Chapter – I

INTRODUCTION

“A sound mind in a sound body is a short but full description of a happy state in this world” – John Locke

EDUCATION

Education is very important for an individual’s success in life. Education improves the physical, mental and social health of the respondents. Generally education is the foundation of the society which brings economic wealth, social prosperity and political stability.

The main purpose of education is to educate individuals, to prepare and qualify them to work in society, and to teach values and morals of the society. Education has a vital role to play in assisting respondents to understand their cultural identity. The development of education and educational opportunities is built on creativity tempered by knowledge and wisdom gained through the experience of learning.

Education is an important aspect which will raise the economic growth of the country and promote knowledge and understanding of rural communities. Educated individuals enjoy respect among their colleagues and they can effectively contribute to the development of their country and society by inventing new devices and discoveries.
ACADEMIC ACHIEVEMENT

Academic achievement is the outcome of education the respondents, teachers and institutions focus on achieving their educational goals. It is commonly measured by examinations or continuous assessments but it varies from institutions to institutions.

Academic achievement is a term refers to the performance of the respondents. Individual’s differences influencing academic performance have been linked to difference in intelligence and personality. Respondents with higher mental ability as demonstrated by IQ tests (Quick Learners) and those who are higher in conscientiousness (Linked to effort and achievement motivation) tend to achieve highly in academic settings.

According to Taneja, (1989) the performance in a school or college in a standardized series of educational test and the performance is the action of a person or group when given a learning task. During that period of life referred to as schooling learning is no longer casual. The achievement in any discipline is an independent factor. Many physical, psychological, physiological and social factors have their impact concerned with intellectual behavior and emotional development are important aspects of physical education, the personality and intelligence are the psychological elements and forces that influence the performance in physical education (Krishnamurthy, 1990).

Dictionary of education defines academic achievement as “The knowledge in the school respondents usually determined by test scores or by marks assigned by teacher or both.
Importance of Academic Achievement

Academic achievement is more important for a student to learn and develop his personality. Assessing the progress of a student means identifying what she / he have achieved. Acquiring skills in academic matters is important as a means of attaining complete realization.

Individual difference in Academic Achievement

Respondents of the same age show enormous difference in mastering their school respondents. Among the respondents who acquire same grade in academic tests, there prevails uniformity and they show a wide range of achievement in all respondents.

Concept of Academic Achievements

The student does not merely have a task of performing in the exams; he should perform well with the aim of eliciting positive reinforcement for his demonstrated competence in the task. The academic achievement means the marks achieved by the student in the examination, and it is identified as the criterion for his performance. Academic achievement is also known as scholastic achievement.

The scholastic achievement is the degree to which the student has moved towards the objective of the school. Academic achievement measures the extent to which individuals have acquired certain knowledge, skills, concept and abilities as a result of instruction received at the school (Arjunasamy, 1995).
PHYSICAL EDUCATION

Modern physical education with its emphasis upon education through the physical achievement which are based upon the biologic unity of mind and body. “Socrates with a headache” is always preferable to a “Brainless Hercules”, but the modern spirit in physical education seeks the education of man through activities as one aspect of the social effort for human enlightenment.

Physical Education is responsible for improving one’s leadership quality. Physical education trends have developed recently to incorporate a greater variety of activities. It helps respondents to develop good activity habits that will carry over into adulthood (Jesse, 1930).

Physical Education is a vast area with wonderful activities, but that has been perceived to be an education of “lower status” compared to other respondents. One should spend time in learning physical activity to make oneself fit and also devote time to learn the other respondents.

PHYSICAL FITNESS AND ACADEMIC ACHIEVEMENT

Physical fitness gives the ability to perform daily tasks vigorously and alertly, with energy left 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 any circumstances; where an unfit person could not manage it without good health and well-being (Ajmer Sigh, 2003).
By doing regular physical activities, fitness level is increased. It is generally associated with higher cognitive functions and academic achievement in academic discipline. Physical activity and academic achievement find a strong link between the student’s health and his academic performance (Rebecca, 2007). By improving physical fitness level, he tends to perform better in the classroom.

College serves as an excellent venue in providing better and healthy lifestyle. Physical programmers argue that allocating time for daily physical education period does not adversely impact academic performance. Physical activity programme helps the respondents to improve social skills, mental health, growth and functions of the body, and also reduces the stress.

