CHAPTER 1

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"When you are fit, you look better, feel better and are likely to have more physical
energy; when you feel fit, the good things of life have more meaning: The sky is bluer, the
music sweeter, the steak tastier."

J. PERCIVAL

Modern world is the outcome of many scientific inventions through centuries.
Scientific instruments and machinery have helped to lead the daily life with ease and
comfort. The modern man depends mostly upon the scientific equipment for his daily
routine, involving mainly his mental powers to have a comfortable life, resulting in fall
and deterioration in his physical health and capacity. Modern man need not toil like his
forefathers in his daily life. So he has become less vigorous and less active. The
inactivity and pressure of work result in stress, which is on the increase in the urban areas.
Fatal cardiac arrests affect even youngsters in their early thirties. It is here the concept
and the initiative for games and physical exercises become useful. The twentieth century
man is not even a chip of the giants that bestrode the world till the end of the last century.

Added to the woeful inadequacy of level of physical exercises, the mental stress is
on the increase. Now that the world is shrinking into a global village thanks to many

\[1 \text{ J.Percival, } \textit{The Complete Guide to Total Fitness} \text{ (New Delhi: Vikas Publishing}
\text{ House, Pvt Ltd., 1977), p.16.} \]
internet challenges. It is a highly competitive world the man has to live in. So mental stress takes a heavy toll of his health. So for a man to be fit, he has to not only resort to physical exercises, but also to yoga practices to give rest to his over worked mind.

Physical fitness experts recommend a thirty-minute work out of continuous exercise. The exercise need not be difficult or strenuous. However as a person's condition improves, he or she should increase the number of times each activity is performed. ²

HEALTH RELATED PHYSICAL FITNESS

Physical fitness is a universally accepted and realised terminology. Physical fitness is a capacity to meet the present and potential physical challenges of life with success. The present concept of physical fitness is not only freedom from disease, but also to gain enough strength, agility, flexibility, endurance and skills to meet the demands of daily life and to build sufficient reserve energy to withstand stress and strain.

Fitness improves general health and it is essential for full and vigorous living. The physically fit child will be more alert and eager to do things. Children are the future citizens of our country. The wealth of a nation depends entirely upon the health of every

citizen of the country. Hence physical fitness of school children is a major important factor to be considered.\(^3\)

Physical fitness is an important outcome of physical education and it is physical education in the school system that is most capable of bringing it out. The physical fitness over a long span and examination of the same reflect the status of health. Physical examination assesses the growth pattern and functional efficiency of sensory and motor organs, functional efficiency of the body in terms of strength, cardiorespiratory endurance, flexibility, speed, agility, balance and neuromuscular co-ordination.

Physical fitness is a combination of qualities that enable a person to perform well in vigorous physical activities. These qualities include agility, endurance, flexibility and strength. Physical fitness and good health are not the same, though each influences the other.\(^4\)

Physical fitness represents one of the several facets of sports and physical activity, which can have definite influences on the health and the well being of children and adolescents, as well as adults. The measurement of physical fitness raises several

\(^3\)N. Govindarajulu, "The Importance of Health-related Physical Fitness Through Physical Activities", Paper Presented at the 3rd All India Physical Education Congress (Madras 8-11 October, 1991).

conceptual, methodological and technical problems, which explain why surveys including such measures have been scarce until recently.\(^5\)

The Australian Fitness Education Award reflects a health related fitness philosophy and encourages students to set personal goals by aspiring to criterion based standards of achievement rather than by comparisons to others. With a view of turning children on rather than off physical activity, Australian Council for Health Physical Education and Recreation (ACHPER) has developed a new fitness testing approach that reduced comparison with others, eliminates embarrassment on focuses on learning about personal health and fitness. Helpful hints to encourage student participation and generally promote physical activity in school and community settings form an added feature of the Australian Fitness Education Award Resources.\(^6\)

The American Alliance for Health, Physical Education, Recreation and Dance had published two standardized tests for the schools: The health - related physical fitness test and the youth fitness test. According to AAHPERD, health - related physical fitness can be viewed thus: Physical fitness is a multifaceted continuum extending from birth to

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death. Affected by physical activity, it ranges from optimal abilities in all aspects of life through high and low levels of different physical fitness, to severely limiting disease and dysfunction. (AAHPERD, 1980:3). 7

