



**ADDIS ABABA UNIVERSTTY  
COLLEGE OF EDUCATION AND BEHAVIORAL  
STUDIES DEPARTMENT OF SCIENCE AND  
MATHEMATICS EDUCATION**

**THE OUTCOME OF TWELVE WEEKS STRUCTURED EXERCISES  
PROGRAM ON HEALTH RELATED FITNESS OF STUDENTS: THE  
CASE OF DURBETE SECONDARY SCHOOL**

**BY  
BEWUKET ASMARE**

**A M.M ED. THESIS**

**SUBMITTED TO THE DEPARTMENT OF SCIENCE AND MATHEMSATICS  
EDUCATION IN PARTIAL FULFILLMENT FOR THE REQUIRMENT OF THE  
DGREE OF MASTERS OF SCIENCES IN TEACHING PHYSICAL EDUCATION**

**OCTOBER 2024  
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**ADVISOR: DR. SUTUMA EDESSA  
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**OCTOBER 2024  
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ADDIS ABABA UNIVERSTTY  
COLLEGE OF EDUCATION AND BEHAVIORAL  
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**Declaration**

This is to certify that the Thesis prepared by Bewuket Asmara entitled as “**THE OUTCOME OF TWELVE WEEKS STRUCTURED EXERCISES PROGRAM ON HEALTH RELATED FITNESS OF STUDENTS: THE CASE OF DURBETE SECONDARY SCHOOL**” and submitted to the Department of Science and Mathematics Education in partial fulfillment for the requirement of the Degree of Masters of Science in teaching Physical Educations complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

**Board of Examination**

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## ***Abstract***

*This study was to improve the health related fitness of student using planned exercises. In designing of the study, 30 students were selected using purposive sampling techniques from Durbete Secondary School as study practitioners. Data collection methods were through overt observation worksheet in which the performance of practitioners for each component was record. Data evaluation was descriptive methods using both qualitative and quantitative approaches. During the pretest practitioners conducted exercise on health related components and pertinent performances were measured and recorded for control. Practical training exercises were provided for three consecutive months and measurement on the performances of each practitioner after training were measured by posttest and recorded in worksheets. Collected data during both pretest and posttest on performances of practitioners and compared. As a result, a 9° push-up test of muscle strength was 1.33 sit-up tests muscular endurance was 1.18 and the 3-minute step test the cardiovascular endurance was negative - 1.73 that showing a decrease of heart beats per minute and an increase in the mean of 2.44. Body flexibility of the practitioners was improved by 2.6 and successful results were gained through all fitness components as a subsequent of instructional training and planed exercises. The study was concluded with satisfying finding on components subjected to the study. The results of posttest measured after 3 months training exercises linked to health-related fitness of muscular strength, muscular endurance, cardiovascular endurance and flexibility have been improved and demonstrated successfulness all over.*

**Keywords:** Components, fitness, 90°push up, 20cm Step up

# Chapter one

## 1. Introduction

### 1.1 Background of the study

Health-related fitness is an important part of any healthy lifestyle. It encompasses aspects such as body composition, muscular strength and endurance, flexibility, body composition and cardiorespiratory endurance. It is intended to describe a state of health and well-being specifically with the ability to perform all aspects of sports, occupations and daily activities.

The discipline that studies and summarizes the knowledge and objective laws in properly organized pedagogical processes is physical education composing of a subject formed by two words physical and education.

The physical part deals with external characteristics of body, mental, social and emotional wellbeing whereby education is concerned with the teaching learning processes to disseminate knowledge and skills.

Health related physical fitness is generally achieved through proper nutrition from moderate to vigorous physical exercise and sufficient rest along with a formal recovery plan. It is the body ability to function efficiently and effectively consisting of components of health related fitness, which contribute to the total quality of life. Fitness was defined as the capacity to carry out the day's activities without undue fatigue or lethargy, but with the automation changes in lifestyles, fitness is now considered a measure of ability to function efficiently and effectively in work and leisure activities to be healthy, resist diseases and improve immune function systems.

Regarding the specific physical functions, fitness is attributed to persons who possess significant aerobic or anaerobic exercises supporting strength and endurance with well-rounded fitness and improves in all aspects of physical development.

Exercise is a planned, structured, repetitive and purposeful activity with the sense to improve or maintain one or more components of fitness whereas activities include exercise and bodily movement done as part of playing, working, active transportation, house chores and recreational activities.

The benefits of physical exercises are to improve brain functions and increase the capacity for learning (Amina K. B., 2019), the class room behavior (Amanda Watson, 2019) and the amount of oxygen flowing through the brain, which increases the capacity to learn and give attention (Arilson F. Sousa, 2019).

Regular exercise produces beneficial effects by providing specific and appropriate activities rising to the level of fitness of individual performances and improves health for any age group. It also creates a sense of wellbeing to produce greater energy and reduce the risk of developing many diseases.

