Chapter -I

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People today have experienced more changes and crises then of any other generation. Advancement in modern technology has enabled our present day society to exist in a world where physical work is almost obsolete. We are constantly looking for ways to make life easier, that is, from the viewpoint of conserving effort and human energy.

Physical inactivity and increased sedentary nature of our daily living habits are a serious threat to the body, causing major deterioration in normal body functions. Such common and serious medical problems as coronary heart disease, hypertension, obesity, anxiety, depression and lower back problems have been either directly or indirectly associated with lack of physical activity.

Biologically man tends to conserve energy. Along with it, advancement in technology and automation, modern civilization consciously or subconsciously has become less active and lazier. The positive correlation between the increased coronary heart disease death rates is increasing, even though the cause and effect certainly cannot be established. As a result of sedentary life style, many people suffer from
hypo-kinetic diseases or diseases associated with lack of physical fitness and inactivity.

One of the serious health problems that children as well as adults are facing today is obesity. Obesity refers to the excessive accumulation of fatty tissue. The best defence against the development of hypo-kinetic diseases is to put the muscles, bones, joints, heart, lungs and various body systems to work on a regular basis through a systematic programme of exercise.

Physical fitness is one’s richest possession. It cannot be purchased. It has to be earned through a daily routine of physical exercise. It is evident that fit citizens are a nation’s best asset and weak ones are its liability. It is the responsibility of every country to promote physical fitness of its citizens because fitness is the basic requirement for most of the tasks to be undertaken by an individual in his daily life.

There many ways and means to improve one’s health and physical fitness. Routine physical exercise includes innumerable permutation and combination of exercise protocols. To name most popular ways: the aerobic dances, callisthenic drills, slow continuous running, brisk walking, laughter exercises, yogasanas, and so on. Each of these exercise have got its own do’s and don’ts. It is wise to involve in an exercise or
group of exercise to optimize the gain with a clear knowledge, what is to be developed. Knowledge of this sought helps to participants in involving themselves in a meaningful and most effective regiment of exercises, in turn optimize the gain.

Physical exercises are purposeful physical activities, designed for achieving desired physiological adaptations to improve physical fitness or performance. Physical exercises can be classified in several ways and one of the classifications is according to its effect on performance. This classification is considered as the most scientific and effective. Physical exercises also can be classified according to the muscle group being exercised and the equipment being used. Some exercise give immediate and direct effect on sports performance and some exercise give indirect and not immediate effect on performance. In physical education the exercises are classified in a different manner, for instance, calisthenics, demonstration, aerobic, etc.

Calisthenics

Calisthenics exercises are rhythmic bodily exercise, usually performed without apparatus. Theses exercise promotes strength, endurance, flexibility, and general well being by placing regular demands on various bodily systems. These exercises are designed to tone and
strengthen muscles and to promote general fitness. These exercises usually involve free movements. Calisthenics are a form of organized exercise consisting of a variety of movements performed without weights or equipments using the weight of one’s own body for resistance.

Aerobic exercises

The word aerobic is made up of two Greek words, ‘Aeros’ meaning air and ‘Bios’ meaning life. Aerobic exercise is vigorous enough to increase the body's need for oxygen and hence air intake and breathing rate increase. Aerobic exercise is done at a pace that allows an adequate supply of oxygen to reach the muscles as one work out. This type of exercise can be continued for 20 - 45 minutes without being exhausting.

It is consensus of modern world that, be it man, woman or child – aerobic exercising is beneficial for everyone. Apart from achieving proper body weight, it improves the general well-being of a person, making him/her absolutely fit. Carrying out aerobics has become the most happening workout trend among both youth and aged. In this fast-paced world, aerobics proves to be just the right option. A moderate intensity workout, it extends over a certain period of time and overloads the heart and lungs, making them work harder than the rest.
In aerobics, one uses large muscle groups repetitively for a sustained amount of time. The best part about aerobics is that one will enjoy doing it for an extended period of time. There are numerous types of aerobics in one can indulge. Some of the most popular types of aerobics exercises are aerobic dance, bicycling, rowing machine, in-line skating, fitness walking, jumping rope, running, stair climbing and swimming. In this study, the researcher opted to use most enjoyable means of aerobic workout, the aerobic dance.

There are different forms of aerobic exercises such as slow continuous run, cycling, swimming, skipping, etc. Aerobic dance is another form of aerobic exercises specially designed to develop the cardiovascular and metabolic system by structured and graceful body movements. These exercises also involve large muscle mass combined with rhythmic and graceful movements. Aerobic dances are also of different kinds and are broadly divided into four different types such as, high impact exercises, low impact exercises, step aerobics, and water aerobics. High impact exercises involve intense jumping actions that are synchronized with the rhythmic beats of the music being played. Low impact exercises are a type of dance aerobics involves less jumping action, but more of footwork which are coordinated with the rhythm of music being played. Step aerobics is performed in a raised platform,
while water aerobics is done in waist-deep water. Typically, a dance aerobic exercise is performed for about 20 to 30 minutes.

Aerobic dance workouts are excellent form of exercises which are weight bearing and very effective for bone remodeling, fat reduction and strengthen the cardiovascular system. It is also equally good in boosting up the immune system and to alleviate tension and anxiety.

