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THE EFFECT OF AEROBIC DANCE AS TEACHING METHOD ON MUSCULAR ENDURANCE, CARDIO VASCULAR ENDURANCE AND FLEXIBILITY OF MENELIK II PREPARATORY SCHOOL GRADE 11 STUDENTS

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This is to certify that the thesis prepared by MANAYE TESFAYE entitled

THE EFFECT OF AEROBIC DANCE AS TEACHING METHOD ON MUSCULAR ENDURANCE, CARDIO VASCULAR ENDURANCE AND FLEXIBILITY OF MENELIK II PREPARATORY SCHOOL GRADE 11 STUDENTS and submitted in partial fulfillment of the requirements for the degree of masters of physical education complies with the regulation of the university and meets the accepted standards with respect to originality and quality.

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ABSTRACT

The twenty first century has witnessed a land mark development in many aspects which restricted movements of students. Due to this, tension and tiredness is observed in students day to day life activities. So students should not ignore the importance of any physical activity. The conventional way of teaching physical education is boring and tiresome which could not achieve its goal. So the purpose of this study is to find out the effect of aerobic dance as teaching method on muscular endurance, cardiovascular endurance and flexibility of Menelik II preparatory school grade 11 students .Quasi experimental design was used to compare pre test and post test result of the study. Simple random sampling technique was used to select thirty subjects that were divided in to two groups; experimental and control groups. The experimental groups underwent aerobic dance as teaching method for eighty days for three days per week for 45 minutes per session. The control group underwent the conventional teaching method of physical education for the same time schedule mentioned above. Muscular endurance, cardiovascular endurance and flexibility were used as variable of the study. Sit up test, 12 minutes walk and run test and sit and reach box test were data gathering tools. Test items selected for the study were new and at good working condition. Test and retest method was used to establish reliability of the data. The collected data from the two groups before and after experimentation on health related physical fitness variables were statistically analyzed by using simple t test. Paired sample t test and independent sample t test was used to find the mean , standard deviation, standard deviation error, t value , df value and two tailed value. The findings indicated that the experimental group has significantly increased in muscular endurance and flexibility but cardiovascular endurance component has not showed any significant improvement. The control group indicated that the conventional method of teaching physical education was not contributing to the development and maintenance of physical fitness of students. As a recommendation it is advised for the coaches, trainers and physical education teachers to adopt this training to improve health related fitness variables.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The twenty first century has witnessed a land mark development in education, especially in science and technology including space, defense, atomic energy, computer, internet service etc. By the internet invention students can collect required information within a fraction of a second from any part of the world. Due to this advanced scientific technological invention, body movements of students have been restricted. Tension and competitive feeling increased. According to Matveyer (2014) students have been felt the prey of stress, hypo kinetic and psychosomatic diseases. So time has come that students should not ignore the importance of any physical activities.

Every student desires good health and it is the ultimate objective of all those who want happiness in life. Every student has to follow good health practices in their routine life. Minor health disorders are quite common to all students. In the case of major health problems, the precautionary measures are plenty. Some students 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 any physical activities is an effective tool to maintain good health and also helps eliminate all the dreadful diseases from the body of students.

It is stated that globalization has driven away the interest of our students in to music due to technological advancement (Agro, 1988). Students are attracted to the performance that is synchronized with music and dance. It is good to follow the interest of students to achieve our goal. Students like to move and dance with their role models. So it is possible to connect dance with exercise activities that can benefit students and develop the fitness components mentioned before. It is possible that students can make participation in physical activities as part of their life by dancing and listening music. Physical education and sports being an integral part of education, experiences the impact of scientific advancements. It is stated the conventional teaching method of physical education has a limited effect on muscular endurance,

cardiovascular endurance and flexibility of students (Bucher, 1979). As I observed muscular endurance, cardiovascular endurance and flexibility need active participation of students in specific exercise designed to achieve the above mentioned fitness components. But as it is said the usual way of teaching physical education is not motivating students to do that (Bucher, 1979). It does not initiate students for learning. Douglas (1994) stated that the usual way of teaching physical education requires skilful students. So it selects some group of students that have skills. Those students that do not have any skill are left behind. The usual ways of teaching physical education do not make exercise part of students' active life style. The usual way of teaching physical education does not teach students how to develop muscular endurance, cardiovascular endurance and flexibility by making it their day do day life activities. It is known that students have different destinations but the usual way of teaching physical education do not understand that and let students to practice different skill activities(e.g. ball games) as if they are elite athletes .That inhibits active participation of students.

The Ethiopian educational policy issue regarding aerobic dance as teaching method does not say anything. But it states that new teaching way is acceptable if it meet the need of the participant and does not contradict with the social, economical and political view of the country.

Aerobic dance as teaching method is considered to be more effective than other methods of teaching physical education in developing physical fitness. It is long lasting and can be performed at different stations with and without apparatus. Aerobic dance as teaching method uses music and dance exercises that students like to master. So the purpose of this study is to find out the effect of aerobic dance as teaching method on muscular endurance, cardiovascular endurance and flexibility of Menelik II preparatory grade 11 students.

1.2 Statement of the Problem

As it is stated that boring, skill oriented and non visionary teaching method of physical education could not bring significant change on muscular endurance, cardio vascular endurance and flexibility of students (Clarke, 1989).

Toy (2008) stated that aerobic dance as teaching method has an effect on Vo2 Max and Body composition of high school students. It is stated that aerobic dance as teaching method has an effect on the amount of fat and consumption of oxygen. But it does not indicate the effect of aerobic dance on flexibility and muscular endurance of students.

Douglas (1994) stated that the conventional teaching method of physical education does not initiate students to practice physical exercise actively by making it as part of their life. As he stated that the conventional teaching method of physical education could not achieve its' goal which is developing and maintaining the fitness components of students. He mentioned that the conventional teaching method of physical education selects some group of students that have skills. Those students that do not have any skill are left behind. It is known that students have different destinations but the conventional teaching method of physical education do not understand that and let students to practice different skill activities as elite athlete as if it is their major life time job. So the problem mentioned above has initiated me to conduct this study to see the effect of aerobic dance as teaching method on muscular endurance, cardiovascular endurance and flexibility of students. It is stated that aerobic dance as teaching method is considered to be more effective than other methods of teaching physical education in developing physical fitness. It is long lasting and can be performed at different stations with and without apparatus. Aerobic dance as teaching method uses music and dance exercises that students like to master. So the purpose of this study is to find out the effect of aerobic dance as teaching method on muscular endurance, cardiovascular endurance and flexibility of Menelik II preparatory grade 11 students.

1.3 Objectives of the Study

1.3.1 General Objective

There are many ways of teaching of physical education which can develop and maintain student's physical fitness variables. Out of the many ways of teaching physical education circuit training, walking, jogging, cycling and aerobic dancing as teaching methods have a great impact on students' physical fitness variables. Aerobic dancing as teaching method synchronize music with different type of physical exercise which can have a great impact on student's interest and passion to participate in physical education class. So the general objective of the study was to find out how health related physical fitness variables change through aerobic dance as teaching method.

