CHAPTER – 1
INTRODUCTION

Physical fitness is a basic foundation of most of the activities/ sports/ daily domestics tasks undertaken by an individual in his daily life. If a person body grows soft and inactive and he fails to develop physical fitness, he is undermining his capacity, for work, which is vital for life and society in a welfare state. Health improvement work/ physical education programs with every strata of age groups is very important if we want to get desired result of fitness. In India adequate emphasis is not laid on the development of physical fitness of the nation. There is very small percentage of people who are really conscious about, their physical fitness. In the era of competitions, every nation competes with others it may be in managing the Government, Our Laboratories, Research Establishment, Industries, Agricultural Products, Safe Guarding our Borders and finally keep our nation's head high by achieving high sports performance/winning medals in the international sports competitions in any age group competition. This can be achieved only if the nation keeps the Physical fitness of it's citizens at the optimum throughout their life.

Every nation's aim is to take care and show concern about the health of their citizens and to enhance their physical fitness level to improve their condition of work in their every day life. The cessation, with age of normal work activity and isolation from production have a negative effects on people's health lowering their functional abilities. In every nation, the elderly people with knowledge and experience at their back are interested in continuing their work activity according to their abilities. Therefore it is important that they should retain their health, strength and work capacity for as long as possible, bearing in mind human aims and the requirements of every society. It is the
duty of the nation to adopt numerous measures encouraging the useful work of elderly people.

Today with scientific and technological progress, a person very often has to master new motor skills and qualities. The development of an increasing number of man assisting mechanical devices accelerates the pace of life introducing considerable speed in the process of production in transport and everyday life. Work demands great attention, precision and rapidity, high intellectual and physical tension at the same time automation rides a person of numerous physical tensions and creates conditions of hypokinises importance, which on the one hand facilitates the expansion of the body's adapted abilities and the development of the necessary physical qualities and motor skills and on the other hand promotes activities which counts the hypokinises effects and diseases connected with it.

Participation in Physical fitness programs is particularly important for elderly people because exactly at this age that latent and subsequently evident disturbances in the body appear and first of all in functional co-ordination. Observations over elderly people who have attended or continued fitness training programs for a number of years testifies to considerable improvement of their motor activity and health, along with the improvement of their work capacity, endurance, speed, agility and flexibility. Active participation in physical education programs even after long break enhances the body fitness.

In recent years elderly people have begun to be drawn in sports competitions accessible to them, regulated, depending on age and other distinctive fitness of the participation. Veteran competitions for men and women are indicated to it. The growing interest of people of this age group to take part in competitions is an indication of their striving for motor and emotional activities in order to fight aging and to show their work capacity.
Regular use of physical exercise and conditioning, tones up the body of those who engage in physical education programs, raise their natural immunity, improve the functions of body systems and work capacity and prevent early aging.

People who lead a sedentary life suffer more often from coronary disease and hypertension than people who regularly take part in physical exercise. The role of physical exercise is very important in prevention of diseases of respiratory organs, metabolic disturbances, disorder of the nervous system and many other diseases.

According to Russel R. Pate (1985) health-related physical fitness is the ability to perform strenuous physical activity with vigour and without excessive fatigue, and demonstration of physical activity traits and capacities that are consistent with minimal risk of developing hypokinetic diseases.

In brief, physical fitness is an integral part of total fitness and this is being gradually recognised as a vital element in good living. In a charter, UNESCO (1978) while stressing importance of physical fitness, proclaimed that everyone has a right of participation in physical education and sports irrespective of race, colour, sex, religion and political affiliations. This simply implies that physical fitness is essential for everyone because everyone is expected to perform his optimum throughout one's life.

According to Edmundson (1953) there are degrees of fitness. The fitness of a healthy man of eighty years age is something entirely different from that of a young sportsman. Physical fitness refers to the ability to carry out daily tasks with vigour. That means the degree of fitness one has to develop and maintain would depend upon its utility. The needs of the individual are to be taken care of. An athlete preparing for international competitions would need much more
fitness than a class room teacher. All professional such as doctors, engineers, 
executives and others need physical fitness, however, the degree of fitness 
required would vary depending upon the profession of the person concerned.