**Aerobic Dance**

Often it is heard that, the Aerobic dance helps in maintaining the all-round fitness and also turns out to be a delightful experience. One can go for simple steps, swings shakes, even go for hip-hop form of dance, as it offers great cardio benefits and can be lots of fun, too. Aerobic dance as an aerobic exercise is effective in controlling the activity throughout, and can be executed in a small place involving many subjects at a time.

The present study is an effort of the researcher to explore the effectiveness of three groups of most popular exercises systems, namely aerobic exercises, calisthenics and combination of aerobic and callisthenic exercises on selected physical fitness variables among schooling population.
Statement of the problem

The purpose of the study was to find out the effect of callisthenic exercises, aerobic exercises and combination of callisthenic and aerobic exercise on selected physical fitness variables of high school male students.

Delimitations

1. The study was delimited to high school Boys between 13 to 15 years of age.
2. The study was further delimited to 240 high school boys consisting of 60 boys in each group, such as experimental groups and control group.
3. The study was delimited to selected calisthenics, aerobic and combination of calisthenics and aerobic exercises.
4. The study was delimited to a training period of 12 weeks duration.
5. The study was delimited to a training session of 45 minutes duration for five days in a week.
6. The study was further delimited to health related physical fitness variables such as cardio-respiratory endurance, muscular endurance, muscular strength, flexibility and body composition.

Limitations

1. The life style, socio economical status, and dietary habits of the subjects were beyond the control of the investigator. Hence, considered as a limitation of the study.
2. No special motivational techniques were used during training sessions and testing and the performance of the subjects was considered as their best effort.

3. No sophisticated instruments or techniques or direct methods were used to measure the health related fitness variables, which was considered as another limitation of the study.

**Hypotheses**

**Hypothesis: 1**

It was hypothesized that there would not be significant improvement in cardio respiratory endurance as a result of 12 weeks calisthenics training programme.

**Hypothesis: 2**

It was hypothesized that there would not be significant improvement in muscular strength as a result of 12 weeks calisthenics training programme.

**Hypothesis: 3**

It was hypothesized that there would not be significant improvement in muscular endurance as a result of 12 weeks calisthenics training programme.
Hypothesis: 4

It was hypothesized that there would not be significant improvement in flexibility as a result of 12 weeks calisthenics training programme.

Hypothesis: 5

It was hypothesized that there would not be significant improvement in body composition as a result of 12 weeks calisthenics training programme.

Hypothesis: 6

It was hypothesized that there would not be significant improvement in cardio respiratory endurance as a result of 12 weeks aerobic training programme.

Hypothesis: 7

It was hypothesized that there would not be significant improvement in muscular strength as a result of 12 weeks aerobic training programme.

Hypothesis: 8

It was hypothesized that there would not be significant improvement in muscular endurance as a result of 12 weeks aerobic training programme.
Hypothesis: 9

It was hypothesized that there would not be significant improvement in flexibility as a result of 12 weeks aerobic training programme.

Hypothesis: 10

It was hypothesized that there would not be significant improvement in body composition as a result of 12 weeks aerobic training programme.

Hypothesis: 11

It was hypothesized that there would not be significant improvement in cardio respiratory endurance as a result of 12 weeks combination of calisthenics and aerobic training programme.

Hypothesis: 12

It was hypothesized that there would not be significant improvement in muscular strength as a result of 12 weeks combination of calisthenics and aerobic training programme.

Hypothesis: 13

It was hypothesized that there would not be significant improvement in muscular endurance as a result of 12 weeks combination of calisthenics and aerobic training programme.
**Hypothesis: 14**

It was hypothesized that there would not be significant improvement in flexibility as a result of 12 weeks combination of calisthenics and aerobic training programme.

**Hypothesis: 15**

It was hypothesized that there would not be significant improvement in body composition as a result of 12 weeks combination of calisthenics and aerobic training programme.

**Significance of the study:**

1. This study may help to understand the effect of calisthenics, aerobic and combination of calisthenics and aerobics on different components of physical fitness.
2. This study may reveal the effect of calisthenics, aerobic and combination of calisthenics and aerobic exercises on the fitness components thereby, helping the coaches and physical education teachers in choosing the exercises for the development of various components of fitness.
3. This study may help in selecting suitable exercises for keeping the ideal body weight according to the age and body size.
4. This study may be useful in chalking out fitness programmes in the school settings for the improvement of the health related fitness of the students.
5. This study may help in cultivating exercises adherence among the students, making them aware of the importance of exercises and its beneficial effects on health and lifestyle.

**Definition and explanation of terms**

**Calisthenics exercises**

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**Aerobic exercise**

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**Physical fitness**

Physical fitness is the ability to do the daily tasks with vigour and alertness, with undue fatigue and with ample energy in leisure pursuit and to meet emergency situation. Physical fitness is a physiological state of well being that provides the foundation for the tasks of daily living, a degree of protection against hypo-kinetic diseases and a basis for participation in sports.

**Cardio-respiratory endurance**

Cardio respiratory endurance is the ability of the cardio respiratory system to deliver and use oxygen under the demands of intensive, prolonged exercise or work.

**Muscular endurance**

Muscular endurance is the ability of a muscle group to contract over an extended time against moderate resistance.
Muscular strength

Muscular strength is the ability of the muscle or muscle group to generate force in a single maximal effort.

Flexibility

Flexibility is the ability to perform movements with greater amplitude.

Body composition

Body composition is defined as the make up of the body in terms of lean body mass and fat mass. Body composition is the proportion of lean body mass to body fat.