1.3.2 Specific Objectives

Participating and practicing in aerobic dance as teaching method develop different fitness components. So the specific objectives of the study include:

- To identify the effect of aerobic dance as teaching method on muscular endurance of Menelik the II preparatory school grade 11 students.
- To identify the effect of aerobic dance as teaching method on cardio vascular endurance of Menelik the II preparatory school grade 11 students.
- To identify the effect of aerobic dance as teaching method on flexibility of Menelik the II preparatory school grade 11 students.

1.4 The Research Questions

Aerobic dance as teaching method synchronizes music with different type of physical exercise which can have a great impact on students interest and passion to participate in physical education class. So the research is going to answer the following questions.

1. To what extent aerobic dance as teaching method have an effect on muscular endurance of Menelik II preparatory grade 11 students?

2. To what extent aerobic dance as teaching method have an effect on cardiovascular endurance of Menelik II preparatory school grade 11 students?
3. To what extent aerobic dance as teaching method have an effect on flexibility of Menelik II preparatory school grade 11 students?

1.5 Significance of the Study

Aerobic dance as teaching method has many advantages for students and researchers. The study proves whether the effect of aerobic dance as teaching method has an impact on students' muscular endurance, cardiovascular endurance and flexibility or not. It also provides scientific base and guide line to physical education professionals', curriculum designers and players to understand the effect of aerobic dance as teaching method on muscular endurance, cardiovascular endurance and flexibility of students.

1.6 Delimitation of the Study

The research was delimited to Menelik II preparatory school .The research was conducted for eighty days for three days per week for 45 minutes per session. Muscular endurance, cardiovascular endurance and flexibility were the only variables selected for the study.

1.7 Limitations of the study

There are many things that challenge a study. For me aerobic dance as teaching method synchronize music with different type of physical exercise. But there are some students which do not like to practice due to religious beliefs. Some students focus on the music than the practical aspect and could not cope up with change of the beat of the music and exercise. This has limited the progress of the study. Improper way of dressing, time wastage while coming to practical class shortage of practical room has also limited the study. My plan was to conduct the research for three month but due to meeting conference of teachers at the beginning of the year, I was forced to carry out for eighty days. This has reduced my chance to conduct the research for three months on cardiovascular endurance of students and get a different result.

1.8 Definitions of Key Terms

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. (Licl, 2006)

Aerobic Exercises

Aerobic exercises typically those exercises performed at moderate levels of intensity for extended periods of time that maintain an increased heart rate. (Agro, 1988)

Aerobic

Aerobic means with the presence of oxygen. (Promoth, 2010)

Cardiovascular Endurance

Cardio vascular endurance is related to the ability of the heart and blood vessels to perform dynamic, moderate to high intensity exercise for prolonged periods. (Frienger, 1972)

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. (Johnson and Nelson, 1969)

Muscular Endurance

Muscular endurance is the ability of a muscle group to execute repeated contractions over a period of time. (Kansal,1996)

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. (Kansal, 1996)

Teaching

Teaching is the process of transferring knowledge.

It is letting other know something new. (Bucher, 1979)

Training

Training may be defined as "A program of exercise designed to improve skills and increase energy capacities, for a participant, the preparation for a particular event". (Matveyev, 1981)

CHAPTER TWO: REVIEW OF RELATED LITERATURE

A study of the relevant literature is an essential step to get a complete picture of what has been done and said with regard to the problem under study, such a review brings about a deep insight and a clear perspective of the overall field. The review provides us with an opportunity of gaining right into the methods, measures, subjects and approaches employed by other research workers. Study of related literatures implies locating reading evaluating reports of research as well as reports of casual observation and opinion that are related to the individual planned research project.

2.1 Definitions of Aerobics

2.1.1 Aerobic Exercises

Agro (1988) stated that aerobic literally means "with oxygen in and refers to the use of oxygen in muscles energy generating process. As stated aerobic exercises typically are those performed at moderate levels of intensity for extended periods of time that maintain an increased heart rate.

2.1.2 Aerobic Dance

It is suggested that moving rhythmically in a series of steps along with a partner or in a group or movement and steps in time to music (Licl, 2006).

2.1.3 Aerobics

It is suggested that aerobic activities include walking, jogging, bicycling, dancing and swimming etc, anything that involves the large muscle groups, which sustains for thirty minutes or longer, is considered aerobic(Promoth,2010). It should be done a minimum of five days a week for at least thirty minutes each session. It is stated that aerobic exercise is the exercise that involves or improves oxygen consumption by the body (Licl, 2006). 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 with 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. It is suggested that formal aerobics classes are divided into different levels of intensity and complexity (Mahendran, 2009). 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.

2.1.4 Dance

It is suggested that 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 (Kenneth, 1968). People dance for a variety of reasons. It is suggested that dance is used to communicate ideas and feelings and is considered a creative art. As it is stated that dance is an integral part of educational experience as a form of recreation and it provides opportunities for enjoyment, self expression, and relaxation. Dance as it is stated can also be used 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. It is suggested that within the past two decades aerobic dance has provided participants with an opportunity to develop fitness and experience the fun and enjoyment of working out of music (Kenneth, 1968).

2.1.5 Aerobic Dance

It is stated that 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 as it is suggested 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(Robert,1993).

Low-Impact Aerobics

It is stated that 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 (Wuset and Bucher, 1991).

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 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.

2.2 Benefits of Aerobic Exercise

Zant and Kusma (1993) stated that regular aerobic exercises as teaching method will improve cardiovascular and cardio respiratory function (heart and lungs), an increased maximal oxygen consumption (VO2max), 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 work load 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.

2.3 Fitness

Wuset and Bucher (1991) stated that 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. It is stated 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.

2.4 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 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. 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 (Wuset and Bucher, 1991)

According to Nixon and Cozens (1964), it was stated that there was a 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. As it is suggested that 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 expert call such fitness tests which include the measurement of percentage body fat, as health related physical fitness tests as 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 below:

2.5 Components of Physical Fitness

Health- Related Physical Fitness Components

Performance Related Physical Fitness Components

Health Related Physical Fitness

It is suggested that 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. 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 (Wuset and Bucher, 1991).

Muscular Strength

It is suggested that 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 (Nixon and Cozen, 1994).

Muscular Endurance

Kansal (1996) stated that muscular endurance is 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.

Cardiovascular Endurance

It is suggested that 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 students' lifestyles. Stress, cigarettes smoking, consumptions of fat and physical inactivity and lifestyle habits 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 students. 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, handball, touch football, or any other activities which utilize the large muscles of the legs and elevate the heart rate (Frienger, 1972).

Flexibility

It is suggested that flexibility is the ability to move muscles and joints through their full range of motion. Most students 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 (Johnson and Nelson, 1969).

Wang (2007) stated that aerobic dance as teaching method has an effect on physical fitness (flexibility, strength and aerobic fitness), self-reported physical functioning and pain in adults with osteoarthritis of the hip or knee. Two-group randomized controlled trial with a convenience sample was used. Students were recruited from community sources and randomly assigned to a 12-weeks aerobics dance teaching method and a non-exercise control condition. Data for 38 students were collected at baseline, week 6, and week 12 during 2003 and 2004. Instruments were a standard plastic goniometry, a hand held dynamometer, the 6-minute walk test, the multidimensional Health Assessment Questionnaire, and a visual analogue scale for pain. Repeated measures analysis of variance showed that aerobic dance teaching method significantly improved knee and hip flexibility, strength and aerobic fitness, but had no effect on self-reported physical functioning and pain.