According to Cottrell (2007) The respondents who are not necessarily fit can be made physically fit, As the physical fitness increases, their academic performance also increases”. Physical movements of the body are vital for normal brain development and it is imperative that the teachers increase the amount of physical activity programmes for the respondents to improve their healthy lifestyle. While taking part in competition, one’s body movements have relationship with the cognitive functions. Doing regular exercise reduces stress and helps one to function normally and improves emotional state.

Regular physical activity increases the amount of oxygen delivered to the brain, which in turn, increases the learning capacity of the respondents. Regular practice of an exercise regulates the oxygen flow to the brain easily which enables them to make decisions with the help of cognitive functions.
ANTHROPOMETRY

Anthropometry measures all physical aspects of the human body. Simple measurements include height and width. But a more thorough body of measurements is usually needed for the human factors to work. Measurements such as the length from the elbow to the tip of the finger or the circumference of the skull are some examples. In a complete anthropometric survey measurements are taken between every joint and across hinge joints (such as the knee and elbow). Range of motion is also recorded along with thickness or girth (Chris Adams).

Anthropometry means the measurement of a man, whether living or dead. In simple terms it is the dimensions of the body. Anthropometry represents the typical and traditional tool of human biology, physical anthropology and axiology. Recently it has taken a strong bonded relationship with physical and sports sciences (Sodhi, 1991).

Anthropometry has kept pace with these developments and has provided suitable measurements and techniques. While anthropometry was traditionally used in static measurements, it has now developed functional measurement suiting the present day needs. Anthropometry is not merely an ensemble of technique and measurements, but it is a powerful method for description and analysis of body size, shape, form and proportion.

The Anthropometric measurement relates to the body mass as its potential value is not appreciated by the health personnel. For proper evaluation of
significance of weight on growth, it is studied in combination with the other appropriate body measurements and clinical examinations.

The height of an individual is an important anthropometric measurement which sums up the linearity of the body. Height of a person is composed of legs, pelvis, trunk (Supine), head and face. The components of the height are important in pertaining to the assessment of growth in different body proportions and for other general and specific purposes (Sushil Gosain, 1993).

**PHYSICAL FITNESS**

Physical fitness means maintaining the various systems of the body healthily and making them function effectively. The fit person should engage in these physical activities without unreasonable fatigue (William, 1994).

Physical fitness has been defined as the ability to handle the task performed in everyday life with enough energy in reverse to enjoy leisure pursuits and deals with emergencies (Margaret, 1995).

**Concepts of Physical fitness**

Doing regular exercise improves the healthy lifestyle that contributes to optimal health and quality of life and it prevents diseases and promotes health. Unlike heredity, lifestyle can be changed to improve fitness and health.

Physical fitness consists of many components each of categories in specific in nature. A fit person possesses at least adequate levels of health related
fitness components. A person who possess one aspect of physical fitness do not necessarily possess all the other aspects.

Physical fitness and exercises help to keep the fat levels in normal ranges in the bodies. It is also responsible for muscle development that can improve one’s perception. Even though physical exertion has become less necessary as a part of the normal work of many adults, the need for regular exercise has not decreased (Charles, 1970).

**Importance of physical fitness**

Fitness is a key to health and the very basis of a happy life. It is no exaggeration that it is a pre–requisite for human survival as well as struggle for existence. It is related to sport especially competitive sports in the same way as oxygen is related to life. Today, there is no sport without fitness. To recapitulate fitness – with all its physical, physiological and social aspects – it is extremely important in man’s life because it makes life worth – living, contributes to health, improves work efficiency, enhances performance in sports, keeps the individuals in harmony with environment, helps the organism develop resistance against disease, adds to human productivity to self – esteem and self – image (Kamlesh, 1986).

Physical fitness is important to an individual’s physical and mental health. Fitness is a national scale which is necessary to survive in a society. Physical fitness can be educational and also essential (Gupta, 1996).
The body is the temple of the soul and to reach harmony of body mind and spirit, the body must be physically fit (John, 1969).

Physical fitness is related to scholastic achievement. Research has shown that respondents who are physically fit tend to get better grades than those who are not. One needs physical exercise to supplement one’s academic training. If the body is physically fit, it will increase the chances of scholastic success. There is a relationship between physical fitness and academic achievement and some investigators believe that when one feels well physically, one is able to function academically higher (Marica, 1964). Physical fitness is more than “Not being sick” or merely “Being well”. It is a positive quality, extend from death to abundant life” (Clarke, 1976).

**PHYSIOLOGY**

Physiology is the study of the functions of the physical parts of the living beings. It analyses the performances of the living being, like how it feeds, how it moves, how it adapts to the changing circumstances, and how it spawns new generations. Physiology is a science that studies the functions of the living organisms – how the various parts of the body normally work, and how their activities are regulated, coordinated and integrated for maintaining the well being of the organism as a whole (Singh, 2001).

