CHAPTER I
INTRODUCTION

Twenty first century has witnessed a landmark development in science and technology including space, defense, atomic energy, computer, internet service etc. By the internet invention we can collect required information within a fraction of second from any part of the world. Due to this advanced scientific technological invention, the body movements of the human being have been restricted. Tension and competitive feeling increased. Man has been felt the prey of stress, hypokinetic and psychosomatic diseases. So time has come that man should not ignore the importance of any physical activities. Every one desires good health and it is the ultimate objective of all those who want happiness in life. Every one has to follow good health practices in their routine life. Minor health disorders are quite common to all. In the case of major health problems, the precautionary measures are plenty. Some people control their diseases like blood pressure, diabetes, acidity, asthma etc. by taking medicines regularly. But such practice does not in a way completely eliminate the health disorders; on the other hand it leads to several other adverse health problems. The continuous, systematic and regular practice of Yoga and any physical activities is an effective tool to maintain good health and also helps eliminate all the dreadful diseases from the human body.

Physical education and sports, being an integral part of education, experiences the impact of scientific advancements. Now sports are able to give outstanding performance because of involvement few scientifically substantiated training methods and means of execution of sports exercise such as sports techniques and tactics improvement of sports gear and equipment as well as other components and conditions of sports training.¹

Physical educators understand the scientific foundation for what they do today is better than what they did years ago. They no longer conduct exercises and physical activities simply for the purpose of entertainment or to stimulate muscular activity for

its own sake. Today they are interested in providing exercises and physical activities that will accomplish specific objectives for participant such as helping a handicapped person to have a sense of accomplishment in physical activity to enhance his or her self concept or assisting an industrial executive in determining his or her state of fitness through sophisticated measurement techniques. The physical education is also utilizing computer technology to store information that will be readily available for instant retrieval and application in their filed.

The science of sports medicine is expanding, with physical education and physician working together as a term to accomplish goals such as proving physical performance. Further many years ago physical activity was largely conducted in a vacuum without a sound scientific explanation. It was important whereas today physical educators as a result of their investigation can scientifically support their claims that physical activity is a medium of improving human existence.²

In the modern world the field of sports has become so popular that large number of young men and women participate in sports from all over the world. The standard of games and sports has improved a lot due to mechanical principles and modern training. A sports man or a player takes advantages of the training methods and he always changes from one process of training to another to benefit from them.

Yogic training and aerobic training are considered to be more effective than other methods of training in developing physical fitness. It is long lasting and can be performed at different stations without apparatus. Yoga practice includes Asanas and Pranayama and aerobic exercises include running, walking, swimming, bicycling and aerobic dance that improve the physical fitness.

Yoga

Yoga means to “yoke” to “unite” to bind to “link” to connect or to “merge”. As yoke joins two bulls together, the yoga unites body and mind together. The merger

of soul with God, and the experience of oneness with him is yoga. It is possible only through the control over sense organs and through continued practice and detachment. According to the great Sage Patanjali the withdrawal of sense organs from their worldly objects and their control is yoga.

The aim of man’s life is to get rid of the worries, anxieties and sufferings of the world and to achieve peace and bliss. To get rid of the tempting delusions, sorrows and pains of the world, there are different paths of yoga namely Bhakti yoga, Karma yoga, Dhyana yoga, Jnana yoga, Hatha yoga and other yogas. The paths may be different but the ultimate aim is the same. Our body has been called the temple of the God. According to Shankracharya we can see the image of God in our own body if maintained purity and free from disease. Just as spotless mirror gives clear reflection, the body and mind if maintained purity and health can lead up to success. Yoga is a science of physical and mental control. It is a system of self renewal of mind and body. It is a means of acquiring a slim supple and healthy body. It can be a way to achieve inner tranquility. It is also a path to great spiritual attainment. Our ancient Rishis and sages have given eight stages of yoga. They are Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi.³

Asana (Posture)

The first physical aspect and third stage in Ashtanga yoga is asana. Any posture that is performed steadily with ease is called asana. Asanas are for the control of body and mind, purification of our mind, veins and nerves and promotion of general health of the body. Asana tone up the internal and external organs of the body and give energy, vigor and vitality. There are several types of Asanas which include standing, sitting, prone, supine and advanced Asanas.⁴

In Patanjali’s yoga, Asana does not mean a specific posture. It means mainly sitting for meditation. Asana means a meditative seat. Asana is maintaining a long time of paramount importance to facilitate proper meditation. The whole science of