Sheales (1987) stated that 13 week aerobic dancing as teaching method has an effect on aerobic power, self image of mood status on high school female students. The exercise group met for 50 min exercise 3 times a week. Body variables were skin fold measurement taken at 10 sites; the variables were assessed on pre-post test basis. It revealed that exercise brought about significant improvement in aerobic power and significant reduction in body fat percentage. The finding of this study suggested that participation in regular aerobic dance teaching method can improve aerobic power and positive impact on mood state and also reduction in fat and stress of high school female students.

Toy (2008) stated that aerobic dance as teaching method has an effect on Vo2 Max and Body composition of high school students. Twenty subjects were selected to experimental group (No: 10) and control group (No: 10) for this study. The experimental group underwent twelve weeks aerobic dance teaching method. The control group which was not undergone any training. The selected variables were vo2 max, body weight, and BMI and percentage body fat measure from the study. After twelve weeks of aerobic dance teaching method, a significant reduction was noted in body weight, BMI and percentage body fat, and a significant in vo2 max. This study highlights that systematic aerobic dance teaching method helps to increase the physical and cardio respiratory fitness among high school students.

Shenbagavalli and M. Recthammal (2008) stated that aerobic dance as teaching method has an effect on body mass index on high school obese students. 30 obese students were selected randomly and divided into two groups 15 subjects in each group. Group I as experimental group and Group II as control group. The experimental group had been in aerobic dance teaching method five days in a week for a period of 8 weeks. The control group did not involve in any fitness program or training program. Once in 2 weeks the load was increased. The body mass index was selected as variable. The collected data were analyzed by using't' ratio. From the findings it is quite interesting to know that aerobic dance teaching method have positive influence upon body mass index of high school obese students. The results shown aerobic dance teaching method helps the subjects to decrease the weight, maintains body mass index and also it helps to increase the heart rate, improve the breathing for a sustained time.

Agro (1988) stated that low impact and high impact aerobic dance as teaching method has an effect on selected fitness measures such as Vo2 max, Sum of skin folds, sit reach flexibility test among college females students. Thirty three college female students participated in a 10 week training thrice a week for 45 minutes each session. 'T' test indicated a significant increase in Vo2 max for the high impact group, where as no changes were noticed in low impact group. A significant difference was found between the groups in Vo2 max. Both low impact and high impact groups significantly decreased the sum of skin folds but no significant difference was found between the groups. Flexibility increased significantly in the low impact group but not in the high impact group, although no significant difference was found between the groups.

It is suggested that aerobic dance as teaching method intervention has an effect in improving health-related physical fitness among selected adults in high school students at Taiwan (Licl, 2006). This study was conducted as a quasi-experimental design. Among the 54 subjects enrolled in the study, 26 subjects of the volunteers agreed to participate in an aerobic dance teaching method. The control group was comprised of a similar sample of 28 subjects learning at the same school. Subjects in the aerobic dance teaching method group participated in a 12-week aerobic dance exercise program, while subjects in the control group did not participate. The results of analysis of variance with repeated measures of health-related physical fitness showed that the subjects in the exercise group had significantly more improvements in abdominal muscle strength and endurance than the subjects in the control group. This study indicated that one 12-

week aerobic dance teaching method was effective in improving the abdominal muscle strength and endurance among selected high school students.

It is suggested that step aerobics dance as teaching method has an effect on selected physical and physiological variables of physical education students (Promoth, 2010). Thirty female students were selected, from St. Joseph Physical Education College, Moolamattum in Kerala. Fifteen female students were assigned as experimental group and another 15 female students were assigned as control group. Their age ranged from 20 to 24 years. The experimental group was progressively introduced to the practice of step aerobics teaching method. The subjects performed step aerobics dancing apart from their regular physical education workout, five days in a week for a period of sixty minutes. The control groups did not participate any training program except their regular workout. Both groups were tested before and after experimental period of twelve weeks with respective standard tests. The data were computed statistically by using simple t- test to see progressive effects. The results, in general, support the theory that step aerobics dance teaching method had significant effects on selected physical and physiological variables improved significantly among the experimental group i.e., flexibility, explosive power, BMI, and Vo2 max and no significant changes were seen in control group.

Mahendran (2009) stated that 12 weeks aerobic dance as teaching method has an effect on selected health related physical fitness and physiological variables among adolescents' students. Thirty healthy, untrained school boys were selected from Sengunthar higher secondary school in Thuraiyur and their age ranged from 12 to 15 years. The subjects were equally divided into two groups namely control and experimental group. The experimental group underwent aerobic dance teaching method for forty five minutes duration for twelve weeks for weekly five classes. Control group was kept under observation without training. Selected health related variables were, muscular strength was measured using by hand grip dynamometer, muscular endurance was measured using by bent knee sit ups, cardio-respiratory endurance was measured using 12-minutes run/walk, flexibility was measured with the reliable equipment sit and reach box. The body mass index was calculated by measuring the height and body weight of the subjects. The height was measured in meters by using a stadiometer and weight was measured in kilograms by using a weighing machine. The following equation was used to calculate the body mass index (BMI) i.e. BMI= weight in kg/ height in meter square. The results of pre- test and post- test were

compared by using simple t-test. All variables were significantly improved among experimental group.

Zant and Kusma (1993) stated that a community based exercise and health education program has an effect on improvement of cardiovascular fitness and body composition. Twenty five subjects were participated in 12 weeks aerobic dance training program. Resting Heart Rate, blood pressure, body composition (skin folds), and maximal exercise capacity were measured before and after training. Data was analyzed by simple t-test. There were significant reductions in Resting Heart Rate, blood pressure, body composition percent of body fat and increased maximal exercise workload. These results indicate that a community based exercise and health education program result in beneficial changes in fitness and body composition.

Robert Boling (1993) and others stated that aerobic dance as teaching method has an effect on competition anxiety and Selected Physiological Variables in high school students. The students ages ranging from 16-18 years and they participated in the training program three times a week for a five-week period. The control group went through the conventional training program consisting of stretching and forms ball game activities. The experimental group went through aerobic dance teaching method. Pre- and post-test data for each subject were obtained for a sub-maximal cycle ergo meter test, wet Spiro meter test for vital capacity, and for a sports competition anxiety test. Dependent tests were used to compare means within groups. Analysis of covariance was used to compare means between groups. The experimental group improved significantly in aerobic capacity, vital capacity, exercise heart rate, and exercise blood pressure.