Biologically, human beings are designed to be active creatures. It is important to be aware of the requirements for the good health and to recognize the importance of vigorous physical activity in the life. Regular activity increases
muscle size, strength and power and develops endurance for straining work. Physical exercise contributes to improve the posture and appearance through the development of proper muscle tone, greater joint flexibility and good feeling of well – being. It generates pore energy and thus contributes to greater individual’s productivity for both physical and mental task. Physical fitness is not entirely a dependent exercise. Desirable’s health practices also play an important role. The person who is physically fit has more strength, energy and stamina; an improved sense of well being; better protection from injury and improved cardio respiratory functions (William, 1994).

**PSYCHOLOGY**

The term psychology is derived from the word ‘Psyche’, which means ‘soul’ and ‘logos’ (Kamlesh, 1988). Psychology is the study of human behavior and human relationships. Sports psychology means applying psychological theories and concepts to the aspects of sports such as coaching and teaching. Sports psychology is analyzing the behavior of the individual when he / she perform various activities in a group. The sport psychologist uses psychological assessment techniques and intervention strategies in an effort to help the individuals to achieve their optimal performance. Sport is the field where sportsman’s behavior is moulded, modified and studied. Every aspect of sportsman’s behavior becomes a respondent of study under sports psychology (Gita Mathew, 1997).

The health related aspects of fitness include greater attention to a healthy diet, improved weight control, reduction of stress, better sleep pattern and other
manifestations of the healthy lifestyle. So fitness contributes to health in many ways and it is an essential component of higher level of health. Fitness requires individual’s initiative and it helps to prevent diseases, leads to better physical health and provides the spring board to enhance the psychological level.

A physical activity is known as the recreational activity which provides mental relaxation. Many people blame the society for producing stress but stress is the result of various aspects like work, school, interpersonal relationship etc. Exercise plays a significant role in reducing stress. It diverts attention in the routine activities and focuses in providing relaxation. It makes the individuals to feel better about themselves and make to feel that they are more capable of handling potential stress producing situations (William, 1994).

Need for the Study

All Indians have to develop the sports science to improve health, sports performance and academic achievement. For the development of research studies the present study analyses the “Anthropometric”, “Physical”, “Physiological” and “Psychological” factors among the respondents with reference to their academic achievement. The research identifies the performance and academic achievements of the individuals. It helps to promote the developing countries like India. The natures of performance and academic achievements are given importance to improve the factors such as anthropometrical, physical, physiological and psychological well – being. The concepts of sports sciences are based on the studies to improve the status and to develop the implementation and evaluation to ensure the promotion of performance and academic achievements. Hence the
researcher makes an attempt to analyze the anthropometric, physical, physiological factors among the respondents with reference to their academic achievements.

Statement of the problem

The purpose of the present study is to analysis of selected Anthropometric, Physical, Physiological and Psychological factors among the students with reference to their academic achievement.

Objective of the study

This study aims at investigating the selected anthropometric, physical, physiological and psychological factors among the respondents with reference to their academic achievement. To compare the difference between the academic discipline with average achievers, above average achievers, good achievers and superior achievers on selected anthropometric, physical, physiological and psychological variables.

Hypotheses

The following research hypotheses were formulated for this study to find out the difference between the academic discipline respondents with reference to their academic achievement.

1. There would be significant difference between academic discipline of the respondents irrespective of their academic achievement on the selected variables.
2. There would be significant difference among the average achievers, above average achievers, good achievers and superior achievers of academic achievement irrespective of the academic discipline on the selected variables.

3. There would be significant difference on the selected variables of the respondents at different academic achievement levels such as average achievers, above average achievers, good achievers and superior achievers.

**Delimitations**

1. To achieve the purpose of the study, during the academic year 2010-2011. 350 sports background respondents are participated in the Inter school competition, 60 I year female respondents from H.H. The Rajah’s College (Autonomous), Pudukkottai and 60 I year female respondents from Sudharsan Engineering College, Sathyamangalam, Pudukkottai, Tamil Nadu, India were selected for the study based on their academic achievement in XII standard state board examination.

2. A total of 120 respondents were classified as average, above average, good and superior achievers based on their higher secondary marks.