Health-related physical fitness is important to everyone and should be stressed by physical educators and medical people alike. Health related fitness is defined as the ability to perform strenuous activity without excessive fatigue showing evidence of traits that limit the risks of developing diseases and disorders which affect a person's functional capacity. Components of health related physical fitness are identified as muscular strength, endurance, flexibility, cardiorespiratory endurance and body composition. 8

To enjoy an optimum state of health and physical fitness, exercises are quite necessary. Exercises are helpful in maintaining the sound body throughout life. Health and fitness afford the people an opportunity to live longer and they add to the quality of every day life. 9


Physical education has long believed that exercise is essential to maintain good health. During the past twenty years a great deal of evidence has been reported by the medical researches supporting the value of vigorous exercise for the promotion of health. Health-related physical fitness components are those, development of which enrich one's health and on the other hand which are related to certain diseases.\(^\text{10}\)

The World Health Organisation defined health as a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity and fitness as the ability to perform muscular work satisfactorily and the Centers for Disease Control defines it as a set of attributes that people have or achieve that relates to the ability to perform physical activity.\(^\text{11}\) A recent consensus conference also defined fitness, in a broad sense, so as to include both physical fitness and physiological fitness, which extends to biological systems influenced by the level of habitual physical activity.\(^\text{12}\)

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YOGIC EXERCISES

Yoga is the universal religion, a way of life, which is above all castes, creeds, languages, regions and nations. Yoga consists of eight Angas or Parts, namely, Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dyana and Samadhi. All these put together stands for yoga. Yamas and Niyamas are to be given to the children upto the age of puberty, that is, upto twelve years of age. Asanas and Pranayama constitute the aspect of physical training in the field of yoga. These should be introduced only from the age of twelve onwards and never before that age. Children under twelve possess a very mobile spinal column. Asanas are supplying agents and the children under twelve, positively need only strengthening exercises and not supplying exercises at all.  

All the effects and benefits of strenuous physical activities and training are claimed to be most comfortably attained through yogic practices. Likewise, ability and health are not much of an impediment in performing yogic practices.  

Yoga is defined as the silencing of the mind's activities which leads to complete realisation of the intrinsic nature of the supreme being.  

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people of all ages. The study of yoga is fascinating to those with a philosophical mind. It is a practical holistic philosophy designed to bring about profound state of well being to body, mind and spirit. Yoga is also said to be harmony. It is thus an integral subject, which takes into consideration man as a whole. The aim of yoga is to devise ways and means of helping the body and mind to maintain their state of balance. Yoga helps one to achieve better emotional and intellectual concentration.

According to Indira Devi\textsuperscript{15} the aim of yogasanas is not only to develop the muscles and the body but also to regulate the proper activities of all the internal organs and glands that affect the nervous system. This controls our well being to a much greater degree than we actually suppose.

Narendra Prasad, stated that yoga has played a key role in changing the prisoners mentality, developing their personality and in converting them into law-abiding citizens.\textsuperscript{16}

The yogic physical culture relies on training the organism to work more efficiently conserving energy input.\textsuperscript{17} Yoga deals with health, strength and conquest of the body.


\textsuperscript{16}Narendra Prasad, "Yoga Changes Outlook of Convicts in Madya Pradesh Jails", \textit{The Indian Express} (13 June, 1995).

\textsuperscript{17}V.S. Sethu Madhava Rao, "Yogic Biometer Exercises", \textit{International Journal of Physical Education}, XIX-3 (1982).
Next, it lifts the veil of difference between the body and the mind. Asanas purify the body and mind and have preventive and curative effects. They are innumerable, catering to the various needs of the muscular, digestive, circulatory, glandular, nervous and other systems of the body. It brings health, beauty, strength, fitness and expression, calmness of the nerves and happy disposition.

When Pranayama and asanas are done together the perfect posture is not disturbed. One soon realises that when asanas are well performed, pranayamic breathing automatically sets in. The practice of Pranayama develops a steady mind, strong will power and sound judgement.\textsuperscript{18}

Pranayama is the fourth anga in the field of yoga. This is highly beneficial to increase the longevity. The purpose of Pranayama is to make the respiratory system function at its best. The respiratory system is the gateway to purifying the body mind and intellect.\textsuperscript{19}

Suryanamaskar signifies paying homage to Lord 'Sun'. It is a very ancient part of indigenous system of exercise. One standing facing east in the early morning, offers prayer to Lord Surya with Suryanamaskar. Suryanamaskar is a graceful combines

\textsuperscript{19}Ibid., p. 17.
sequence of ten positions. As a matter of fact these ten positions are ten different asanas. If suryanamaskar exercise is done regularly and systematically, the result will be a remarkable for body, mind and general feeling of youthfulness.