Highmore (1956) conducted a study to find comparison between the 
Thurstone and Halzinger Factorial techniques. The subjects were 200 war 
veterans, whose average age were 30 years. The analysis, based on nine athletic 
tests drawn from preliminary battery of 14 items. All the results were reduced 
to standard (Z) scores. The composite score (criterion) was also computed. 
Then all the tests were inter-correlated using the Bravais Pearson method and 
their correlation with composite score was also determined. The results 
revealed clearly a general factor together with three group factors.

Bitcon (1966) constructed norms for the four items test for high school 
boys in the state of Iowa and also established validity and reliability for this test 
by utilizing a correlation technique with the AAHPER youth fitness test. The 
four items test and the AAHPER youth fitness test were administered to eighty 
four high school boys. Composite scores were computed and then correlated to 
determine the degree of relationship between the two tests. The test-retest 
technique was used to determine the reliability of the four item test. The co­
efficient and correlation between AAHPER physical fitness test and composite 
score was computed to be 0.934. The co-efficient of correlation between the 
test-retest composite scores of the four items test was 0.961. Percentile norms 
were constructed for each of the items in the four items test. A percentile norm 
table was also constructed for composite.

Johnson (1956) is of the opinion that fitness should be considered to 
exist on a continuum or scale, ranging from very low levels to maximum 
levels. The various levels will be controlled entirely by the individual and is 
affected by the amount and kind of regular physical activity and his mental and 
emotional states.
Factors which determine the state of fitness are many, but more important among them are age, sex and life style. Cooper (1970) emphasizes that age is not a major obstacle to fitness. One can remain fit in every age bracket. As the person gets older his involvement in physical activities is reduced, the efficiency of his heart and lungs also decreases. To maintain fitness, the amount and intensity of exercise taken should be to the extent that undue fatigue is not caused. Wrong type of activity or over-exertion can have disastrous results. Cooper sums-up well stating that exercise is the medicine that keeps countless people alive. But like all medicines, it must be taken according to prescription.

Average age of Indian people with comparison to Western and European is less reason being the general awareness about the physical fitness among Indians is not up to that mark which the people of those countries have. The example of this is readily available when President Clinton visited New Delhi during his friendly visit to India he was provided with fitness equipment attached to his that bedroom which shows the concern of big nation about the fitness of their head of the state. Even in USA, there is a President Council on health and physical fitness with comparison to this in the under developed countries the importance to health related fitness is not given. Even the scientific evaluation procedures are not available in these countries.

Getting older is a normal progression of life, a progression that we all go through, as all living being do. An important thing to understand and remember is that, by growing older we are not required to grow weaker and lack fitness. Once you understand the importance of exercising and role of physical fitness in growing older, you eventually make your body younger from within, despite the old age.
Exercises that can be done with old age

In the context of healthy ageing, a lot of potential exercises have been recommended by the recognized geriatrics societies around the world. In general, the aim of these exercises is multi focal and could include various aspects like, strengthening the muscles, improving the balance of the physiological functioning, stretching and relaxing the joints and the muscles and finally building up power and endurance. In this context we would be focusing on some of the exercises that can be useful from ageing and fitness point of view.

Building up strength with old age

On illustrative understanding, the primary aim of these exercises could be to improve the metabolism and the power of the ageing muscle, this not only helps to keep the diseases at bay but also ensures that your performance levels are at their optimum best.

Strength exercise for the abs and the lower regions

If you are looking at strengthening the abdominal and the lower region of the body then you can pursue the following exercise. First of all place pillow at the back side of the chair. Sit in a such a way that you are facing the front, then bend the knees, while maintaining the grounding of your feet, leaning back on the pillow ensure that your shoulders and back remain straight.

Followed by this, raise your body forward making sure that your back is no longer touching the pillows. Stand up from this position and finally make sure you sit down very slowly and gently. A important point is that this exercise should be done with the minimum use of hands. Make 10-12 reps, repeat the exercise three times in a week.
People all over the world are becoming more and more health conscious, the priority has been shifting from everything else to the fact that the most important thing in life, is to keep oneself in shape and fit, to enjoy things in life. Keeping fit, means capturing the days of youth and all the fun of those days alive. Man can give up everything for the sake of keeping himself young. In spite of all the kinds of treatments that have been flourishing the market, the people have not been driven crazy, they still trust the basic natural way of keeping in shape, i.e., by exercising regularly and maintaining a working routine. It is very necessary to go for a complete fitness training, which takes care of all the aspects of making a fit body, beginning from making note about the right kind of diet and right kind of exercises which suits the physical conditions of the body.

