed by Rao (1996) who has opined that widespread malnutrition prevalent in the world is largely attributed to social, cultural and economic factors.

Malnutrition results from the interaction of several factors, such as poor socioeconomic condition, parental ignorance and illiteracy, repeated infections, large families, closely spaced families etc. (Ghosh, 1992).

The main causes of malnutrition in India includes non-availability of foods, poverty, population growth, Custom and traditions, socio economic variables like caste, religion, level of education and influence of industrialization, urbanization and modernization as explained by Soman and Rajasree (1994).

The dimension of world food and nutritional problems highlight such factors as the large and increasing number of malnourished and hungry people, especially children, rising costs of food production, unstable market conditions, and the relation of diet of health in the world especially in India where under nourished is widespread. Nutrition, physical activity and health related promotion programme in schools have developed into a mature field of research over the past decades. A number of success factors have been identified and evidence-based interventions have been performed. However, the school
setting as an arena for evidence-based health promotion programmes, is still not used to its full potential. Schools provide an excellent arena for reaching large segments of the population, such as young people, school staff, families and the surrounding community. There is a need for an overview regarding the current status of nutrition, physical activity, related health as well as support structures.

Ali (1987) pointed out that for the effective utilization of developmental inputs and to solve the health and nutritional problems faced by the tribes, a systematic study on health and nutritional status of different tribal group is necessary.

To find out the health related physical fitness and nutritional problems faced by the tribes in the changed scenario and to formulate and implement appropriate developmental programmes to their welfare, a comprehensive and systematic study prevailing health related physical fitness and nutritional status among the tribes is necessary.

Based on the back ground of the literature provided and the existing conditions of the tribal children, it is highly required to substantiate the present status of these children who are entering into new roles of the society, that expose them to know risks to their health.

**Statement of the Problem**

The purpose of the study was to establish the health related physical fitness and nutritional status of the tribal children at different age levels and sex in Wayanad district in Kerala. A secondary purpose was to compare the health related physical fitness and the nutritional status of these children.
**Delimitations**

1. The study was delimited to the following tribal groups of Wayanad district in Kerala.
   
a) Paniyar  
b) Kurichchiar  
c) Kurumar  

2. The study was also delimited to the boys and girls from the following schools in Wayanad.
   
a) Meenangadi High School  
b) Govt. High School, Kakkavayal  
c) Govt. High School, Cheeral  
d) Govt. High School, Ambalavayal  
e) Govt. High School, Vaduvanchal  
f) Govt. High School, Kolari  
g) Govt. High School, Vythiri  
h) Govt. High School, Pookkodu  
i) Govt. High School, Meppadi  
j) Govt. High School, Achoor  
k) Govt. High School, Vellarmala  
l) Govt. Sarvajana Higher Secondary School, Sulthanbatheri  
m) Govt. High School, Mananthavadi  
n) Govt. U.P. School, Mananthavadi  
o) Gandhi Memorial U.P. School, Anchukunnu  
p) Govt. High School, Kaniyampetta  
q) Govt. High School, Panamaram  

3. The study was further delimited to the following health related physical fitness variables.
4. The study was delimited to the following anthropometric measurements.

a) Endurance run
b) Timed flexed knee sit ups
c) Sit and reach
d) Body Composition

5. The study was further delimited to the following indices to assess nutritional status:

a) Weight-for-age
b) Height-for-age

6. The study was further delimited to the following indicators to grade the children according to their nutritional status level:

a) Weight-for-age

**Limitations**

Since the subjects of the study were from different tribes, certain factors like habits, lifestyle, daily routine, practices, diet and other such factors, which would have an effect on the result of the study, could not be controlled by the researcher.

Climatic condition and availability of certain sophisticated instruments also was considered as limitations of this study.

**Hypothesis**

(i) It was hypothesized that there would not be any significant difference between the tribal groups in health related physical fitness and nutritional status, in case of the tribal school going children.
(ii) It was also hypothesized that there would be a significant difference in nutritional status of the school going tribal children with the national standard proposed by NCHS.

(iii) It was further hypothesized that the majority of the school going tribal children, in both the sexes, would fall in the malnutritive category as proposed by Gomez classification.