Panbilnathan and Kulothungan (2011) stated that different intensity aerobic dance as teaching method has an effect on body composition variables among high school students. Sixty male students were selected randomly divided four groups and each group consists of fifteen students each. The age ranged from 16-18. Group 1 underwent as low intensity aerobic dance teaching, group II underwent moderate intensity aerobic dance teaching method, group III underwent high intensity aerobic dance teaching method and group IV acted as control group. The experimental groups underwent their intensity aerobic dance teaching method three days per week for twelve weeks. Control group did not undergo any training program rather than their routine work. The body composition are percentage body fat and lean body mass were measured by using skin fold

caliper. Prior to and after end of practice period all students were tested. The results of pre-test and post-test were compared with using Analysis of Co-variance. The result shows that high intensity aerobic dance teaching method was significantly better than low and moderate aerobic teaching method in percentage body fat. The moderate and high intensity aerobic dance teaching method significantly influenced lean body mass of middle age men.

It is suggested that stretching exercises and aerobic dance as teaching method has an effect on flexibility of school boys (Subramanian and Jayasivarajan, 2011). For this study sixty school boys were selected at random from Velankanni Matriculation Higher secondary school, Puducherry and their age ranged from 14 -17years. The selected subjects divided in to four groups each group consist of fifteen subjects. Group I underwent stretching exercises, group II underwent aerobics dance teaching method, group III underwent combined exercises (stretching and aerobics dance teaching method) and group IV is control group. The three experimental groups were subjected to the training program for 10 weeks for three days per week. Control group did not undergo any training program rather than their routine work. Flexibility was measured by using sit and reach box. Prior to and after end of practice period all subjects were tested. The results of pre-test and post-test were compared with using Analysis of Co-variance. The result shows that combined exercises (stretching and aerobics dance teaching method) were significantly better than stretching exercises, aerobics dance exercises in flexibility.

Rajkumar (2011) stated that an aerobic dance as teaching method has an effect on somato type components and its relationship with health related physical fitness and biochemical variables. Forty-five college male students were selected randomly from in the Government boys' hostel, laws pet, Pondicherry. Their age ranges from 18 to 19 years. They were divided into three groups namely control group, yogic group and aerobic dance teaching group. The training period the aerobic dance teaching group underwent fourteen weeks of training on their respective program. The aerobic dance teaching group was trained on aerobic dancing exercises with rhythmic music with various types of aerobic type movements. The progressive load method was used up to fourteen weeks for the respective groups. The training was given during for 5 days a week. The data pertaining to pre test and post test of experimental variables were derived through the following methods. Health related physical fitness components such muscular

strength and endurance, muscular flexibility, cardio vascular endurance & body composition significantly improved after aerobic dance teaching method than the control group.

Preetha (1993) stated that a selected aerobic dance as teaching method has an effect on selected physical, physiological and psychological variables among women students of Pondicherry University. Samples were selected randomly aged between 17 to 19 years and was divided into equally three groups Control and two experimental groups. Experimental group underwent aerobic dance teaching method, held five days in a week for a period of twelve weeks .Control group did not undergo any training. Prior to and at the end of training period all subject were tested for selected physical, physiological and psychological variables. Aerobic dance teaching method showed significant improvement on selected physical, physiological and psychological variables like weight, flexibility, and balance among experimental group than the control group.

Punithavath (2010) stated that an aerobic dance as teaching method has an effect on selected physical, physiological and biochemical variables among school girls. 45 girls were selected from St. Joseph of Cluny Hr. Sec. School, Pondicherry. The age group of the subjects ranged between 14 to 18 years. The subjects were divided into three groups and each group consisted of fifteen subjects. The experimental groups underwent training program namely aerobic dancing teaching method and the control group which was not subjected to any training. The subjects selected were from two categories viz. Control group and aerobic dancing teaching method group and the data on the selected variables were collected before and after the training period. The pretest and post test data collected from control and aerobic dancing teaching method groups were statistically analyzed to find out the significance of the variables such as speed, muscular endurance, cardio respiratory endurance, resting pulse rate, breath holding time, respiratory rate, protein and lactic acid, by the use of analysis of simple t-test. After eliminating the influencing of pre test, the adjusted post test means of experimental groups and control group were tested for significance by using simple t-test.

2.6 Summary of the Literature

The review of literature helped the investigator to spot out relevant topics and variables. Further the literature helped the investigator to frame the suitable research question leading to the problems. The latest literature also helps the investigator to support his findings with regard to the problem. Further the literature collected in the study also helps the research scholar to summarize his study. The reviews are presented under different sections such as definition of aerobic, aerobic dance, types of aerobic dance, benefit of aerobic dance training and different studies on aerobic dance. All the research studies presented in the section prove that aerobic dance as teaching method contribute significantly for better development of dependent variables. The research studies reviewed are collected from journals available in the websites and some university libraries. It is also observed from the reviews of literature that no research studies have been conducted in relation to aerobic dance as teaching method on health related physical fitness variables. This motivated the researcher to select this study.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

In this chapter, research method and design, research setting and population, selection of variables, instrument of data collection, validity and reliability of the instrument, selection of tests ,reliability of the data, pilot study, orientation of the subjects, training program, test administration, procedure of data collection, method of data analysis and ethical issues have been explained.

3.1 Research Method and Design

The research design was quasi experimental design. To compare pretest and post test result, quasi experimental design was used. Simple random sampling technique was used to select the subjects in order to give each element of the population equal and independent chance of being included in the sample. Thirty subjects from Menelik II preparatory school grade 11 were selected by simple random sampling technique to carry out the research. The subjects were divided in to two groups. One with experimental group and the other with control group. The experimental group underwent aerobic dance as teaching method and the control group underwent the conventional teaching method of physical education. The training periods for both of the groups were eighty days, three days per week with duration of 45 minutes.

3.2 Research Setting and Population

The research has been conducted in Menelik II preparatory school. The school has grade 11 and grade 12 sections. There are about 25 grade 11 and 25 grade 12 sections. The school has a basket ball and a hand ball court for physical education practical class. Thirty subjects randomly selected from grade 11 attendance lists of the students. Male and female students are included in the list. The age of the participant varies from 16 up to 18.

3.3 Selection of Variables

On the basis of the available literature, personal experience, discussion done with research supervisor and consulting with physical education teachers, the following health related physical fitness variables are selected.

Health Related Physical Fitness Variables

a. Muscular endurance
b. Cardio vascular Endurance
c. Flexibility

3.4 Selection of Tests

The test items were selected after thorough review of literature as well as consultation with experts, research supervisor and physical education experts which were appropriate and ideal for the variables. The test items were used as data gathering instrument for the research.

Table 3.1: Tests Selection

No.	Criterion Variables	Test Items	Unit of Measurements
1.	Muscular Endurance	Sit up (Bent Knee)	Count
2.	Cardio Respiratory Endurance	12-Min run / walks	Meters
3.	Flexibility	Sit and reach box	Centimeters

3.5 Reliability of the Instrument

Sit and reach box, Stop Watch and other equipments are used for this study. All these instruments are available in the department of physical education and sports sciences at Menelik the II preparatory school. They are new and at good working condition. Their calibration is tested and found to be accurate enough to serve the purpose of the study.

3.6 Reliability of the Data

The reliability of the data is established through test and retest method. Thirty subjects are randomly selected from Menelik the II preparatory school grade 11 students and they are tested twice by the same testers under similar conditions on each criterion variable. The intra class correlation is used to find out the reliability of the data with test - retest scores on each criterion variables separately.