The several benefits that are derived from the regular physical fitness workouts. Workout chalked out in correspondence to the physical needs of the body, if observed regularly, may help the body get into the desired shape and develop resistance power in the body. The major benefits derived from fitness training programs are bringing down the weight of the bulky body to right proportion, increases the resistance power in the body which results in decreasing the risks of getting attacked by diseases, helps in cutting down the fat from the body and finally gives the body a toned shape. Not only these, but also helps in frequently getting caught in depressions, cures insomnia by helping enhance the sleeping routine, releases positive vibes in the body and thus increases self-esteem and apart from these also gives more energy and stamina to the body.

Fitness training also helps in increasing the metabolism of the body, which means more muscles using more calories in body. The training helps increase fit muscles in body, by burning the calories. After the body grows
senile, the body loses its muscles and the metabolism of the body slows down gradually, which means the calories of the body is not burnt and get concentrated which results in increasing the weight of the body. So to keep the metabolism from slowing down and not letting the fat concentrate in the body one can opt for some fitness training and take some aerobic activities. Taking exercises not only helps one maintain a strong and toned look from outside but also helps in keeping the mental peace and content. It also helps in reducing symptoms of menopause, cardiac diseases and keeps the level of cholesterol in control. And in all it gives the body a much toned shape, which not only looks strong but is stronger than what it looks like.

The Importance of Physical Activity

Regular activity, fitness and exercise, are critical for the health and well being of people of all ages. Research shows that everyone, young or old can benefit from regular exercise, either vigorous or moderate. Even very old adults can improve mobility and function through physical activity. It should be a priority for everyone. Millions of people suffer from chronic illnesses, that can significantly improve through activity. Exercise reduces the risk of heart disease, diabetes, colon cancer, and high blood pressure. People who are active outlive those who are inactive.

Despite the well known benefits, most adults and children lead relatively sedentary lifestyles. They are not active enough. A sedentary lifestyle is defined as engaging in no leisure-time physical activity (exercises, sports, physically active hobbies) in a two-week period. Typically all of older people lead sedentary lifestyles. More than one-third of young people in grades 9-12 do not exercise regularly. They tend to watch too much television.
The cost to the medical establishment is in the billions for treatments of diseases, which could be lessened with exercise. Regular exercise should be 30 mins, 5 days a week. Or 20 mins of vigorous exercise 3 times a week. Physical activity maintains muscle strength, joint structure, joint functioning and bone health. Exercise has an effect on mental health as well, especially among young people. It increases the capacity for learning, increases self esteem and reduces anxiety and stress. Sports can introduce skills such as teamwork, self-discipline, sportsmanship, leadership and socialization. Lack of recreational activity may contribute to making young people susceptible to gangs, drugs or violence.

Obesity has become a nationwide epidemic. Regular activity, along with a nutritious diet, that incorporates portion control is the key to maintaining a healthy weight. Public and private sectors need to band together to encourage more activity. Walking programs for schools, worksites and the local community are some examples. The most important change has to come from the individual and families. Every person must realize the benefits of physical activity for the mind and body. Then commit to a lifestyle that is active for the whole family.

**Fitness for the over 50s**

Only around one in 10 Australians over the age of 50 years exercises enough to gain any cardiovascular benefit. Some estimates suggest that about half of the physical decline associated with old age may be due to a lack of physical activity. Arguably, people over the age of 65, more than any other age group, require adequate fitness levels to help them recover from illness and reduce their high risk of diseases one significant problem of old age is loss of independence. Exercising regularly and attaining a reasonable degree of physical fitness would help an older person meet the demands of their daily routine. Various studies show that it is never too late to get fit.
The human body responds to exercise, no matter what its age, and the health benefits are multiple. If you are over 50 years, obese, suffer from a chronic illness or have been sedentary for some time, it is a good idea to see your doctor before embarking on any new exercise routine.