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⁴ H. Kumar Kaul, Ibid, p.3.
yoga is only to prepare the person for meditation physically, vitally and mentally. Patanjali’s yoga defines asana as namely “Sthiram Sukham Asanam”. Therefore asana in Raja yoga does not imply the different postures of the Hatha yoga. They say that there are 84 Lakhs of different postures. The beloved and worshipful Gurudev Swami Sivanandaji has made it clear that out of these 84 lakhs postures, only 84 are the most important Asanas.\(^5\)

**Pranayama (Breath control)**

Pranayama means control and regulation of breath. Prana is a Sanskrit word which means vital force. It also signifies of life of breath. Ayana means the control of the Prana so Pranayama means the control of the vital force by concentration regulated breathing. Prana is the vital power or force which is motivating every element on the earth and is the origin of the force of thought. There is a deep affinity between Prana and mental force, between mental force and intellect, between intellect and soul, and between soul and God. The Prana not only ensures the proper functioning of the body but is also the regulator and animator of the Phsyche. It is a remedy for several physical and psychic disturbances of which modern man is the victim.

In all forms of life from the highest to the lowest the Prana is present as a living force. All the force is based on Prana; it is the origin of movement, gravity, magnetism, physical action, the nerve currents and the force of the thought. Without Prana there can be no life, for it is the soul of all force and energy. It is found in the air, water and food. Prana is the vital force inside each living being and thought is the highest and most refined action of Prana. As we breathe, the movement of the lungs inhaling air is the expression of Prana. Pranayama is not simply the breathing but the control of the muscular force activating the lungs. The control of Prana through the concentration of thought and regular breathing is called pranayama. It is through Pranayama that each part of body can be field with Prana. Once one is capable of performing it, one is master of the body and can dominate illness and suffering. Prana is accumulated where our mind is concentrated.

Thought is the absolute master controlling Prana energy. Just as we are able to make ourselves ill and weak by thinking wrong and negative thoughts, so we may cure ourselves by expelling bad thoughts and replacing them with positive ones. It is the essential factor in our lives. It is a basic necessity for the safeguard of our health. As wind drives smoke and impurities from the atmosphere, Pranayama drives away the impurities of the body and mind.

Types of Pranayama

Many types of Pranayama are used in yoga practice such as Surya Bhedana Pranayama, Sheetkari Pranayama, Bhashrika Pranayama, Moorcha Pranayama, Samavrtti Pranayama, Plavini Pranayama, Ujjayi Pranayama, Sheetal Pranayama, Bharmari Pranayama, Kapalabhaati pranayama and Nadisodhana Pranayama.\(^6\)

Yoga is a scientific way to Health

Yoga is a systematic and methodical process to control and develop the mind and body to attain good health, balance of mind and self-realization. Thought yoga has the potential power to make us healthy added to our vigor, still most people lack the knowledge of systematic practice of yoga. They perform yogic exercises for a short period and when their health improves, they discontinue the yoga practice. For this reason, the effective results of yogic practices cannot be determined perfectly. Many scientists, doctors, psychologists etc, all over the world are extensively studying the beneficial aspects of yoga which encourages us to attain positive health through yoga.\(^7\)

Effects of Yogasanas on Health

Yogasanas are very effective in throwing out all our body wastes and bring control over the body and organs are proper functioning of which depends our health and happiness .The Asanas improve mental power and health in controlling the sense

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organ. It increases the elasticity of our body and makes the body more active and supple. The blood circulation takes place more smoothly and properly and the body becomes capable of more work. It improves our resistance power against diseases and do not allow any external matter to accumulate in the body, they keep the body free from diseases. The different asanas clean the blood circulation, drain of our body and circulates blood freely to all parts of our body and helps keep our body free from impurities. Yogasanas are the best means to keep organs in proper functioning order. It is not only improving body health, but also have sobering effects on the mind. The mind becomes balance and peaceful. The practice of Yoganasas is very effective activating on various glands, so that they secrete their juices in the required quantity and function properly.

