CHAPTER I

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Nepal, the independent, sovereign and the only Hindu Kingdom lies in the heart of Asia, sandwiched between the Tibetan autonomous region of the People’s Republic of China in the north and the Indian Federation in the south. With an area of 55,463 sq. miles, Kingdom of Nepal, situated along the south slopes of Himalayas, with the length of about 525 miles in East-West direction and breadth varying from 90 to 180 miles in North-South direction, is rectangular in shape, and lies between 20°20’ N - 30°10’ N latitude and 80°15’ E - 88°19’ E longitude (Fig. No.1).1

Nepal is a mountainous country. The high mountains of the main Himalaya range cover more than a quarter of the country. The middle zone containing the lower mountains and hills consists of half of the total land. The remaining part of the country contains low lying plains along the southern border. In general, the altitude of land increases from south toward north. It is as low as 61 metres in the Tarai, and as high as 8848 metres in the Himalaya. On the basis of topographic features, Nepal can be divided into three major physical divisions: Tarai, Hill and Mountain (Himalaya).

Mountain (Himalayan region) region is over 3,000 metres covering the 8 percent of total population, Hilly region is lying

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between the Himalaya and Tarai region. Its altitude is from 600 metres to 3,000 metres covering the 48 percent of the total population; and the Tarai region including inner Tarai is generally below 600 metres covering 44 percent of total population of Nepal. The rugged topography has posed great problems, and thereby has impeded the development of effective transportation and communications network.

Nepal is a meeting ground for a diversity of peoples, cultures, religions and languages. The Mongoloid ethnic groups coming from north have settled in the northern Himalaya region, the Indo-Aryan ethnic group are scattered throughout the middle mountain and hill region, other Indo-Aryan ethnic groups have dwelt in the plain region.

Nepal bordered on north by China and on south, east and west by India, is divided into five developmental regions, fourteen zones and seventy-five districts for their internal political and administrative set-up.

Physical Education In Nepal:

Nepal achieved freedom from Rana rules government in B.S.2007 (1950-51). During the Rana period, there was no freedom of education for all and the number of schools and colleges were few. The syllabus taught in schools and colleges was borrowed from the Indian university. Only after the B.S. 2017 (1960-61) a systematic Education system was planned and implemented, but still the
education system was not organised. Late King Mahendra announced New Education System Plan (NESP) in B.S. 2028 (1971-72), and a systematic curriculum for schools was implemented.

Before the new Education System Plan we could not find physical education as a compulsory or regular programme course. Physical education was in a worse situation at that time. Some of the selected schools organised P.T. and Drill in the last period of the class routines as an extra-curricular activity. We did not find that physical education was taught anywhere as a prime subject.

During NESP, among all subjects which were regarded to be compulsory at secondary school level, only Panchayat, Health, Physical Education and science had been organised as 50 marks subjects or were being taught combined with each other as full 100 mark-subjects. The Table -1 given below shows the division of marks according to the levels and types of the schools².

Physical education was only included in the so called 'extra-curricular activities' being defined as integral part of the school programme in which participation would be compulsory for both teachers and students. In reality, it must be stated that this appendix of the daily school routine was not more than a co-curricular activity.

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### TABLE - 1

**DISTRIBUTION OF MARKS FOR HEALTH AND PHYSICAL EDUCATION DURING THE NESP (71-76) ACCORDING TO THE LEVEL AND TYPES OF SCHOOL**

<table>
<thead>
<tr>
<th>Level of School</th>
<th>School Types and full Marks</th>
<th>Subject</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>650</td>
<td>Physical Education, Sanitation, Handicraft and Arts</td>
<td>50</td>
</tr>
<tr>
<td>Lower Secondary</td>
<td>900</td>
<td>Physical Education and Health Education</td>
<td>50</td>
</tr>
<tr>
<td>General</td>
<td>900</td>
<td>Physical Education</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Health Education</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Panchayat</td>
<td>50</td>
</tr>
<tr>
<td>Secondary</td>
<td>Vocational</td>
<td>Science, Hygiene, and Physiology</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>Physical Education</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Sanskrit</td>
<td>Science, Health and Physical Education</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>900</td>
<td>Social studies (History, Geography, Panchayal)</td>
<td>50</td>
</tr>
</tbody>
</table>

According to new revision of school curriculum (since 1982) the importance of physical education does not exist as before. In lower secondary school physical education is given as a separate subject which carries 50 marks. At high school level physical education is being offered to be chosen among other optional or
extra-optimal subjects. The marks allotment for health education and physical education or any other two optional and one extra-optimal subjects is calculated to 200 and 100 full marks respectively out of 700 grand total marks.