**PHYSICAL EXERCISES**

Fitness is a key to enjoy life. Exercise is an important of a total fitness programme. Modern living has taken all the exercises out of our lives and so in order to get fit and have to put it back again, regular exercise is necessary to develop and maintain an optional level of health, performance and appearance. It makes feel good, both physically and mentally. It gives psychological lift and strengthens a sense of accomplishment. Looking young is a reflection of good health. Regular physical exercises enhance the function of the joints; increases the sense of physical well-being and promotes a sense of feeling good; increases physical working capacity by increasing cardiorespiratory fitness, muscle strength and endurance and decreases the risk of serious diseases that could lead to early disability and death. It enhances the metabolic rate and helps to reduce obesity and bone loss. Too much fat and not enough exercise may increase the risk of heart disease, diabetics, arthritis and back problem. Ukoho\(^{20}\) expresses that exercise has shown to improve health prospects in various ways. It helps to reduce

body fat and overall weight and reduce blood pressure. Exercise ensures better digestion, respiration and efficient blood circulation. It has been suggested that the improved strength, balance and flexibility resulting from participation in exercise programme reduce the probability of injuries among older people as well as back injuries among certain occupational groups.

The lack of exercise by most Americans is a major contributing factor to many chronic diseases. Physicians are now prescribing exercise for patients just as they would drugs. Compliance with any exercise programme depends on realizing the needs and goals of the individual. The fundamental principles of an exercise prescription apply to all persons regardless of age, sex, or level of fitness. A systematic manipulation of the components of frequency, duration, intensity and progression with periodic reevaluation allows the programme to be individualized. The guidelines for the programme should include all of the components of health-related physical fitness. These include cardiorespiratory endurance, body composition, muscular strength endurance and flexibility. A programme for exercise should fit into the life style of the patient and be a life long prescription.21

Exercise tolerance is increased, risk factors are controlled and even progression and regression of coronary artery disease can be influenced by training and diet. Psychological effects include lessened depression and reduced anxiety. Regular physical activity is important for maintenance of health and may lead to a better quality of life. Activities should include dynamic endurance exercises and properly selected calisthenics. Circuit training of moderate intensity is helpful for promoting muscle strength. Training has to be followed not less than two to three hours per week in at least three sessions at an intensity corresponding to 60 to 85% of the maximum heart rate achieved in a symptom limited maximum exercise test. Cardiac patients at high risk should exercise at lower intensities.22

Exercise improves and promotes physical fitness, muscle tone and body condition. Regular vigorous exercise also increases the efficiency and capacity of the heart and lungs and helps people maintain their proper weight. Individuals who are physically fit tend to be slimmer than those who are unfit. They have greater resistance to disease and recover faster if they do become ill. Physically fit people may be happier and more alert and

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relaxed. They also may be able to resist the effects of aging better than those who are physically unfit.\textsuperscript{23}

Physical fitness is a personal responsibility. Most people are physically unfit simply because they do not get enough exercise. Most health experts agree that people should exercise at least three times a week to maintain desirable fitness.

The breathing exercises will definitely give health the required boost.\textsuperscript{24} A daily walk is the best way to stay in shape, both physically and mentally. There is nothing like exercise to keep fit.\textsuperscript{25}

Bucher and Wuest\textsuperscript{26} stated that the following five benefits of exercises:

1. Exercise maintains muscle tone.
2. Exercise relieves nervous tensions and provides relaxation
3. Exercise aids digestion
4. Exercise helps to control obesity and
5. Exercise improves functioning of the lungs by deepening of respiration.

\textsuperscript{23}The World Book Encyclopedia, \textit{Loc.cit.}

\textsuperscript{24}M. Bhasin, \textit{The Indian Express} (22 October 1997).

\textsuperscript{25}M. Bhasin, "Looking Good", \textit{The Indian Express} (2 November 1997).