**Effects of Pranayama on Health**

Pranayama is controlling the normal breathing cycle, it increase the expansion and contraction of our lungs so that they become capable of purifying more and more blood. Mind becomes capable of more concentration. It has a unique power to throw waste products from the body. It creates resistance power in the body against disease.⁸

**Benefits of Asanas and Pranayama**

If one practices the Asanas and Pranayama regularly and systematically for long period, it is sure to find that they act as curatives of and preventives for various kinds of mental and physical ailments. The body will become light, and intellect will turn sharp and clear, memory will grow strong, will-power assumes firmness and rigidity, body fat and heart rate will be reduced, the belly will no longer project, the face will look serene, the eyes will grow bright and lustrous, the voice will turn sweet, an improve in static motor performance, personality development, lung capacity and respiratory, brain functions and physical fitness.⁹

**Aerobics**

Aerobic activities include walking, jogging, bicycling, dancing and swimming etc. anything that involves the large muscle groups, which sustains for thirty minutes

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or longer, is considered aerobic. It should be done a minimum of five days a week for at least thirty minutes each session.\textsuperscript{10}

Aerobic exercise is the exercise that involves or improves oxygen consumption by the body. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. They are several kinds of aerobic exercise which are performed at moderate levels of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise, involving large muscle groups, and a cooling down period at the end.

Aerobics is a form of physical exercise that combines rhythmic aerobic exercise with stretching and strength training routines with the goal of improving all elements of fitness (flexibility, muscular strength and cardio – vascular fitness). It is usually performed to music and may be practiced in a group setting led by an instructor, although it can be done solo and without musical accompaniment. With the goal of preventing illness and promoting physical fitness, practitioners perform various routines comprising a number of different dance-like exercises. Formal aerobics classes are divided into different levels of intensity and complexity. Aerobics classes may allow participants to select their level of participation according to their fitness level. Many gyms offer a wide variety of aerobic classes for participants. Each class is designed for a certain level of experience and taught by a certified instructor with a specialty area related to their particular class.\textsuperscript{11}

**Dance**

Dance is a popular activity of people of all ages and is both a physical activity and a performing art that provides participants with an opportunity for aesthetic expression through movement. People dance for a variety of reasons. Dance is used to communicate ideas and feelings and is considered a creative art. The dance is an integral part of educational experience as a form of recreation and it provides opportunities for enjoyment, self expression, and relaxation. Dance can also be used

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\textsuperscript{10} Prem Sunder, *Yoga for Fitness*, (New Delhi: Khel Sahitya Kendra Published, 2009), p. 32.
as a form of therapy providing opportunities for individuals to express their thoughts and feelings. It provides a means to cope with various stresses placed on individuals. Dance is increasingly used as a means to develop fitness. There are many forms of dance that are enjoyed by individuals including ballet, ballroom, folk, and clog, modern, square and top. Cultural heritages is reflected in and passed on through dance activities. Within the past two decades aerobic dance provides participants with an opportunity to develop fitness and experience the fun and enjoyment of working out of music.\(^\text{12}\)

**Aerobic Dance**

The aerobic dance is a common craze among most people today. It is one of the best ways to enjoy a fitness program and also a way to achieve better health. The aerobic dance is a feet tapping exercise that is accompanied with musical beats and the signals of an instructor. Aerobic dancing also induces fast breathing for a long period of time by pumping more oxygen into the bloodstream. Also known as “aerobics”, the aerobic dance can be done with hip hop or country folk music. There are different types of aerobics such as dance aerobics, step aerobics, low impact aerobics, High Impact aerobics, Water Aerobics and aerobic kickboxing.\(^\text{13}\)

**Low-Impact Aerobics**

Low-impact aerobics are those movements involving large muscle groups used in continuous rhythmic activity in which at least one foot contacts the floor at all times. It has developed to decrease the lower leg overuse injuries associated with high-impact classes. This type of exercise is ideal for seniors, pregnant women and overweight people. It is beneficial for those who have not exercised for some time. With low impact aerobics, more fit people may have difficulty achieving required intensity and therefore they are told to use larger movements. It means when you

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begin walking, you may walk with slow rate and slowly increase your step length and move your arms as you walk to get to the same level.\textsuperscript{14}

**Benefits of Aerobic Exercise**

Regular aerobic exercises will improve cardiovascular and cardio respiratory function (heart and lungs), an increased maximal oxygen consumption (VO\textsubscript{2}max), maximal cardiac output (amount of blood pumped every minute), maximal stroke volume (amount of blood pumped with each beat) and blood volume and ability to carry oxygen. Reduced workload on the heart (myocardial oxygen consumption) for any given sub maximal exercise intensity, increased blood supply to muscles and ability to use oxygen. Lower heart rate and blood pressure at any level of sub maximal exercise, threshold for lactic acid accumulation. Lower resting systolic and diastolic blood pressure in people with high blood pressure. Increased HDL Cholesterol (the good cholesterol), Decreased blood triglycerides reduced body fat and improved weight control Improved glucose tolerance and reduced insulin resistance.\textsuperscript{15}