**Physical Fitness Testing:**

(Physical education is an integral part of Education. Along with physical fitness it is the most important part in the field of physical education. It brings a desirable change in the total behaviour of an individual. Physical fitness means having the ability of a person to live a full and balanced existence. Being physically fit means having your heart, blood vessels, lungs and muscles functioning at peak efficiency. Peak or optimal efficiency means the high level of health we need for taking part in daily tasks and recreation with enthusiasm and pleasure. The totally fit person possesses not only physical well-being but also such qualities as good human relations, maturity and high ethical standards. He or she satisfies such basic needs as love, affection security and self-respect. School health and physical programmes are vitally concerned with not only physical fitness but also strives to contribute to total health and fitness.)

Today there has been keen awareness of the need for physical fitness on a nationwide basis and it is in this context that method, content and aim of physical education have to be visualised.
The development of fitness is one objective of physical education which is widely understood and appreciated.

It will be seen that since physical education strives toward fitness, it should not only help to improve the man's capacity to work but also develop his all round efficiency and his total personality. Williams stated "Physical fitness is a quantitative expression of the physical condition of all individuals".\(^3\)

The rational of a fitness need has been expressed in numerous ways to the public in the past few years. Although fitness must be planned longitudinally for optimum benefit, the elementary school age level is a vital cog in the smooth running wheel of total fitness. As Dr. Roy Shephard, a prominent Canadian researcher in physical activity has stated, "Physical activity is a 'learned behaviour' and the earlier the habit is acquired the more likely it is to persist into adult life".\(^4\)

Underlying the objectives of the fitness initiative is a belief that physical fitness is a very personal matter and is ultimately the responsibility of the individual. Each person, in accepting or rejecting this responsibility, must realize the implications.

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of that choice on the lives of others in our society, in our communities and in our families.

Studies concluded in the past several years would indicate that there is a need to address the problem of fitness with renewed vigour. An examination of cardio-vascular disease, leisure time analysis, nutrition and health care cost can only support a change in emphasis from curative medical practices to a more preventive life style.

The researchers in the field of physical education are using many new terminologies such as physical fitness, physical capacity, physical achievement and athletic ability and so on. These words have been used to indicate the neuro-physical ability of human being. If one will think for a moment of the numerous and varied factors such as speed, strength, endurance, flexibility, agility, balance, power, timing and neuro-muscular co-ordination, etc. one will find that each is contributing independently to the perfection of the total movement.

The 1920's were particularly significant for the field of testing. During this era, however, new statistical techniques became available and more scientifically constructed tests were developed. Pioneer work in the field of scientific test construction was done by C.H. McCloy of the University of Iowa. David K.Brace of Texas developed his motor ability test,
Frederic Cozens devised a test of general athletic ability for college men. These early tests have served as models for modern test construction.

The physical fitness status of national population varies between nations due to such influences as age, sex, heredity, ethnic, cultural and economic patterns and the physical environment. Leaders in physical education around the world have shown increased concern in recent years about the level of physical fitness of their national populations. This concern is reflected by the development and administration of fitness tests in many different countries.

The measurement and evaluation of the physical fitness status of youth in different countries provide information with which one can make an indirect comparison between the levels of effectiveness of physical education programmes with regard to achieving physical education objectives. By measuring, weighing and evaluating the physical fitness levels and athletic abilities of their students, physical educators can establish growth curves and set fitness and athletic ability standards. Such data can be used to make comparison between programmes of physical education and between populations of youth.

Ever since the U.S.A. experienced that a large number of its citizens were not fit enough to be recruited in their armed forces during World War II, there has been an ever-growing interest in adopting programmes to promote physical fitness specially in school-going children.

One attempt to identify differences in physical fitness levels between National populations of youth was made in 1954 by Kraus and Hirschland in which the results of the Kraus-Weber tests of muscular fitness for American children and for European children were compared. Kraus and Hirschland suggested that the poor American showing could be explained by the high degree of mechanization that existed in American society and the consequent comparative lack of physical activity in the daily lives of youths. The study of Kraus and Hirschland provided the stimulation for a national conference in 1956 to consider the fitness of American youth.