Table 3.2: Reliability Correlation Co-Efficient Values on Selected Variables

NO.	Tests	r value
1	Bent Knee Sit Up	0.89*
2	Twelve minutes run and walk	0.91*
3	Sit and reach	0.93*

3.7 Pilot Study

A Pilot study is conducted before giving the training program to ensure that the intensity and duration of aerobic dance as teaching method is appropriate. Ten students are randomly selected for pilot study from grade 12 section. They are asked to practice their respective training. The average performance of the ten students from each group is calculated and that is fixed as an initial load for the experimental groups.

3.8 Orientation of the Subjects

I the researcher explained about the purpose of the study to the subjects and their part during the training program. I have also explained the testing procedures on selected criterion variables and gave instructions to the subjects about the procedures to be adopted while measuring. Six sessions are spent to familiarize the subjects with the techniques involved in executing aerobic dance as teaching method, which help them to perform exercises properly and avoid injures.

3.9 Training Program

During the training period, aerobic dance as teaching method group underwent weekly three classes for eighty days of training on their respective program. They are given training on aerobic dance as teaching method with music's program for 45 minutes with an intensity that elicited heart rates. The progressive load method is used for eighty days on the respective groups. The training schedule of aerobic dance as teaching method is enclosed in appendices.

3.10 Tests Administration

Bent Knee Sit-Ups Test

Purpose:

To measures the muscular endurance of the abdominal muscles.

Equipments:

Mats, stop watch and score sheet.

Procedure:

The subjects are asked to take a supine lying position on the mat, knees bent to an angle less than 90 degrees, and hands clasped behind neck. The angles are held firmly on the ground by another subject. The performer lifted his trunk, touched his knees with forehead and then lowered his trunk touching the mat with his elbows. This exercise was done continuously without pause for one minute. Numbers of correctly executed sit ups are recorded as his/her performance.

Scoring:

The maximum number of repetitions performed in sixty seconds is the score. The repetition is not counted when finger tips did not maintained contact behind the head, when the knees are not touched.

Twelve Minutes Run-Walk Test

Purpose:

To measures Cardiovascular Endurance.

Equipments:

Football field, stopwatch, whistle, score sheet, pencil and clapper, etc...

Procedure:

For this test a foot ball field is prepared with marking at every ten meters for 200m. The groups of fifteen subjects are doing this test. The subjects are asked to stand on the starting position and are given instructions to cover as much distance as possible by running, jogging or walking, if running throughout the twelve minutes period is not possible. They are instructed to continue till the final whistle is blown and to stop before.

With the starting whistle they started and at the end of twelve minutes the whistle is blown. The number of minutes left is announced to the subjects every minute, and the subjects jogged with moving forward the final whistle. When the signal to stop is given, they immediately stopped their running.

Scoring:

The subject are concerned covered the distance is recorded. The score in meter is determined by multiplying the number of complete laps (200 meters) completed, plus the number of segments of five meters of an incomplete lap plus the number of meters stopped off between a particular segments.

Sit and Reach Test

Purpose:

To measures the flexibility of the back and leg (hamstring) muscles.

Equipments:

A sit and reach box, centimeter scale, score sheet and pencil.

Procedure:

The subjects are asked to assume a sitting position on the floor with fully extended legs. A sit and reach box kept closer to the feet in such a way that, the bottom of the feet are forwardly fixed at the box. The subjects are asked their arms to extend forward with one hand on top of the other and finger pads on top of fingernails. The subject reaches directly forward, palms down, along the measuring scale three times, holding the position of maximum reach the last time for one full second.

Scoring:

Three trials are given to each subject. Each attempt is held for one second and the measurement is taken to the nearest centimeter.

3.11 Procedure of Data Collection

The data are collected on health related physical fitness variables namely muscular endurance, cardiovascular endurance and flexibility for the two groups before the experimental period (pre test) and after eighty days of training (post test) respectively.

3.12 Method Of Data Analysis

In order to test the effect of aerobic dance as teaching method, the collected data from the two groups before and after experimentation on health related physical fitness variables are statistically analyzed by using simple t test. Paired sample t test and independent sample t test is used to find the mean , standard deviation, standard deviation error, t value , df value and two tailed value.

3.13 Ethical Issues

Regarding ethical consideration, the researcher was governed by the research code of ethics in maintaining privacy and confidentiality and other related values. The researcher promised to the participants of the study that the information which was collected from the respondents shall not be transferred to third party or it will not be exploited for undertaking other than the purpose of the research study. Beside this, the process of data collection was done anonymously without writing their names, identification number and section, telephone number so that the threat of being disclosed was very much minimized. The names ,age and sex of students attached at appendices were pseudonyms. Making guarantees and confidentiality on the information that was being given to the study and risk of harm due to participation. All actions based on the school rules, code of conduct and policy concerning to research ethics. The protocol was approved by the school guide lines and written consent was given and informs the concerned bodies and participants.

CHAPTER FOUR: ANALYSIS OF THE DATA AND RESULTS OF THE STUDY

The collected data on health related physical fitness variables has been analyzed and presented in this chapter. The purpose of the study is to find out the effect of aerobic dance as teaching method on health related physical fitness variables such as muscular endurance, cardiovascular and flexibility of Menelik the II preparatory school grade 11 students. Thirty students are selected from Menelik the II preparatory school during the academic year 2015/16 – 2016 for this study. The subject's age ranged from 16 to 18 years. The selected subjects are divided into two equal groups of fifteen subjects each at randomly; those are experimental group and a control group.

The experimental group underwent the selected aerobic dance as teaching method with music's program. The training period of an experimental group is eighty days, three days per week for duration of 45 minutes. Control group underwent the conventional physical education class. The data are collected on health related physical fitness variables namely muscular endurance, cardiovascular endurance and flexibility for the two groups before the experimental period (pre test) and after eighty days of training period (post test). In order to test the effect of aerobic dance as teaching method, the collected data from the two groups before and after experimentation on health related physical fitness variables are statistically analyzed by using simple t test. Paired sample t test and independent sample t test are used to find the mean, standard deviation, standard deviation error, t value, df value and two tailed value. Paired sample correlation is used to see the size of the effect. To investigate if there was a statistically significant association correlation is used.

The influence of independent variables on each criterion variables are analyzed and presented below.

4.1Muscular Endurance

Table 4.1 The mean and standard deviation values on muscular endurance of pretest and post test scores of experimental and control groups.

Groups	Testing periods	Mean	Standard deviation	Std. Error Mean
Experimental Group	Pre test	17.6	3.9	1.00
	Post test	27.6	3.45	0.89
Control Group	Pre test	17.6	5.0	1.30
	Post test	17.8	4.8	1.25

The above table 4.1 showed that the pre tests mean values on muscular endurance of experimental and control groups is 17.6. The post test mean values on muscular endurance of experimental and control groups are 27.6 and 17.8. From the above mean value of experimental and control group we can see that aerobic dance as teaching method has brought a significant change .The mean of the experimental group has improved by 10 but the control group has not shown as such a significant improvement after intervention that is 0.2.