3. The age of the respondents ranges from 17 to 19 years.

4. Only the following variables were selected for this study

**Anthropometric Variables**

- Standing Height
Body mass
BMI (Body Mass Index)

**Physical variables**
- Speed
- Flexibility
- Muscular endurance

**Physiological variables**
- Resting pulse rate
- Respiratory rate
- Breath holding time

**Psychological variables**
- Trait Anxiety
- Aggression
- Sports achievement motivation

5. The standardized tests were used to collect relevant data on the selected dependent variables.

**Limitations**

1. The previous experience of the respondents in the field of sports and games which might be influencing the data collection was not considered.

2. In academic achievement the medium of study in the XII standard was not considered.
3. The respondents have studied various groups like biology, computer science, commerce and vocational group in XII standard, but it was not considered for the study.

4. The vocational group has theory and practical so the marks were not considered during the collection of data.

5. During the data collection the locality of the respondents were not considered.

6. The respondents were selected from only two academic discipline in town area.

7. Psychological factors such as mental status, food, habits, rest period, and lifestyle could not be considered.

8. The weather conditions such as atmospheric temperature, humidity and meteorological factors during testing period were also not considered.

9. Though the respondents were motivated verbally, no attempt was made to differentiate the motivation level during the period of testing.

10. The achievements have limited to the respondents as average; above average; good and superior on selected variables. Hence it might have affected the categories of achievements during the collection of data.

11. The questionnaire was prepared in English language whereas all the respondent mother tongue is Tamil. Although the Tamil version is orally made by the researcher.
Significance of the study

1. The result of the study may provide the different academic achievements among the respondents in various predictor variables in anthropometric, physical, physiological and psychological variables.

2. The conclusion of this study may pave a way to create an importance to develop the respondents physically and mentally.

3. The findings of the study may be used as a screening tool and technique in analyzing and classifying the respondents.

4. This study may be used to assess the respondents with proper physical fitness and mental growth.

5. This study may help the physical education teacher and physical director to find out the basic qualities and fitness among the respondents.

6. This study may motivate other professionals and scholars to take up similar studies.

Definition of the operational terms

Academic achievement

Academic achievement is a specified level of attainment or pro efficiency in an academic work as evaluated by the teachers and by the standardized tests or by the combination of both.
Aggression

Aggression has been defined as a behavior characterized by the intention of inflicting unpleasant stimulation on another individuals – but this underestimates its subtlety and omits some important features (Anne and Cripe, 1986).

Anthropometry

Anthropometry is the science of measuring the human body and parts. It is used as an aid to the study of human evaluation and variations (Clarke and Clarke, 1976).

Body Mass

Body Mass is described as the mass of an organisms body and it was measured in kilograms (Suctcliff and Ganham, 1981).

Body Mass Index (BMI)

A standardized estimate of an individual’s relative body fat calculated from his or her height and weight. The formula for calculating BMI is weight in kilograms (kg) divided by height in meters (m) squared. (Brandon Peters, 2011)

Breath Holding Time

Breath holding time is defined as the duration of time through which one can hold his breath without inhaling or exhaling after a deep inhalation (Strukic, 1981).
**Flexibility**

It is the functional capacity of a joint to move through a normal range of motion. It is specific to a given joint and its actually more dependent upon the musculature surrounding a joint than on the actual body structure of the joint itself. *(Uppal, 1992).*

**Muscular Endurance**

It is a quality that enables a person to sustain localized muscle group activities for extended period of time *(Uppal, 1992).*

**Physical Fitness**

Physical fitness is the capacity to carry out reasonably well various forms of physical activities without being unduly tired and includes qualities important to the individual’s health and well being *(Uppal, 1992).*

**Respiratory Rate**

Respiratory rate is the number of breaths a human being takes within a certain amount of time (frequently given in breaths per minute) *(Weinberg, 1995).*

**Resting Pulse Rate**

Pulse rate or heart rate is the rate of beats of the heart per minutes *(Morehouse and miller, 1976).*
Sports Achievements Motivation

Achievements motivation is a dominant motivational orientation in a situation characterized by the attainment of clear success and failure. The two primary motives are either to achieve success or to avoid failure (Anne and Cripe, 1986).

Sport Psychology

“Sports psychology is the branch of sports and exercise science that seeks to provide answer to the question about human behavior in sports” (Thelma, 1992).

Speed

Speed is the ability to make rapid movements of the same type in the shortest possible time (Uppal, 1992).

Standing Height

Standing height is the vertical measurement from the heel to top head of the human body (Suctcliff and Ganham, 1981).

Trait Anxiety

Trait anxiety as the chronic predisposition to perceive a variety of objective non-threatening situations and events as fearful (Seppo, 1986).