In 1957, the American Association for Health, Physical Education and Recreation (AAHPER) established the AAHPER Youth Fitness Project. The purpose of this project was to determine the fitness status of U.S. boys and girls, and to encourage improvement in their fitness levels. A battery of tests was developed by members of the AAHPER research council and a testing programme was launched to determine the physical fitness status of boys and girls, grades five to

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twelve. Data were obtained on 8,500 American school children aged 10-17 years and the data were reported as percentile\(^7\). These data became the first national physical fitness norms developed in the United States by the physical education profession.

The AAHPER has given active leadership in promoting the concept of physical fitness in their own country as well as inspiring similar national movement in other countries and even in the international sphere in its role of secretariat of ICHPER.

Similar movement of fitness in other nations followed in quick succession. The Red and Blue conditioning programme of Canada is an example.

In keeping with the trend in other nations, India also started a movement to create a consciousness and enthusiasm amongst the people of the country for physical fitness and to stimulate their interest for physical welfare, with the scheme of National Physical Efficiency Drive.

**Anthropometric measure:**

Physical activity and the capacity for work are the


\(^8\)V.C. Dunder. The Red and Blue Conditioning Programme of Pupils and parents. (Duluth, Minnesota: Steward Taylor Company, 1955)
fundamental determinants of human survival. Many physiologist and physical educators have tried to investigate the factors which influence the level of physical capacity and the anthropometrical characteristics of mankind. Scientists and physiologists have been of the view, that anthropometric measurements and physical components of an athlete have a lot to do with his performance.

The science of Anthropometry has an important place in sports and performance. Anthropometry is that branch of Anthropology, that is concerned with taking a measurement of human body. For classification as well as for comparison certain measurements and the anatomical proportions related to athletic performance have an important role in the field of sports performance.

Anthropometry, simply stated, consists of making external measurement of human body. These measurements may be objective. The result can be used to appraise body-built, nutritional status and posture. Body-built includes the size and proportions of the individual, whereas nutritional status refers to the relationship in development between skeletal, adipose and muscular tissue. Anthropometric measurements have revealed correlation between body structure, physical characteristics and sports capabilities. This knowledge helps to evaluate and to predict performance potentialities on the
basis of physical characteristics and specific requirements of the game.

No study had been undertaken to determine the status of the physical fitness of Nepalese school children, nor had comparisons been made between Nepalese children and other populations, and because it was believed by this research scholar that a knowledge of the status of physical fitness of Nepalese children will be useful in the development of adequate physical education programmes in schools of Nepal, a study of the status of physical fitness of the students of Nepal seemed appropriate and highly desirable.

Therefore, the present study was undertaken with a view to constructing the physical fitness test batteries and to establish the relationship with the Anthropometric characteristics.

Statement of the Problem

Physical fitness plays a very important role in the curriculum of physical education. Among the various objectives of physical education such as Health, participation in games and sports, as cultural heritage; develop qualities conducive to social and sports, as cultural heritage; develop qualities conducive to social and national unity, mental alertness, maturity and citizenship, the objective of physical fitness can be realised only through a programme of physical education, whereas in the
realisation of other areas the school curriculum may also play its part. Physical fitness is also essential for achieving better success in other areas of physical education curriculum such as mastery in sport.

Physical fitness has been a subject of controversy throughout the years and an elusive one to define objectively. It seems that there could hardly be any compromise about the standardization of the term physical fitness among the authorities working in this field. The simplest definition of physical fitness is "the capacity of individual to perform given physical tasks involving muscular effort". Physical fitness is considered to be a part of the total fitness.

The term "physical fitness" is included in many familiar test batteries commonly used in the schools, but the present researcher feels that many of these tests in these batteries were not actually tests of physical fitness. Part of this misconception about physical fitness may stem from the lack of agreement among experts as to exactly what elements constitute physical fitness. Johnson and his associates placed the common test parameters into two basic categories:

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(a) Physical fitness parameters (those that are actually essential for health and functional fitness; Muscular strength, Muscular endurance, Cardio-respiratory capacity and Flexibility), and

(b) Motor performance parameter (adds to the physical fitness parameters - power, agility, speed, balance, co-ordination and reaction time). \(^{11}\)

Meyers in his book "Measurement in Physical Education" has explained physical fitness to be "the functional capacity of the individual for a specific task or mode of living", and classified the common test components in three categories \(^{12}\):

(a) Component of physical fitness : (Namely- muscular strength, muscular endurance, and cardio-vascular function),

(b) Motor fitness : (adds to the component of physical fitness- speed, agility, power and flexibility), and

(c) General motor abilities : (addition of co-ordination and balance component to motor fitness).