Table 4.2: Paired sample correlation score during pre test and post test of muscular endurance

Group	Correlation value
Experimental group	0.99
Control group	0.93

From the above table we can see how the independent and dependent variables are strongly related. The value 0.99 and 0.93 indicate that there exists a maximum effect due to the application of aerobic dance as teaching method. Aerobic dance as teaching method has brought strong impact on muscular endurance of the experimental group.

Table 4.3. The independent sample score of experimental and control groups during pre test on muscular endurance

Group	t- value	Df	Sig(2-tailed)
Experimental group	-0.3	28	0.968
Control Group	-0.4	26	0.896

Table 4.4 The independent sample score of experimental and control groups during post test on muscular endurance

Group	t- value	Df	Sig(2- tailed)
Experimental group	6.3	28	0.01
Control group	6.0	25	0.00

The above table 4.3 and 4.4 show independent sample score of experimental and control groups during pre test and post test value of t-value, df and sig (2-tailled) of muscular endurance. The independent sample score show that the post test value of experimental group has improved due to the intervention of aerobic dance as teaching method on muscular endurance when compared to the pre test result of experimental and control group before the intervention of aerobic dance as teaching method.

4.1.1 Cardiovascular Endurance

Table 4.5 The mean and standard deviation values on cardio respiratory endurance of pretest and post test scores of aerobic and control groups

Groups	Testing periods	Mean	Standard deviation	Std. Error Mean
Experimental Group	Pre test	2109.3	71.56	18.47
	Post test	2109.3	71.56	18.47
Control Group	Pre test	2104	141	36.4
	Post test	2099	130	33.6

The above table showed that the pre test mean values on cardiovascular endurance for experimental and control group are 2109.3 and 2104 respectively. The post test mean values on cardiovascular endurance for experimental and control group are 2109.3 and 2099 respectively. The above table has showed that the application of aerobic dance as teaching method on cardiovascular endurance of experimental group could not brought any impact. But the conventional teaching method on cardiovascular endurance of the control group has shown that the post test value of the control group has minimized a little bit than the pre test value.

Table 4.6: Paired sample correlation score during pre test and post test of cardiovascular endurance

Group	Correlation value
Experimental group	0.99
Control group	0.98

From the above table we can see how the independent and dependent variables are strongly related. The value 0.99 and 0.99 indicate that there exists a maximum effect due to the application of aerobic dance as teaching method. It shows that there exist strong relations among the two groups.

Table 4.7. The independent sample score of experimental and control groups during pre test on cardiovascular endurance

Group	t- value	Df	Sig(2- tailed)
Experimental group	0.14	28	0.9
Control group	0.12	20	0.8

Table 4.8. The independent sample score of experimental and control groups during post test on cardiovascular endurance

Group	t- value	Df	Sig(2- tailed)
Experimental group	0.26	28	0.79
Control group	0.25	21	0.73

The above table 4.7 and 4.8 show independent sample score of experimental and control groups during pre test and post test value of t-value, df and sig (2-tailled) of muscular endurance. The independent sample score show that the post test value of experimental group has improved due to the intervention of aerobic dance as teaching method on cardiovascular endurance when compared to the pre test result of experimental and control group before the intervention of aerobic dance as teaching method.

4.1.2 Flexibility

Table 4.9. The mean and standard deviation values on flexibility of pretest and post test scores of experimental and control groups

Groups	Testing periods	Mean	Standard deviation	Std. Error Mean
Experimental Group	Pre test	32	6.0	1.55
	Post test	37	5.6	1.44
Control Group	Pre test	31.8	7.08	1.82
	Post test	31.6	6.37	1.64

The table showed that the pre test mean values on flexibility for experimental and control group are 32 and 31.8 respectively. The post test mean values on flexibility for experimental and control group are 37 and 31.6 respectively. From the above table we can see that the mean value of the experimental group has improved by 5 but the mean value of the control group has not show any improvement with the application of the conventional teaching method of physical education. The value of the mean of the control group has reduced by 0.2 with the usual way of

teaching physical education. So from these result we can understand that the result of the experimental group was improved after the intervention of aerobic dance as teaching method.

Table 4.10: Paired sample correlation score during pre test and post test of flexibility

Group	Correlation value
Experimental group	0.99
Control group	0.93

From the above table we can see how the independent and dependent variables are strongly related. The value 0.99 and 0.99 indicate that there exists a maximum effect due to the application of aerobic dance as teaching method. It shows that there exist strong relations among the two groups.

Table 4.11. The independent sample score of experimental and control group during pre test on flexibility.

Group	t- value	Df	Sig(2- tailed)
Experimental group	0.11	28	0.91
Control group	0.08	26	0.93

Table 4.12. The independent sample score of experimental and control group during post test on flexibility.

Group	t- value	Df	Sig(2-tailed)
Experimental group	2.49	28	0.19
Control group	2.43	27	0.13

The above table 4.11 and 4.12 show independent sample score of experimental and control groups during pre test and post test value of t-value, df and sig (2-tailled) of flexibility. The independent sample score show that the post test value of experimental group has improved after the intervention of aerobic dance as teaching method on flexibility when compared to the pre test

result of experimental and control group before the intervention of aerobic dance as teaching method.

4.2 Discussion on Findings

The Research Question

The research answers the following questions

- Does aerobic dance as teaching method have an effect on muscular endurance of Menelik II preparatory grade 11 students?
- Does aerobic dance as teaching method have an effect on cardiovascular endurance of Menelik II preparatory school grade 11 students?
- Does aerobic dance as teaching method have an effect on flexibility of Menelik II preparatory school grade 11 students?

From the data on muscular endurance above we have seen that the pre tests mean values on muscular endurance of experimental and control groups is 17.6. The post test mean values on muscular endurance of experimental and control groups are 27.6 and 17.8. From the above mean value of experimental and control group we can see that aerobic dance as teaching method has brought a significant change .The mean of the experimental group has improved by 10 but the control group has not shown as such a significant improvement after intervention that is 0.2.

From the data on cardiovascular endurance above we have seen that the pre test mean values on cardiovascular endurance for experimental and control group are 2109.3 and 2104 respectively. The post test mean values on cardiovascular endurance for experimental and control group are 2109.3 and 2099 respectively. The mean has showed that the application of aerobic dance as teaching method on cardiovascular endurance of experimental group could not brought any impact. But the mean of the post test value of the conventional teaching method on cardiovascular endurance of the control group has shown reduction than the pre test value.

From the data on flexibility above we have seen that the pre test mean values on flexibility for experimental and control group are 32 and 31.8 respectively. The post test mean values on flexibility for experimental and control group are 37 and 31.6 respectively. From this we can see

that the mean value of the experimental group has improved by 5 but the mean value of the control group has not show any improvement with the application of the conventional teaching method of physical education. The value of the mean of the control group has reduced by 0.2 with the usual way of teaching physical education. So from these result we can understand that the result of the experimental group was improved after the intervention of aerobic dance as teaching method.

Research results by different scholars show that the application of aerobic dance as teaching method has an effect on muscular endurance, cardiovascular endurance and flexibility of students.

Agro (1988) stated that muscular endurance of students has improved significantly with the application of aerobic dance as teaching method. According to his study active participation of students in aerobic dance as teaching method was achieved due to the application of music synchronized dancing teaching method that has hold the attention of the students. He mentioned that active participation in music synchronized dancing teaching method has developed and strengthen the whole body of students. That is students ability to sustain repeated production of force at low to moderate intensities over an extend amount of time (muscular endurance) has increased.