**Definition and Explanation of the Terms**

1. **Tribe:**

   Friedl, (1976) defined Tribe as a "confederation of groups who recognizes a relationship with one another, usually in the form of a common ethnic origin, common language, or a strong pattern of interaction based on inter marriage or presumed kinship".

2. **Fitness:**

   "Fitness is a physical state of art, being that allows people to perform by activates with vigor, reduce their risks a heat problems related to lack of exercise, and establish a base of fitness for participation in a variety of physical activities" (Ratliffe and Ratliffe, 1994).

3. **Health related physical fitness:**

   (Marrow (2000) defines Health Related Physical Fitness as "the attainment and maintenance of physical capacities that are related to good or improved health and are necessary for performing daily activities and confronting expected or unexpected physical challenges".

4. **Nutrition:**

   Nutrition is defined as "the sum of total of the processes involved in the intake and utilization of food substances by living organisms, including ingestion, digestion, absorption and metabolism of food". (Williams, 1995)
5. **Nutritional Status:**

The health condition of an individual as influenced by his or her intake and utilization of nutrients determined from correlation of information obtained from physical biochemical clinical and dietary status. (Fleck, 1976)

6. **Wayanad:**

Wayanad is one of the fourteen districts in Kerala which is came into existence in November 1980. This district is a continuation of the great Mysore Plateau and lies above the crest of the Western Ghats. It is rugged and mountainous on the South and the West. It has an area of 2,116 sq.km. in which 544 sq.km. are reserved forests. (Krishnan, 1999)

7. **Anthropometry:**

"Anthropometry is a science of measuring human body and its parts. It is used as an aid to the study of human evolution and variations". (Mathews, 1978)

8. **Nutritional Anthropometry:**

Nutritional anthropometry is the measurement of human body at various ages and levels of nutritional status and it is based on the concept that an appropriate measurement should reflect any morphological variation occurring due to a significant functional change. (Rao, 1996)

9. **Cardiovascular endurance:**

Cardiovascular endurance, cardio vascular fitness, or aerobic fitness has been defined as “the ability of the lungs, heart and blood vessels to deliver adequate amounts of oxygen and nutrients to the cells to meet the demands of prolonged physical activity”. (Hoeger and Hoeger, 1990)
10. **Flexibility:**

Flexibility is defined as the ability of a joint to move freely through its full range of motion. The amount of flexibility possessed by individuals is limited by factors such as joint structure, ligaments, tendons, muscles, skin, tissue injury, adipose tissue, body temperature, age, gender, and index of physical activity. (Hoeger and Hoeger, 1990)

11. **Muscular strength and Endurance:**

Muscular strength has been defined as the ability to exert maximum force against resistance. While muscular endurance is the ability of a muscle to exert sub maximal force repeatedly over a period of time. For the purpose of the study the abdominal muscle endurance was selected. (Hoeger and Hoeger, 1990)

12. **Body Composition:**

The term “body composition” is used in reference to the fat and non-fat components of human body. The fat components are usually referred to as mass or percent body fat. The non fat body component is referred to as lean b. mass. (Hoeger and Hoeger, 1990)

**Significance of the study**

With in the limitations received and the researcher’s personal understanding the following points are the major contributions this study:

1. The tribal populations of Kerala being neglected for long, needs to be uplifted and so we required empirical evidence which can be achieved through this research.

2. The study established the health related physical fitness of boys and girls of the Wayanad district at different age levels.

3. The study will establish the nutritional status of boys and girls of the Wayanad district at different age levels.
4. The study will also highlighted the fitness as well as nutritional problems faced by the tribals of Wayanad district.

5. The study will also throw light on the steps to be taken to overcome the deficiencies faced by the tribals of Wayanad.

6. The nutritional status of the tribals being so far not ventured in to, has to have solid evidence to upgrade their status which can be provided through this study.

7. The test result will provide health related physical fitness and nutritional status of such children so that general comparisons are possible with state and national norms, as strong and weak points of the respective subject group may become available.

8. Test results can be used to stimulate student interest in health related topics.