Clarke and Clarke explain that the basic physical fitness components are muscular strength, muscular endurance and circulatory-respiratory endurance. Muscular power, agility, speed, and flexibility are added to compose motor fitness; kinesthetic arm-eye and foot-eye co-ordination are needed for general motor ability.

However, as our objective was to measure and reflect to reliable degree the status of students in terms of fitness, the researcher notes in a more precise manner the tangible component, such as muscular strength, muscular endurance, cardio-respiratory endurance, and speed that can be evaluated with the relation of anthropometric measures.

**Strength** is a pre-requisite to all activity, since it takes a certain amount to be agile, to have power, and to run fast. Strength as a factor is inextricably related to other motor performance factors; it remains as entity in itself and is a silent element of the whole. Strength of and in itself is not an indicant of capacity, fitness or educability, but it is merely the ability to apply force. "Strength may be defined as the capacity of the individual to exert muscular force".

Another factor that is recognised as basic to proficiency in physical fitness is: muscular endurance. Muscular


endurance is the "ability of muscles to perform work". The need for this quality is specific to the individual. It is apparent that certain levels of muscular endurance are needed, and that is another quality which must be included if optimal functional fitness is to be achieved.

Not only are strength and muscular endurance the influencing components in physical fitness but minimal adjustments of the cardio-respiratory are also necessary. Cardiovascular endurance is characterized by "moderate contraction of large muscle groups for relatively long periods of time". The lack of such endurance causes the onset of early fatigue, which is mainly responsible for the decrease in other performance traits such as strength, co-ordination, basic skills, power, speed of movement and so on.

The times we are living in can be justly called the 'golden age' of physical training and sports. Never before have people enjoyed such actual opportunities for the development of their strength and capabilities, nor have they realised so distinctly that a physically weak person can hardly expect to keep abreast with the accelerating pace of today.

16 Ibid p. 154.
Today there has been a keen awareness of the need for physical fitness on a nationwide scale and it is in this context that method, content and aim of physical education have to be visualised. The development of fitness is one objective of physical education which is widely understood and appreciated.

Physical fitness is a very desirable quality to be possessed. The amount of fitness factor differs from nation to nation, with the geographical situation, race and so on. Physical education, is a newly introduced subject in Nepal which is yet to be organised in a systematic way. However, the evaluation system of physical education is more subjective than objective. The present researcher, during his teaching period, experienced that the need of fitness assessment was very necessary and not merely that, but it was also evident from the literature that various nations have developed their own physical fitness norms on the basis of test batteries and they differ from one another. For instance: a test developed in USA or Canada and the norms established on the basis of those populations might can be applicable to the population of Asiatic origin in view of Anthropometric, hereditary, geographical and environmental conditions existing there in.

So, it was felt by the scholar that Nepal, which is in a crawling stage in physical education cannot meet the European norms or even the Indian norms.
Therefore, the development of separate norms, suitable to the school going students of Nepal is necessary right now. So, having considered this and after thorough critical discussion with the experts in the field, the research scholar had tended to study "to construct the physical fitness test batteries and to find out the similarities and differences of the anthropometric characteristics of the secondary school students from the different geographical regions of Nepal".

**Significance of the Study**

Fitness of work is a changeable characteristic, probably subject through all phases of human living to improvement or deterioration. The state of fitness is different in various ethnic and cultural groups, and little doubt exists in the minds of scientists in sports medicine that wide difference in work capacity and physical fitness exist among individuals living under varying cultural and physical environmental conditions throughout the world.

Except for a few selected populations, the physical fitness of the human races of the world is unknown. This study was concerned with the construction of physical fitness test batteries and comparisons of the results in the anthropometrical measurements among the students from different cultures of Nepal.
No attempt had been made so far for conducting research for the fitness measurement and evaluation procedures of physical fitness of the students of Nepal. So, the present study was significant in the following ways:

(a) The Study would be expected to determine the effectiveness of teaching programme in physical education.

(b) This study would help in determination of physical fitness status of the secondary school going children of Nepal and promotion of physical activity programme for them.

(c) It would help to adopt evaluative procedures on the basis of norms established.

(d) The study would throw some light on quantitative differences that exist as muscular strength, muscular endurance, cardio-respiratory endurance and body structure of Tarai, Hill and Himalayan students of Nepal.

(e) It would help the student to understand himself and his potentialities through such appraisal.

(f) It would help to organise the physical education programme on the base of the classification of students.

(g) This study would create a consciousness and enthusiasm amongst the people of the country for physical welfare.
(h) The test would enable the physical education teachers to discontinue the application of the physical fitness test constructed for the American and/or European student population. Thus the tests which were not appropriate for the Nepalese students population would be replaced.