It is stated that aerobic dancing as teaching method moves and allows the body to work continuously without any break. The heart and blood vessels are busy of pumping blood and transferring of substance. This continuously pumping of blood and transferring of substances make the heart and blood vessel efficient and strong. The mussel of the heart and blood vessel will be adaptive for further challenging activities. As he stated cardiovascular endurance improves better with non stopping movement of the body and that could be related to daily life style .He suggested that engaging in aerobic dance as teaching method improve the cardiovascular system and reduce many risk factors associated with coronary heart diseases(Ashokan and Abraham ,2014).

Toy (2008) stated that aerobic dance as teaching method has increased joint range of motion. According to him aerobic dancing allows muscle to freely contract. As it is stated aerobic dance as teaching method serves as a lubricant for muscle to actively contract and relax. So this easy

contraction and relaxation of muscle increase joint range of motion which eventually results in improvement of flexibility of the student.

From my experience as physical education teacher for more than ten years I came to realize that aerobic dance as teaching method could be an alternative way for developing physical fitness of students. Engagement in aerobic dancing movement improves muscular endurance of students. Aerobic dance as teaching method holds the attention of students to focus on the exercise. The combined effect of music and sport make students actively participate and carry out the activity. This active participation of students for long duration develops their muscle to engage in contraction and relaxation process for extended period of time. Student's active participation in such long duration of aerobic dance makes their muscle to continuously stay at work. So when students participate in such busy exercise, their muscle can work for longer duration. That is muscular endurance of the students will improve better.

From the result of my study on cardiovascular endurance of students, I came to realize that the application of aerobic dance as teaching method could not show any improvement. But I feel that this could be due to different reasons such as recording error, students practicing power and other similar reasons. But I agree with the results of the research of other authors that states aerobic dance as teaching method has a positive effect on cardiovascular endurance of students. Aerobic dance as teaching method let students practice different exercises synchronized with music which hold the attention of students to focus on the activity. In my opinion aerobic dance as teaching method is the best type of exercise which can have a great effect on contraction and relaxation of the heart and blood vessels. I believe that continuously engaging in aerobic dance as teaching method let the heart to work for long period with resistance. This develops and improves the capacity of the heart to work for longer duration.

The result on flexibility of experimental group has shown that aerobic dance as teaching method has a great effect on flexibility of students. I believe that aerobic dance as teaching method can contribute a lot for increased joint range of movement of muscle of students. I have seen that aerobic dancing as teaching method letting students to relax and make their muscle move freely. In my opinion increased joint range of motion is due to active participation of students in aerobic dance as teaching method. This results in increased flexibility power of students.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The best way to keep physical activity and exercise a permanent part of student's life is to make it fun and enjoyable. If students are given different options of what they can do and easy access to those options they are more likely to participate in physical activity and exercise. This allows students to have a positive attitude toward physical fitness. It is also helpful if students are knowledgeable about the rewards of physical activity and exercise (Heyward, 2006).The challenge facing the fitness teaching program is how to best manipulate, progressively overload and inter mix intensity duration and frequency with a variety of modes of activity to help the students reach their goal. Fortunately a number of different teaching program are available to the fitness including aerobic dance as teaching method. Aerobic dance as teaching method is a fun way to get fit. The cost is relatively low; little to no equipment is necessary in order to participate. Physical fitness components of students are kept best by choosing an activity which can make students feel happy and relaxed. For this reason aerobic dance as teaching method is used to find out the effect on muscular endurance, cardiovascular endurance and flexibility of Menelik II preparatory school grade 11 students. Thirty subjects are selected by simple random sampling technique .The selected subjects are divided in to two groups with experimental and control group. The experimental group underwent the selected aerobic dance as teaching method program with music. The training period of the experimental group is eighty days, three days per week with duration of 45 minutes. Control group underwent the conventional physical education class for eighty days, three days per week with 45 minutes. The collected data on health related physical fitness variables has been analyzed and presented. In order to test the effect of aerobic dance as teaching method, the collected data from the two groups before and after experimentation on health related physical fitness variables are statistically analyzed by using simple t test. Paired sample t test and independent sample t test are used to find the mean, standard deviation, standard deviation error, t value, df value and two tailed value. Paired sample correlation is used to see the size of the effect. To investigate if there was a statistically significant association correlation is used.

The following were major findings of the study:

1. The study disclosed that aerobic dance as teaching method develop and maintain the physical fitness components of students.

2. It was found out that the mean of muscular endurance and flexibility of experimental group of students has improved by 10 and 5 respectively but the control group has not show as such a significant change that is only 0.2 . It was also found out that cardiovascular endurance of the experimental group has not show any change but the control group has reduced from the first.

3. The study indicated that students were motivated and initiated more to practice physical activities with passion and interest.

5.2 Conclusions

From the analysis of the data the following conclusions are drawn.

Aerobic dance as teaching method has improved and maintained health related physical fitness variables. Muscular endurance and flexibility of students have improved with the application of aerobic dance as teaching method on experimental group but the cardiovascular endurance of the students have been maintained with the application of aerobic dance as teaching method of the experimental group. When we compare the pre test and post test value of the control group, there is no improvement or there is a decrease in the value of cardiovascular endurance of the students. Muscular endurance and flexibility of control group has not show any improvement with the usual way of teaching physical education.

The researcher observed that with the application of aerobic dance as teaching method students' passion for practicing physical education was increased. The atmosphere of the class has become so enjoyable that students laugh and play with the exercise.

Hence it could be safely concluded that aerobic dance as teaching method enables students to practice different activities by making it as part of their day to day life activity. Furthermore aerobic dance as teaching method can connect students with exercise activities by making it their life style.

5.3 Recommendations

From the results of the study the following recommendations are drawn.

1. Coaches, trainers and physical educators are advised to adopt this training method to improve health related fitness components. It is also advisable that coaches would try and compare the result which can have a great difference. It is advised for coaches to have an alternative method to keep fitness of the participant.
2. Menelik II preparatory school should organize a short term training for physical education teachers on how to apply aerobic dance in teaching physical education.
3. The Ministry of education is advised to apply aerobic dance in teaching physical education.
4. Addis Ababa education bureau is advised to apply aerobic dance in teaching physical education.

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Appendix I

Eighty Days of Aerobic Dance As Teaching Method Exercises Training Programme

(Low impact) Duration: 11 weeks
Weekly: 3 Class
Time: 45 minutes
minutes

Warm Up Exercises: 5 minutes
Aerobics Exercises: 30 minutes
Cool Down Exercises: 10

Weeks	Slow Movements	Medium Movements	Fast Movements	Cool Down Exercises
I & IV	15 Minutes 3 times	10Minutes 2 times	5Minutes 1 times	10Minutes
V & VIII	10 Minutes 3 times	15Minutes 4 times	5Minutes 2 times	10Minutes
IX& XII	10Minutes 3 times	10Minutes 4 times	10Minutes 3 times	10Minutes

Movements	Intensity	Heart Beat
Slow	Easy	Easy
Medium	Medium	Medium
Fast	Fast	Fast

Following movements are given for the above durations.