The physical decline of older age

About half of the physical decline associated with ageing may be due to a lack of physical activity. Without regular exercise, people over the age of 50 years can experience a range of health problems including:

- Reduced muscle mass, strength and physical endurance
- Reduced coordination and balance
- Reduced joint flexibility and mobility
- Reduced cardiovascular and respiratory function
- Reduced bone strength
- Increased body fat levels
- Increased blood pressure
- Increased susceptibility to mood disorders, such as anxiety and depression
- Increased risk of various diseases including cardiovascular disease and stroke.

Common myths

Many older people believe that exercise is no longer appropriate. Some of the common misconceptions that prompt older people to abandon physical activity include:
Older people are frail and physically weak.

The human body doesn't need as much physical activity as it ages.

Exercising is hazardous for older people because they may injure themselves.

Only vigorous and sustained exercise is of any use.

Other barriers to exercise

Other factors that may contribute to the lack of physical exercise among people over 50 years include:

A preference for sedentary activities, such as reading and socialising.

The relatively high cost of some sports.

Many sports and activities tend to attract young adults, so older people may feel unwelcome.

The physical fitness marketplace has failed to include and attract older people.

Benefits to the older body

Some of the many benefits of regular exercise for older people include:

**Muscle** - the amount and size of muscle fibres decreases with age. Some studies suggest that the average body loses around 3kg of lean muscle every decade from middle age. The muscle fibres that seem to be most affected are those of the 'fast twitch' variety, which govern strength and speedy contraction. There is evidence to suggest that these changes are related to a sedentary lifestyle, rather than age. Muscle mass increases sharply in the older person after regularly exercising for a relatively short period of time.
Bone - bone density begins to decline after the age of 40, but this loss accelerates around the age of 50 years. As a result of this bone loss, older people are more prone to bone fractures. Estimates suggest that one in four women over the age of 80 years will fracture their hip. Exercise reduces the risk of bone loss and osteoporosis. Weight bearing exercise, in particular, helps to keep bones healthy and strong.

Heart and lungs - moderate intensity exercise is most favourable: for example, exercising at about 70 per cent of the individual's maximum heart rate (220 beats per minute minus your age). Studies show that cardiorespiratory fitness takes longer to achieve in an older person than a young person, but the physical benefits are similar. Regardless of age, people are able to improve their cardiorespiratory fitness through regular exercise.

Joints - the joints of the body require regular movement to remain supple and healthy. Regular flexibility exercises also strengthen the surrounding soft tissue (such as tendons and ligaments) and reduce the risk of injuries. In particular, people with arthritis can benefit enormously from a gentle exercise routine that includes working joints through their full range of motion.

Body fat levels - carrying too much body fat has been associated with a range of diseases including cardiovascular disease and diabetes. Regular exercise burns kilojoules, increases muscle mass and speeds the metabolism. Together, these physiological changes help an older person maintain an appropriate weight for their height and build.

MEASURING YOUR HEART RATE

Heart rate is widely accepted as a good method for measuring intensity during running, swimming, cycling and other aerobic activities. Exercise that doesn't raise your heart rate to a certain level and keep it there for 20 minutes won't contribute significantly to cardiovascular fitness.
The heart rate you should maintain is called your Target Heart Rate. There are several ways of arriving at this figure. One of the simplest is: Maximum Heart Rate \((220 - \text{age}) \times 70\%\). Thus, the target heart rate for a 40 year-old would be 126.

The decision to carry out a physical fitness program cannot be taken lightly. It requires a lifelong commitment of time and effort. Exercise must become one of those things that you do without question, like bathing and brushing your teeth. Unless you are convinced of the benefits of fitness and the risks of unfitness, you will not succeed.

Patience is essential. Don't try to do too much too soon and don't quit before you have a chance to experience the rewards of improved fitness. You can't regain in a few days or weeks what you have lost in years of sedentary living, but you can get it back if you persevere. And the prize is worth the price.

**DEFINING FITNESS**

Physical fitness is to the human body what fine tuning is to an engine. It enables us to perform up to our potential. Fitness can be described as a condition that helps us look, feel and do our best. More specifically, it is: "The ability to perform daily tasks vigorously and alertly, with energy left over 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 circumstances where an unfit person could not continue, and is a major basis for good health and well-being."