\textsuperscript{26}Charles A. Bucher and Deborah A. Wuest, \textit{Foundations of Physical Education and Sports} (St. Louis: Times Mirror / Mosby College Publishing, 1987), pp. 153-54
In addition to the above benefits other advantages of exercise cited by experts include the following:

1. Added strength and endurance help in performing daily tasks with less fatigue.

2. Better movement accrues for the human body.

3. Exercise helps in building a desirable self-concept and

4. Exercise helps to prevent accidents.

Macleod\textsuperscript{27} observes, over the last thirty to forty years, with increasing momentum in the last decade, exercises has been recommended in health conscious societies as an essential element in a normal life style both to maintain a good health and to alleviate disease, disability and depression.

During physical exercise energy stores are used up at a rate depending on the intensity of the exercise and on the availability of oxygen and the rate of production of waste products is correspondingly increased.

Exercises combined with sensible food intake appears to be most effective,

most natural probably the safest method of weight control, especially for those who are only moderately overweight. The amount of daily exercise necessary to provide weight maintenance benefits is dependent upon occupational physical activity and most likely upon other individual differences.

**Yogic Practices and Physical Exercises**

Sujatha believes that yoga is more beneficial in the long run than other physical exercises, which rely on the number of rapid movements for effective exercising. Yoga is the only science that controls both body and mind and that it has no religious barriers.

Yoga practices are generally looked upon as exercises. Asanas lead to serenity of mind whereas exercises lead to exertion of the body. Gore after making a study of the difference between asanas and physical exercises, states as follows:

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28 Sujatha, "What the expert says", *The Hindu* (26 June, 1999)

Asana

1. The movements are slow, steady and smooth to attain and to release in any asana.

2. The effect of asanas is more on the trunk part proprioceptive and visceroreceptive mechanisms are given free scope.

3. Movements of the spinal column are made in almost all directions and with their possible range of movements.

4. There is no purpose of muscle building in asanas.

5. The muscular tensions are reduced to a minimum. Thus there is no strain on the muscles and nerves.

6. After a session of asanas, one feels fresh, relaxed and energetic with the sense of well being.

7. As the voluntary efforts are withdrawn in the final stage of asanas, the activity of the motor cortex is gradually reduced or even withdrawn completely. Now a proper inner awareness is automatically developed where one can observe or experience various sensory inputs coming from proprioceptor and visceroreceptors.

Physical Exercise

1. Exercises are performed in a fast or speedy manner leading to exertion and fatigue.

2. Movements of extremities are more prominent and also important while exercise to the trunk is secondary in exercise.

3. In exercises, only a particular movement is repeated to develop strength and skill of some part of the body.

4. Heavy muscle masses are built through exercises for more and more muscular strength.

5. The voluntary efforts in the stretching of muscles increase the tension in muscles and give rise to painful sensations.

6. When the exercises are finished, one feels tired and needs rest.

7. In an attempt to achieve the goal in exercises, one makes a lot of voluntary efforts. The activity of the motor cortex dominates all the lower centers and even exceeds limitations of the body. One remains aware of the external things since the reaction is to be measured outside the body with the judgement of exteroceptors.
Psycho - Physical Health and Fitness

Lawther\(^{30}\) stated that sports psychology is an area, which attempts to apply psychological facts and principles to learning performance and associated human behavior in the whole field of sports.

Regular exercise makes one feel good both physically and mentally. It gives a psychological lift and strengthens the sense of accomplishment. Looking young is a reflection of good health. If one does not exercise at all, he will be more likely to die young and suffer from a wide range of diseases. Psycho-physical health is the greatest concern of modern man. Participation in activities that promote physical fitness also had been shown to reduce depression and anxiety and to increase a person's self image and ability to deal with stress in a positive manner.

Yoga eliminates psycho-physical tensions. It is known fact that a regular practice of physical exercises and yogasanas relaxes the mind and considerably brings the mental stress and physical strain. Yogendraji\(^{31}\) stated that, relaxation quickly recovers, regalvanizes the nerve centers, collects the scattered forces, reinvigorates the whole body.


Jastin and Abbrechli\textsuperscript{32} stated that there had been growing realization of the importance of self concept in recent years for understanding and predicting human behavior, which plays an important role in sports performance. Self-concepts selected for the investigation is not an inherited quality, but it is formed as a result of one's experience and reaction to the environments. As the child grows, he learns not only about his surroundings but also about himself.

The psycho-physical methodology of yoga is becoming more and more popular in the present times and also increasingly subjected to scientific research.

**STATEMENT OF THE PROBLEM**

The main purpose of the study is to find out the effect of selected yogic practices and physical exercises on health related physical fitness and psychological variables among the High School boys.