Exercise makes demands on the body systems over and above normal every day activity and as a result, the body systems adapt to activities involving the coordination and interaction anatomically and physiologically that musculoskeletal systems interact to produce movement (Rosser, 2001).

An exercise is a sub category of physical activity, which is planned, structured and purposive in the sense of improvements or maintenance of physical fitness (S Stear 2003).

At least three times a week activities for 60 minutes that promote muscle strengthening and endurance, flexibility is required for younger peoples to achieve accumulated energy. Being physically inactive and sedentary lifestyle is one of the reasons for dramatic increase in weight leading overweight and obesity and attributing to risk factors for non-communicable diseases.

There are five components of physical fitness: body composition, flexibility muscular strength, muscular endurance, and cardiovascular endurance.

Among the entire researcher considered only four of the health related fitness components including muscular strength, muscular endurance, cardiovascular endurance and flexibility to conduct a study with well-balanced exercise program that address all of the health-related components of fitness.

## **1.2 Statement of the problem**

The researcher is a physical education teacher at Durbete Secondary School and he observed that very little attention is paid to the physical activities and sports. Students have very low participation in the physical education classes and field based exercises, less interest in conducting fitness components.

The teaching credit hours is very little so that many of the students do not attend the regular period of activities, lack many requirements needed to learn with proper handling of tools and program contents.

Reports indicate that the state of health related fitness of students at the school is not satisfactory and limited due to the advancement of technology and transportation mechanisms depriving them from physical movements.

Hence, the researcher decided to conduct a study on improving health-related fitness of students through planned exercises on muscular and cardiovascular endurance and body flexibility at Durbete Secondary School.

### **1.3 Objectives of the study**

#### **1.3.1 General objective**

The general objective of this study was to improve health-related fitness of students through planned exercises on muscular and cardiovascular endurance and body flexibility at Durbete Secondary School.

#### **1.3.2 Specific objectives**

The specific objectives of the study are to:

1. Identify ways of improving health-related fitness
2. Describe health related fitness components and pertinent exercises
3. Measure the performance of practitioners in all exercises of fitness components
4. Improve the performances of practitioners on health related fitness
5. Find out results in health related fitness components

### **1.4 Research questions**

1. What types of exercises are employed to health related physical fitness?
2. Mention the advantages of health related fitness improvement?
3. Can pre-test and post-test differentiate improvements on health related fitness?
4. What types of static methods is applicable on the health-related fitness of students?
5. Is demonstrate improvements on health related fitness?

### **1.5 Significance of the Study**

The significance of this study widely enhances health related fitness through practical exercises in order to increase fitness and produce improvements in more than one aspect of fitness. Health related fitness exercises to improve muscular endurance, muscular strength, body composition, flexibility and cardiovascular endurance improves the health related fitness of students that helps to pioneer practitioners as athletes, sportsmen and conduct all duties.

When students are healthy they can do everything required for living and all lifestyles phenomena in all conditions. It is helpful to work and live in all aspects necessary for life.

### **1.6 Limitation of the study**

The study is limited to Durbete Secondary school due to sampling techniques and environmental factors.

Some limitation included:

- Shortage of finance to study on other different schools than Durbete Secondary school
- Lacks of access to websites and technological instruments to find supportive data
- Limited access to all required data

### **1.7 Delimitation of the study**

This study was delimited to grade 9 and 10 Durbete Secondary School due to the limitation of required amount of money, time and willingness of students to participate in the study. It is also delimited to easily find all materials, training exercise field collect data required for the study.

### **1.8 Organization**

This study paper is organized in five chapters:

- The first chapter deals with Introduction, background of the study, statement of the problem, study objective, research questions, significance of the study and organization of the study paper.
- The second Chapter is about Review of relate literatures
- The third Chapter three is Methodology containing the study site, research design, research methods, data collection tools and sampling techniques.
- Chapter four is about Results and discussions dealing with data presentation, data analysis and evaluation, result and discussions.
- Chapter five is about summary, conclusion and recommendation.

## 1.9 Definition of terms used in this text

**Cardiovascular Endurance:** is how well the heart and lungs can supply the amount of oxygen needed while exercising at medium to high intensity with the ability to exercise at medium intensity for a long time (high intensity for a while) before getting tired. It is the ability to exercise or move for an extended period and a crucial indicator of general health.

**Muscular Strength:** is the ability to exert maximal force in one single contraction such as lifting a weight that you could lift only once before needing a short break.

**Muscular endurance:** is the ability to contract muscles repeatedly or continuously over an extended length of time in running, swimming, climbing, jogging or running on a tread mill.

**Flexibility:** is the range of motion of muscles and connective tissues at a joint or group of joints and the capacity to adjust to short term changes quickly and calmly to deal with unexpected problems or tasks effectively.