Physical fitness involves the performance of the heart and lungs, and the muscles of the body. And, since what we do with our bodies also affects what we can do with our minds, fitness influences to some degree qualities such as mental alertness and emotional stability.
As you undertake your fitness program, it's important to remember that fitness is an individual quality that varies from person to person. It is influenced by age, sex, heredity, personal habits, exercise and eating practices. You can't do anything about the first three factors. However, it is within your power to change and improve the others where needed.

KNOWING THE BASICS

Physical fitness is most easily understood by examining its components, or "parts." There is widespread agreement that these four components are basic.

**Cardiorespiratory Endurance** - the ability to deliver oxygen and nutrients to tissues and to remove wastes, over sustained periods of time. Long runs and swims are among the methods employed in measuring this component.

**Muscular Strength** - the ability of a muscle to exert force for a brief period of time. Upper-body strength, for example, can be measured by various weight-lifting exercises.

**Muscular Endurance** - the ability of a muscle, or a group of muscles, to sustain repeated contractions or to continue applying force against a fixed object. Pushups are often used to test endurance of arm and shoulder muscles.

**Flexibility** - the ability to move joints and use muscles through their full range of motion. The sit-and-reach test is a good measure of flexibility of the lower back and backs of the upper legs.

**Body Composition** is often considered a component of fitness. It refers to the makeup of the body in terms of lean mass (muscle, bone, vital tissue and organs) and fat mass. An optimal ratio of fat to lean mass is an indication of fitness, and the right types of exercise will help you decrease body fat and increase or maintain muscle mass.
Your exercise program should include something from each of the four basic fitness components described previously. Each workout should begin with a warmup and end with a cool down. As a general rule, space your workouts throughout the week and avoid consecutive days of hard exercise.

Today, there is a growing emphasis on looking good, feeling good and living longer. Increasingly, scientific evidence tells us that one of the keys to achieving these ideals is fitness and exercise. But if you spend your days at a sedentary job and pass your evenings as a "couch potato," it may require some determination and commitment to make regular activity a part of your daily routine.

Exercise is not just for Olympic hopefuls or supermodels. In fact, you're never too unfit, too young or too old to get started. Regardless of your age, gender or role in life, you can benefit from regular physical activity. If you're committed, exercise in combination with a sensible diet can help provide an overall sense of well-being and can even help prevent chronic illness, disability and premature death.

If you're interested in improving your overall conditioning, health experts recommend that you should get at least 30 minutes of moderately intense physical activity on all or most days of the week. Examples of moderate activity include brisk walking, cycling, swimming or doing home repairs or yard work. If you can't get in 30 minutes all at once, aim for shorter bouts of activity (at least 10 minutes) that add up to a half hour per day.

Instead of thinking in terms of a specific exercise program, work toward permanently changing your lifestyle to incorporate more activity. Don't forget that muscles used in any activity, any time of day, contribute to fitness. Try working in a little more movement with these extras:
* Take the stairs instead of the elevator.
* Park at the far end of a parking lot and walk to the office or store.
* Get off public transportation a few blocks before your stop.
* Get up from your desk during the day to stretch and walk around.
* Take a brisk walk when you get the urge to snack.
* Increase your pace when working in the house or yard.
* Mow your own lawn and rake your own leaves.
* Carry your own groceries.

If you're ready to move up to more vigorous activity, remember that "no pain, no gain" isn't exactly true. The best-laid plans of many a fitness program have been ruined by too much enthusiasm on the first day and sore muscles on the second. A goal is an end point, not a beginning, so work toward your goal gradually. Once you're in better shape, you can gradually increase your time or distance or change to a more vigorous activity.

If you have cardiovascular disease, you should check with your physician before undertaking more vigorous activity. Likewise, if you're a man over 40 or a woman over 50 with risk factors such as smoking, high blood pressure, high cholesterol or obesity, seek your doctor's advice.

The key to a lifetime of fitness is consistency. Here are some tips to help you make exercise a habit.