Physical education courses help to build up physical fitness by allowing students to increase their endurance, strength and flexibility.\textsuperscript{13} The state government is planning to introduce yoga in schools as part of the curriculum, said Health Minister, Veerasamy.\textsuperscript{14}

The autobiography of a yogi, forms part of the prescribed curriculum today in over hundred universities and colleges all over the world.\textsuperscript{35}

**HYPOTHESIS**

It was hypothesised that there would be a great effect of training on the selected criterion variables due to yogic practices and physical exercises; and also, there would be very significant difference in the effect of these two treatments.

**DELIMITATIONS**

1. For the purpose of the study the students of Madras in Tamil Nadu were selected.

2. The age of the subjects selected for the study ranged from fifteen to seventeen years only.


\textsuperscript{34}N. Veerasamy, “Government Plans to Introduce Yoga in Schools”, \textit{The Indian Express} (18 March, 1997).

\textsuperscript{35}Courses in Kriya Yoga”, \textit{The Indian Express} (20 April, 1997).
3. Selected yogasanas were given as yogic practices.

4. Selected exercises were given as physical exercises.

5. The health-related fitness variables such as flexibility, trunk strength, functional strength, speed and agility, cardiorespiratory endurance and body composition were tested.

6. For testing the psychological variables such as anxiety and self-concept questionnaire was applied and data collected.

LIMITATIONS

1. The nutritional habit and the Anthropometric measures were not taken into consideration.

2. Only limited physical exercises and yogasanas were taken into consideration.

3. Only two psychological variables were subjected to analysis.

DEFINITION OF THE TERMS

Yoga

Yoga is the science of man and is therefore, entirely concerned with the application of its technology in daily life.\(^{36}\)

The practices enjoined in yogic literature and / or handed down in different traditions are called yogic exercises.\(^{37}\)

Yoga is as old as India itself. It was recorded in Vedas "Yug" to mean to join or to yoke. Yoke was the basic symbol of India at that time and it to be so. Yoking the oxen is a primitive deed of Harappa pre historic civilization of India.\(^{38}\)

**Exercise**

Exercise comprises all movements designed to act on the muscle, the blood vessels, the nervous system, the skin and the abdominal organs.\(^{39}\)

**Flexibility**

Flexibility is the movement of a joint through the full range of motion.\(^{40}\)

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Strengt

Muscular strength is defined as the contraction force of muscles and is pre
requisite to muscle movement.\(^4^1\)

Agility

Agility is the ability to move quickly and efficiently. Agility refers to the
controlled ability to change position and direction rapidly and accurately.\(^4^2\)

Speed

Speed is the capacity of the individual to perform successive movements of the
same pattern at a fast rate.\(^4^3\)

Endurance

Muscular endurance is the ability of muscle or of muscles to maintain a sub
maximal contraction over a period of time.\(^4^4\)

\(^4^1\)Frank M. Verducci, Measurement Concepts in Physical Education (St. Louis: The

\(^4^2\)James S. Bosco and Williams F., Gustafson, Measurement and Evaluation in Physical

\(^4^3\)Harold M. Barrow and Rose Mary Mc Gee, A Practical Approach to Measurement in

\(^4^4\)Carl E. Willgoose, Evaluation in Health and Physical Education (New York: Mc
Cardiorespiratory Endurance

Cardiorespiratory endurance is the ability to carry out load of relatively prolonged period.\textsuperscript{45}

Body Composition

Body composition is concerned in part with the obesity of the individual.\textsuperscript{46}

Anxiety

Anxiety is a complex emotional state characterized by general fear or forbidding usually accompanied by tension. It is related to apprehension and fear and is frequently associated with failure, either real or anticipated.\textsuperscript{47}

Self-concept

Encyclopedia of psychology defines self-concept as the totality of attitudes, judgement and values of an individual relating to his behavior, abilities and qualities\textsuperscript{48}

\begin{itemize}
\item \textsuperscript{45}Morehouse and Miller, \textit{Physiology of Exercise} (St. Louis: The C.V.Mosby company, 1976), p. 67.
\item \textsuperscript{46}Frank M. Verducci, \textit{Op.cit.} p. 221.
\end{itemize}
SIGNIFICANCE OF THE STUDY

1. This study will be great use in designing programme to improve the health related physical fitness of the High School students.

2. The results and findings of this study will establish the relationship between physical and psychological abilities of the students.

3. The results of this study might be useful to those involved in research in the areas of health, physical fitness and psychological aspects of school students.