(i) This study would help the physical education teachers and educational planners to compare the status of the students of Nepal with other countries on the obtained norms of this study.

(j) To motivate the students in developing physical fitness.

Purpose of the Study

The main purpose of this study was to construct the test batteries of physical fitness and develop the norms for secondary school students of Nepal, and to find out the relationship with the anthropometric characteristics.

To meet the above mentioned purpose, the following objectives were included in this study:

(a) to determine the fitness status of the students of Nepal.

(b) to compare the fitness status of the students of different regions (Tarla, Hill and Himalaya).
(c) to determine the norms based on the measurements and test scores for the selected population of Nepal.

(d) to determine the status, and the differences between the physical fitness of a group of boys of Nepal as indicated by selected measures (Age, height, weight and selected test batteries).

(e) to determine the relationship between the physical fitness performance and selected anthropometric characteristics of the students of Nepal.

Hypothesis of the Study

After perusal of relevant literature the following Research hypothesis was formulated:

It was hypothesised that appropriate physical fitness test could be constructed for the high school students of Nepal and further their relationship with the anthropometric characteristics could be explored.

Sub Hypotheses:

(a) It was hypothesised that fitness level of the students of Nepal would be poorer than the level established by the American norms.

(b) It was hypothesised that fitness status of the students of different regions would also vary because of anthropometric and environmental differences.
(c) It was hypothesised that the appropriate norms could be developed for the student population of Nepal.

(d) It was hypothesised that there would be a relationship between the anthropometric characteristics and the physical performance of the students of different regions of Nepal.

**Delimitation of the Study**

It was impossible to cover all student-population of all grades of Nepal and therefore to make the study more feasible and to complete within a time limit, the study was restricted to the following points:-

(1) The study was conducted only on the VIII, IX and X grade students of Nepal.

(2) The study was restricted to male high school student-population of Nepal.

(3) The study was delimited to the physical fitness test consisting of following physical fitness components: -

(a) Muscular strength,
(b) Muscular endurance,
(c) Cardio-respiratory endurance, and
(d) Speed.
(4) The study was also delimited to the following anthropometric measures:

(a) Age,
(b) Height,
(c) Weight,
(d) Arm length,
(e) Upper Arm length,
(f) Fore Arm length
(g) Arm girth,
(h) Hand length
(i) Leg length,
(j) Upper leg length,
(k) Fore leg length,
(l) Thigh girth,
(m) Calf girth,
(n) Chest girth,
(o) Neck girth,
(p) Abdominal girth,
(q) Arm span.

Limitation of the study

The present study was limited to the following points:

(1) No motivational technique was applied to encourage or discourage the subjects while various
measurements were taken.

(2) The participation of subjects in other activities which was the part of their curriculum might have affected their performance for the present study.

(3) Climatic variations might differ from place to place because of the variance of the altitude.

(4) At certain places where the minimum facilities for conducting the test were not available, the subjects were shifted to appropriate places, to same locality where the test could be conducted according to the standard method.

(5) Tiredness due to the long distance walking to reach the school which might influence the performance of students, was another limitation.

(6) The time for conducting the test was not same throughout the period of the investigation.

Definition of the Terms

The terms used in this present study were with the meaning explained through the definitions given below:

**Physical fitness**: "Physical fitness is the ability to carry out daily task with vigour and alertness without undue
fatigue with ample energy to engage in leisure time pursuit and to meet unforeseen situations and unexpected emergencies".  

**Strength :-** "Strength is the ability or capacity of a muscle or muscle group for exerting force against resistance".  

**Muscular endurance :-** "Muscular endurance is the ability to continue muscular exertions of submaximal magnitude".  

**Cardio-Respiratory endurance :-** "Cardiovascular endurance is the ability to continue or persist in the strenuous task involving large muscle groups for a long period of time".  

**Speed :-** "Rapidity with which successive movements of the same kind can be performed".  

**Anthropometry :-** "The measurement of structure of proportion of the body is called anthropometry".

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22. Ibid  
"Anthropometry is the science of measuring the human body and its parts. It is used as an aid to the study of human evolution and variations. 24.

**Tarai Region**: "Broad belt of low and level land in the southern part of Nepal, generally below 600mt. height from sea level".

**Hilly Region**: "The region lying between the Himalaya and Tarai regions. Its altitude is from 600m to 3,000 m".

**Himalaya Region**: "The northern part of Nepal over 3,000 mt. height from sea level".

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