* Choose an activity you enjoy.
* Tailor your program to your own fitness level.
* Set realistic goals.
* Choose an exercise that fits your lifestyle.
* Give your body a chance to adjust to your new routine.
* Don't get discouraged if you don't see immediate results.
* Don't give up if you miss a day; just get back on track the next day.
* Find a partner for a little motivation and socialization.
* Build some rest days into your exercise schedule.
* Listen to your body. If you have difficulty breathing or experience faintness or prolonged weakness during or after exercise, consult your physician.

It's a good idea to choose more than one type of exercise to give your body a thorough workout and to prevent boredom. Also, you might want to choose one indoor exercise and one outdoor activity to allow for changes in your schedule or for inclement weather. Very few people live in a climate that's temperate year-round. But weather extremes don't have to interfere with your exercise routine if you make some minor adjustments.

**STATEMENT OF THE PROBLEM**

The problem is stated as:

“Construction and Standardization of Health Related Fitness Norms for Senior Citizens of Chandigarh”.

**DEFINITIONS OF THE TERMS**

1. **NORM**

   i) “An experimentally derived index which enables teachers to compare the achievement or status of their students with those of a similar groups. Norms are often assumed to be representative of some larger population.”

   (Barrow & Mc Gee, 1979)
ii) “Norm is a standard to which an obtained score may be compared. Test that have an accompanying set of norms are much more useful those do not.”

(Methews, 1979).

2. CARDIOVASCULAR ENDURANCE
i) "Cardiovascular endurance, also referred to as cardiorespiratory endurance and circulatory endurance, is a kind of physiological fitness demonstrated through an adjustment of the heart and lungs to prolonged physical exertion"

(Willgose, 1961)

ii) "Cardiovascular endurance is the ability of the circulatory and the respiratory system to adjust and to recover from the effects of exercise or work".

(Johnson & Nelson, 1982)

iii) "It is the ability which enable the sportsman to do a sports activities effectively without getting tired and to recover quickly from fatigue during and after the activity".

(Hardayal Singh, 1984).

3. BODY COMPOSITION

The interest in body composition is centered mainly on the presence of obesity, defined as excessive accumulation of body's total fat tissue.

4. SIT AND REACH

Measures the flexibility of the back and leg (hamstring muscle)

**Flexibility** : Range of movement about a joint for a position of extension to flexion on the opposite movement.
5. **MODIFIED SITUPS**

The test is meant to measure:

i) Muscular strength: The maximum force or tension that can be produced by the muscle group.

ii) Muscular endurance: The force produced by a muscle group for a prolonged period or to sustain a contraction for a longer duration.

**LIMITATION**

1. Factor such as diet, daily routine, life style, etc. could not be controlled in this study. This has been considered as limitation of the study.

2. No special technique was used to motivate the subjects during the administration of test.

**DELIMITATION**

1. The study was delimited to the Chandigarh elderly people whose age was above 65 years old.

2. Elderly people who are known to have any physical or organic deficiency were not included in study.

**SIGNIFICANCE OF THE STUDY**

People have started realizing the effect of physical fitness programmes which is loudly advocated by the medical experts, physical education teachers through the media. They emphatically say fitness programmes prevent heart attacks, other health diseases and improve the efficiency of the individual in performing daily routine work. But there is no evaluation system available for the elderly people to know about their physical fitness status to determine the effectiveness of any programme. It is essential to evolve a standard procedure...
to measure the achievement level, no effort so far have been made to formulate scientific evaluation procedure for elderly people. From many evaluation procedures their performance can be obtained in terms of numerical scores, it is necessary that a norm or standard scale be available to interpret such scores, without which the score may not convey much meaning. It will also help the elderly people to know their level of achievements in relation to the group. Thus motivate the elderly people to raise themselves to have better percentage level in comparison to their fellow citizens.

The study will provide the norms of health related fitness for elderly people of Chandigarh. It will also help in evaluating the present level of health related fitness of the elderly people. With the availability of norms, elderly people can determine the health related fitness status and know exact need of each individual. Further, this study will unfold phenomena of health related development among aged people.

OBJECTIVES OF THE STUDY

The following objectives were considered to the achieved.

1. To study the health related physical fitness level of Chandigarh senior citizens.

2. To develop the health related fitness norms of Chandigarh senior citizens.