**Fitness**

Fitness is the ability to live a full and balanced life. The totally fit person has a healthy and happy outlook on life. Fitness is the young man’s absolute necessity. It breeds self-reliance and keeps man mentally alert. Physical fitness is essential for human beings to adjust well with his environment as his mind and body are in complete harmony. Clarke and Clarke (1989) found that physical fitness is not a static factor and it varies from individual to individual and in the same person from time to time depending on factors.\textsuperscript{16}

**Physical Fitness**

It is generally agreed that physical fitness is an important part of the normal growth and development of a child, a generic definition regarding the precise nature

\textsuperscript{14}Www.Fitnesshealthzone.Com/Exercises/Different-Types-of-Aerobics/  
\textsuperscript{15}Www2.Gsu.Edu/Wwwfit/Benefits.Html#Aerobic  
of physical fitness has not been universally accepted. Through research and scholarly inquiry, it is clear that the multi-dimensional characteristics of physical fitness can be divided into two areas: health related physical fitness and skill related physical fitness.\textsuperscript{17}

Physical fitness is probably the most popular and frequently used term in physical education. The most important objective of physical educators is to develop physical fitness. According to Nixon and cozens (1964), it was the desire to establish a scientific approach to the development of physical fitness which formed the basis of the first meeting of physical educators in 1885 when the profession of physical education originated.

The United States president’s Council on physical fitness and sports defined the terms “physical fitness as the ability to carry out daily task with vigor and alertness, without undue fatigue, with ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies” (Clarke, 1971). General fitness implies the ability of a person to live most effectively with his and her potentials, which depend upon the physical, mental, emotional, social and spiritual components of fitness which are highly interrelated. The primary components of physical fitness identified by the president’s council on physical fitness and sports were muscular strength, muscular endurance and cardio respiratory endurance. However, later on the president council also included some other motor performance components namely agility, speed, flexibility and balance in physical fitness. But keeping in view the general opinion of the majority of the researchers, the author has not included the components such as speed, agility, power and balance (which are more important for success in specified sports) as essential components of basic physical fitness. However, the author defines physical fitness by group of five components, namely muscular strength, muscular endurance and cardio respiratory endurance, flexibility and body composition. It is important to mention here that some experts (e.g. Clarke and Clarke, 1987;\textsuperscript{17}N. Hastad Douglas and C.Lacy Alan, Measurement and Evaluation in Physical Educatin and Exercise Science, (USA: Gorsuch Scarisbrick Publishers, 1994), p.121.)
AAHPERD, 1980, 1984) call such fitness tests which include the measurement of percentage body fat, as health related physical fitness tests\textsuperscript{18}

Physical fitness is comprised of many different components. These components can be classified into two categories, of which one is pertaining to health related and the other is pertaining to skill performance related fitness components which are given in the table1.1

<table>
<thead>
<tr>
<th>COMPONENTS OF PHYSICAL FITNESS</th>
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<tr>
<td><strong>Health- Related Physical Fitness Components</strong></td>
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<tr>
<td>Muscular Strength</td>
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<tr>
<td>Muscular Endurance</td>
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<tr>
<td>Cardio- Respiratory Endurance</td>
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<tr>
<td>Flexibility</td>
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<td>Body Composition</td>
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**Health Related Physical Fitness**

It is concerned with the development and maintenance of the fitness components that can enhance health through prevention and remediation of disease and illness. Health related fitness enhances one’s ability to function efficiently and maintain a healthy lifestyle. Thus health related fitness is important for all individuals throughout life.\textsuperscript{19}

Health related physical fitness is based on the assumption that an adequate level of body development is required for health. There are five components of health related fitness namely muscular strength, muscular endurance, cardio respiratory endurance, flexibility and body composition.\textsuperscript{20}

\textsuperscript{19} A. Deborah Wuest and Charles A.Bucher, Ibid, p.19.
Muscular Strength

Muscular strength is an important for individuals to perform daily activities and tasks such as taking out the trash moving furniture or appliances, or changing a tire and lifting, pulling or pushing objects. Many tasks involve use of the upper body and lines. In an emergency a strong individual has a better change of avoiding serious injury then compared with a weak person. In many cases upper body strength can make the difference between a serious injury and escaping harm.