On the sport marching
Out ward toe touch with single arm
Toe touching
V-step movement
L-step left side movement
V-shape forward toe touch

V-shape knee up left side movement

Marching with arms side, up and down.
out ward toe touch with double arm
Toe touching side ward movement
L-step right side movement
Zigzag forward movement
V-shape knee up right movement

Grape wine movement

Single leg side wards movement

A-step movement

Diamond step movement

V- step rotation right side movement

NAME AND AGE FOR CONTROL AND AEROBIC GROUP

Name and Age for Control Group

S. No	Name	Age
1	Abel Kibreab	17
2	Aziza Seyfedin	17
3	Beyene Mulatu	16
4	Dawit Yohanes	17
5	Edom Kindu	16
6	Fitsum Work	17
7	Hadra Fadie	18
8	Hayat Hussen	16
9	Mikiyas Birhanu	17
10	Mussie Gidey	16
11	Robel Alayu	17
12	Samson Abayneh	16
13	TesfaneshDominiko	18
14	Werkalem Fentaw	18
15	Zanta Berihu	16

Name and Age for Aerobic Group

S. No	Name	Age
1	Abdulkerem Gedru	17
2	Abdulkerem Hussen	16
3	Abrar Dino	17
4	Bezawit Teshome	18
5	Dagmawit Begashaw	17
6	Fasika Derese	17
7	Helen Mulugeta	17
8	Kidist Melese	17
9	Markos Samuel	17
10	Mulunesh Tsegaye	16
11	Robel Fantahun	17
12	Sulleyman Yimam	16
13	Tinsae Fiseha	18
14	Wabe Woreka	18
15	Yonatan Mulugeta	16

Appendix II

Pre Test Score of the Health Related Physical Fitness Test Variables of the Control Group

S. No	Name	Sit ups (counts)	12-Min run & walk (Meters)	Sit & reach (Cm)
1	Abdulkerem Gedru	19	2270	27
2	Abdulkerem Hussen	19	2150	38
3	Abrar Dino	20	2200	31
4	Bezawit Teshome	21	2210	35
5	Dagmawit Begashaw	23	1890	38
6	Fasika Derese	6	1910	40
7	Helen Mulugeta	11	2250	34
8	Kidist Melese	25	2140	29
9	Markos Samuel	11	1890	37
10	Mulunesh Tsegaye	18	2100	28
11	Robel Fantahun	17	2250	40
12	Sulleyman Yimam	21	1990	35
13	Tinsae Fiseha	15	2250	29
14	Wabe Woreka	18	1960	17
15	Yonatan Mulugeta	21	2110	19

Post Test Score of the Health Related Physical Fitness Test Variables of the Control Group

S. No	Name	Sit-ups (Counts)	12-Min run & walk (Meters)	Sit & reach(cm)
1	Abdulkerem Gedru	19	2240	27
2	Abdulkerem Hussen	18	2150	37
3	Abrar Dino	20	2170	32
4	Bezawit Teshome	21	2210	34
5	Dagmawit Begashaw	23	1880	37
6	Fasika Derese	7	1910	39
7	Helen Mulugeta	11	2230	35
8	Kidisit Melese	25	2150	29
9	Markose Samuel	12	1900	36
10	Mulunesh Tsegaye	19	2120	29
11	Robel Fantahun	18	2210	38
12	Suleyman Yimam	21	2010	35
13	Tinsae Fiseha	14	2230	28
14	Wabe Wereka	18	1970	18
15	Yonatan Mulugeta	21	2110	20

Appendix III

Pre Test Score of the Health Related Physical Fitness Test Variables of the Experimental Group

S. No	Name	Sit ups (Counts)	12-Min run & walk (Meters)	Sit & reach (Cm)
1	Abel Kibreab	17	2020	28
2	Aziza Seyfedin	14	2100	40
3	Beyene Mulatu	16	2220	20
4	Dawit Yohanes	23	2010	33
5	Edom Kindu	20	2210	32
6	Fitsum Work	10	2050	39
7	Hadra Fadie	23	2140	39
8	Hayat Hussen	15	2060	38
9	Mikiyas Birhanu	24	2170	25
10	Mussie Gidey	16	2080	34
11	Robel Alayu	17	2010	27
12	Samson Abayneh	15	2150	38
13	TesfaneshDominiko	21	2160	32
14	Werkalem Fentaw	18	2080	28
15	Zanta Berihu	15	2180	28

Post Test Score of the Health Related Physical Fitness Test Variables of the Experimental Group

S. No	Name	Sit ups (Counts)	12-Min run & walk (Meters)	Sit & reach (Cm)
1	Abel Kibreab	29	2160	32
2	Aziza Seyfedin	27	2240	45
3	Beyene Mulatu	25	2320	27
4	Dawit yohanes	34	2180	38
5	Edom Kindu	30	2280	37
6	fitsum Work	22	2200	44
7	Hadra Fadie	32	2250	43
8	Hayat Hussen	25	2180	42
9	Mikiyas Birhanu	32	2280	30
10	Mussie Gidey	25	2280	38
11	Robel Alayu	26	2320	33
12	SamsonAbayneh	25	2310	44
13	Tesfanesh Dominiko	30	2320	36
14	Werkalem Fentaw	28	2280	34
15	Zanta Berihu	24	2300	33

AEROBIC DANCE TRAINING TIP

- ON THE SPORT MARCHING
- MARCHING WITH ARMS SIDE UPWARD AND DOWN
- OUT WARD TOE TOUCH WITH
- TOE TOUCHING SIDE WARD
- DOUBLE ARM MOVEMENT
- V-STEP MOVEMENT
- DYMAND STEP MOVEMENT
- L-STEP RIGHT SIDE MOVEMENT
- V-SHAPE FORWARD TOE TOUCH
- RIGHT & LEFT SIDE
- ZIG-ZAG FORWARD MOVEMENT
- GRAPE WINE MOVEMENT
- DYMAND STEP MOVEMENT

TESTS

- MUSCULAR ENDURANCE TEST
  - BENT KNEE SIT-UPS
- CARDIO-RESPOATORY ENDURANCE TEST
  - 12- MINUTES RUN & WALK TEST
- FLEXIBILITY TEST
  - SIT & REACH BOX TEST

DECLARATION

I hereby declare that the thesis entitled, "THE EFFECTS OF AEROBIC DANCE AS TEACHING METHOD ON MUSCULAR ENDURANCE, CARDIOVASCULAR ENDURANCE AND FLEXIBILITY OF MENELIK II PREPARATORY SCHOOL GRADE 11 STUDENTS" Being submitted to Addis Ababa University College of Education And Behavioral Study Department of Science And Mathematics Education for partial fulfillment of the requirement for the award of the degree of Master of Education in Physical Education, for the work done under the guidance of Dr. Solomon Belay, that it has not Previously formed on the basis for the award of any Degree, Diploma, Fellowship or any other similar title of any candidate of any University or institution.

Name of candidate: Manaye tesfaye Signature_____

Advisor Name: Dr. Solomon Belay Signature _____