## Chapter two

### 2. Review of Related Literatures

#### 2.1 Definition of health related fitness

Health related fitness is the body ability to function efficiently and effectively. It is a state of being that consists of at related physical fitness components, each of which contributes to total quality of life. Physical fitness is associates with person ability to work effectively, enjoy leisure time to resist hyperkinetic disease and meet emergency situations.

Even though a variety of factors contribute to the development of physical fitness, consistent exercise is necessary to achieve optimal fitness. Nowadays, it is thought that one of the most significant health indicators in childhood for improvement in a variety of ways is physical fitness. Schools are frequently thought of as the ideal location for identifying youngsters with poor levels of fitness and encouraging a healthy lifestyle (Ortega et al. 2008). Being physically fit is the ability to achieve and maintain health. This section concentrates on elements that support optimal health, avert the onset of illness, and address issues related to inactivity (Lozano et al., 2009). Health related physical fitness components are muscular strength, muscular endurance, cardiovascular endurance, flexibility and body composition (Sharon, 2008). Importance of Regular Exercise

Regular exercise is an important part of a healthy life style. There are many benefits of regular exercise and maintaining fitness and these include exercise increase energy levels exercise improve both the strength and efficiency of our cardio vascular system to get the oxygen and nutrients to your muscle thing seems easier and you have more energy for the fun stuff in live. Exercise improve muscle strength staying active keeps muscle strength and joints, tendons and ligaments flexible allowing you to move more easily and avoid injury. Strong muscles and ligament reduce your risk of joint and lower back pain by keeping joints in proper alignments they also improve coordination and balance. Exercise can help you to maintain a healthy weight. The more you exercise the more calories you burn. In addition, the more muscle you develop, the higher your metabolic rate becomes, so you burn more calories even you are not exercising the result? You may lose weight and look better physically which will boost your self-esteem. Exercise improves brain function exercise increase blood flow and oxygen levels in brain. It also encourages of the brain chemicals that

are responsible for the production of cells in hippocampus. The part of the brain that controls memory and learning this in turn boosts concentration level and cognitive ability and help reduce the risk of cognitive degenerative diseases such as Alzheimer. Exercise is good for your heart to reduce cholesterol and reduce blood pressure so it lowers the stress on your heart. Added to this it also strength your heart muscle combined with a healthy diet, exercise for lower the risk of developing coronary heart disease. To enhances your immune system exercise improve your body ability to pump the oxygen and required to fuel the cells that fight bacteria and viruses ([https:// www.skills you need .com](https://www.skillsyouneed.com)).

## **2.2 Health related fitness components**

### **2.2.1 Muscular Strength**

Muscular strength is the ability to exert maximal force in one single contraction such as lifting a weight that you could lift only once before needing a short break. Muscular power is to a great force production over a short period of time such as in fast leg kicks and explosive jumping.

A common method of strength training is with resistance machines or free weights such as dumbbells using own body weight such as in push-ups and leg lunges.

It is important to exercise larger muscle groups before smaller ones, because smaller ones fatigue more quickly and alternate muscle groups to allow for recovery before performing another exercise on the same muscle group. Muscular strength gains, an exercise of a muscle through its full range of motion for 8 to 12 repetitions is helpful.

The amount of weight or resistance is to be challenging after the set to feel muscular fatigue whereby rehabilitating from an injury requires the uses lower weight or resistance and higher numbers of repetitions.

Exercises targeting muscular power need to perform fast repetitions numbers two or three times in a given conditioning sequence. A single repetition in maximum bench press 90° push-up leg press and other exercises are common fitness tests that measure muscular strength, which is the maximum amount of force applied against an external force.

Performance and muscle strength are directly correlated that triceps, hamstrings, abdominals, rhomboids, hip abductors and anterior tibia are the muscles typically weak (Katz, 2008). Until adulthood, students refrain from engaging in weightlifting, power lifting and body building.

Epiphysis plates can be harmed by strength too intense training on Jumping rope, jumping jacks, star jumps, hopping, bear walking, squat jumps, squats, push-up crawls, sit-up squat thrusts to fit or achieve the ability to maintain health.

Muscular strength is gained by incorporating explosive exercises training after seeing initial strength. Plyometrics is a form of exercise that uses powerful, rapid movements to help increase speed, power and strength that strengthen muscle tissues and train nerves to produce the specific muscle contraction.

### **2.2.2 Muscular endurance**

The term muscular endurance is the ability to contract muscles repeatedly or continuously over an extended length of time in running, swimming, climbing, jogging or running on a tread mill.

The capacity of muscles to apply force against an opposing force for a prolonged amount of time without experiencing weariness is known as muscular endurance. It is when less force is sustained over a longer period of time such as in gallops, skips and swings or daily life style activities. Dancers often confuse endurance with strength so it is sometimes useful to think of endurance as continuous and strength as maximal.