Muscular strength is defined as the ability of the muscles to produce force at high intensities over short intervals. It is a conditional ability, and it depends largely on the energy liberation processes in the muscles. Strength the most important motor ability in sports is a direct product of muscles contraction. All movements in sports are caused by muscles contractions and therefore, strength is a part and parcel of all motor abilities, technical skills and tactical actions. Strength training is good for general health, good posture and prevention of injuries.

Muscular Endurance

Muscular endurance is defined as the ability of the muscles to sustain repeated productions of force at low to moderate intensities over an extend amount of time. It indicates that your muscles are strong enough to move for long periods of time and can complete numerous repetitions. In physical education program each day during the warming up phase of each lesson students must develop muscles endurance by participating in sets of abdominal exercises in increasing numbers as the time passes.

Abdominal muscles can promote health related problems by contributing to a misalignment of the spine. When weak abdominal muscles add strain to the lower back muscles, lower back problems can result. Many research studies conducted to investigate the ways to provide relief to people who suffer from back pain have demonstrated that improving the endurance of the abdominal muscles can decrease the incidence and severity of the pain.
**Cardio-Respiratory Endurance**

One of the greatest causes of death in the world is coronary heart disease. Coronary heart disease usually present warning signs from the following risk factors, such as elevated blood lipids, hypertension, and disturbances in the heart rhythms. These risk factors have been shown to be related to people’s lifestyles. Stress, cigarettes smoking, consumptions of fat and physical inactivity are lifestyle habits that have a direct tie to coronary heart disease and its mortality. According to a recent report from the surgeon general lack of regular exercise and physical activity contribute to the development of other coronary heart disease risk factors.

Research suggests that by engaging in regular exercise and physical activity that improves the cardiovascular system, the individuals can reduce many risk factors associated with coronary heart diseases. This is especially true for young people. There is strong evidence that the onset and rapid development of coronary heart diseases begin during youth, and may eventually become irreversible. Aerobic activities are incorporated throughout the physical education curriculum in order to improve this component. These activities include walking, jogging, running, jumping rope, distance swims, stationary bicycling, aerobic dance, step aerobics, basket ball, hand ball, touch football, or any other activities which utilize the large muscles of the legs and elevate the heart rate.

**Flexibility**

Flexibility is defined as the ability to move muscles and joints through their full range of motion. Most people will, at one time or another, suffer back problems. Approximately 80% of these low back problems are due to weak and or tense muscles. Many daily activities place a great deal of strain on these muscles. Physical inactivity can also contribute to the risk factors that promote back problems. This means that these problems can be deducted or limited through improved physical fitness. Physical inactivity contributes to a loss of flexibility for the lower back and the hips flexors, sitting for long periods time promotes a sedentary existence which will result in a loss of flexibility. Individuals with a sedentary life style who perform occasional physical labor are at high risk for developing back problems. Physicians
prescribe specific trunk and thigh flexibility exercises, stretching for their patients with lower back problems, supporting the value of stretching exercises to prevent low back problems.

**Body Composition**

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

**STATEMENT OF THE PROBLEM**

The purpose of the study was to find out the effects of yogic training, aerobic training and detraining on health related physical fitness namely muscular strength, muscular endurance, cardio respiratory endurance, flexibility and body composition of college male students.

**THE OBJECTIVES OF THE STUDY**

The following objectives were set for the present study

- To find out how the health related physical fitness variables changes through yogic training and aerobic training.
- To find out which experimental group increases faster on health related physical fitness during mid and post test.
- To find out which experimental group maintains health related physical fitness for longer duration during the training cessation period.
- To find out which training group decreases quickly on health related physical fitness during the training cessation period.
HYPOTHESES

The following hypotheses were set for the present study.

- It was hypothesised that the effects of yogic and aerobic training on health related physical fitness will be significantly increase when compared with the control group.
- The aerobic training group will be superior to yogic group on health related physical fitness during the training period.
- It was hypothesised that the training effects of pre test to mid test will be superior mid test to post test during the testing period.
- The aerobic training group reduces faster the health related physical fitness variables during training cessation period when compared to the yogic group.
- It was hypothesised that the results on health related physical fitness variables gradually reduces during the training cessation periods.

DELIMITATIONS

The following delimitations were set for the present study.

- For this study 45 (forty five) healthy untrained subjects were selected on random basis.
- The students were selected from Dr.R.K.Shanmugam College of Arts & Science, Indili, Kallakurichi T.K Villupuram (Dt) in Tamil Nadu, India.
- The subject’s age were ranged between 18 to 21 years.
- The selected subjects were divided into three groups, each group consist of fifteen (15) subjects. Group I underwent yogic training, group II underwent aerobic training and group III acted as a control group.
- The selected Asanas and Pranayama were given to yogic group.
- The selected aerobic dance steps assigned for aerobic group.
- The duration of the training period was stipulated to 12 weeks for 5 days per week (45 minutes)
- The health related physical fitness variable were measured by using a selected standardized tests.
LIMITATIONS

The following limitations were set for the present study.

➢ The hereditary and environmental factors, which would influence the criterion variables, were recognized as limitation.

➢ Methodological variations such as air temperature, atmospheric pressures, relative humidity etc. during testing periods could not be controlled and their possibility influence on the result.

➢ Day to day activities, rest period, food habits and life style could not be controlled.

DEFINITION OF THE TERMS

Yoga

Yoga is the unit of physical and mental discipline, with control of breath and all other functions, practiced in order to attain one pointed concentration of mind, spiritual union with the supreme.\textsuperscript{21}

Asana (posture)

Asana means holding the body in a particular posture to bring stability to the body and poise to the mind.\textsuperscript{22}

Pranayama

Pranayama means breath control. In Sanskrit, Prana means breath and a Yama means a control. In modern literature on yoga, prana, even in the compound Pranayama, has been often interpreted to mean a subtle psychi force or a subtle cosmic element.\textsuperscript{23}

\textsuperscript{21} Ashok Majumdar, \textit{Nervous System in Yoga and Tantra}, (New Delhi: Nag Published, 1999), p.2.

\textsuperscript{22} Ajmer Singh et.al. Ibid, p.514.

Aerobic Exercises

Aerobic literally means “with oxygen in and refers to the use of oxygen in muscles energy generating process. Aerobic exercises typically those performed at moderate levels of intensity for extended periods of time that maintain an increased heart rate.”

Aerobic Dance

Move rhythmically in a series of steps along with a partner or in a group or movement and steps in time to music.

Training

Training may be defined as “A programme of exercise designed to improve skills and increase energy capacities, for an athlete, the preparation for a particular event”.

Detraining

The loss of training effects following the cessation of training.

Physical Fitness

Physical fitness is the ability to carry out daily tasks with vigor and alertness without undue fatigue and ample energy to enjoy leisure time pursuits and meet unforeseen emergencies.²⁸

Health Related Physical Fitness

Health related physical fitness is the primarily associated with disease prevention and functional health. It has five components they are muscular strength, muscular endurance, cardio- respiratory endurance, flexibility and body composition.²⁹

Muscular Strength

Muscular strength is defined as the ability of a muscle group to develop maximal contractile force against a resistance in a single contraction.³⁰

Muscular Endurance

Muscular endurance is the ability of a muscle group to execute repeated contractions over a period of time sufficient to cause muscular fatigue or to maintain a specific percentage of the main mum voluntary contraction for prolonged period of time.³¹

Cardio Respiratory Endurance

Cardio respiratory endurance is related to the ability to perform large muscle, dynamic, moderate to high intensity exercise for prolonged periods.³²

³² Yaksha Aggarwal, Ibid, p. 149.
Flexibility

Flexibility is that quality of the muscles, ligaments and tendons that enables the joints of the body to move easily through a complete range of movement.\textsuperscript{33}

Body Composition

The proportion of body fat to lean tissue in an individual usually given as a percentage of body weight that is fat.\textsuperscript{34}

SIGNIFICANCE OF THE STUDY

The following significance was set for the present study.

\begin{itemize}
\item This study would promote awareness of physical activity and yoga among the students.
\item This study would provide scientific base and guidance to the physical educationist, coaches and players to understand the effects of yogic and aerobic training on physical fitness of male students.
\item The present study may give some more basic knowledge to the sports scientists to conduct further research in the similar field.
\end{itemize}

\textsuperscript{33} Ajmer Singh et. al. Ibid, p. 514
\textsuperscript{34} Yaksha Aggarwal, Op.Cit., p. 41.