Muscular strength and endurance can be matched in a training environment that endurance capacity is when high volume of power on step ups in 30s tests are used to measure abdominal muscular endurance and bent arm hang tests are measured the upper-limbs muscular endurance in both highly trained top-level endurance of athletes and well-trained individuals (AgaardanAndersen,2010). Muscular endurance is frequently tested in fitness tests by having participants perform pushups and sets for a minute. Muscular endurance deals with how long muscles can sustain exercises in improving muscular endurance and enhance overall health and fitness.

Muscular endurance is the ability to continue contracting a muscle or group of muscles against resistance such as weights or body weight over a period of time. Increasing the performance of muscles means continue to contract and work against all forces. Greater muscular endurance allows a person to complete more repetitions of an exercise (pushups or squats) further more indicating the healthiness of individuals.

### **2.2.3 Cardiovascular Endurance**

Cardiovascular endurance or aerobic fitness is how well the heart and lungs can supply the amount of oxygen needed while exercising at medium to high intensity. Having good cardiovascular endurance shows the ability to exercise at medium intensity for a long time (high intensity for a while) before getting tired.

The ability to supply fuel throughout prolonged physical exercise is known as cardiovascular endurance, which is the maximal capacity to extract used oxygen from circulating blood and the functioning capability of the heart, lung and blood vessel cardio respiratory system through aerobic respiration. Maximum oxygen consumption increases and the ability to utilize oxygen and fuel to supply more energy to the working muscles improves during maximum aerobic exercise.

Cardiovascular endurance is the ability to exercise or move for an extended period and a crucial indicator of general health. Better cardiovascular endurance in healthy people is indicative of a better level of physical fitness (Eric, 2009).

### **2.2.4 Flexibility**

Flexibility is the range of motion of muscles and connective tissues at a joint or group of joints. In contrast to other systemic fitness components, flexibility is highly specific to each of the joints of the body. Flexibility is the capacity to adjust to short term changes quickly and calmly to deal with unexpected problems or tasks effectively.

Health related component flexibility in fitness is the range of motion available at each joint without pain or discomfort of the body at different levels, which helps to alleviate low back discomfort, avoid injuries and improve posture.

According to Miranda (2009), the most common methods for measuring flexibility are in the field with tests like the set and reach test and in the lab with measurement tools like a goniometry flexi meter.

Muscle flexibility is the ability to move muscles and joints through full normal range of motion for efficient movement and prevents incorrect body alignment and maintains appropriate muscle length and balance to decrease injury risks. Better flexibility improves performances, decrease risk of injuries, help joints to move through full range of motion.

Training exercises include regular anaerobic exercise of any physical activity that starts the aerobic metabolism. In non-endurance sports, flexibility is used as a builder to increase muscular mass and to enhance strength, speed and power.

Physical education and sport medicine stress the development of health-related fitness as a means of lowering sickness risks and improving life expectancy (Bouchard et al., 1994). Unfortunately, over the past ten years, there has been a decrease in the amount of time and emphasis dedicated to the physical education curriculum (Oh, Graber, & sport, 2019). Frequent aerobic training produces notable adaptations in a range of dimensions and functional capacities connected to the cardiovascular respiratory system, both during rest and during exercise. Regular physical activity engagement over the long term can improve quality of life (Blair et al., 2004).

### **2.3 Roles of regular training exercises**

The roles of regular exercise play important part of a healthy life style. Regular exercises maintain fitness and boost vitality to strengthen and enhance the effectiveness of our cardiovascular system, which makes easier muscles to absorb oxygen and nutrients.

Exercise increases muscle strength and helps to maintain joint, tendon and ligament flexibility, which facilitates easier movement and reduces the risk of injury. Exercises improve brain functions, increase blood flow and oxygen levels in brain, encourages the brain chemicals that are responsible for the production of cells in the part of the brain that controls memory and boosts learning and concentration level, cognitive ability and help to reduce the risk of degenerative cognitive diseases such as Alzheimer.

Exercises reduce cholesterol and blood pressure and lower the stress on heart; strengthen heart muscle and lowers risks of developing coronary heart disease.

### **2.4 Tests of health related fitness**

Basic training principles are the guides to follow in order to measure and evaluate health related fitness components.

Measurement is of fitness as the process of gathering data on performance through exercises in a particular scenario or manner in which one or more factors manifested are difficult to promptly collect and compare to the intended outcome.

The sport kinetic test is one of the most crucial methods for assessing performance and fitness (Melinda 1997-2012). Accordingly, different test parameters were employed to assess performances and handle data properly.

### **2.4.1 Tests of muscle strength**

The 90° Push-up test was used to gauge the performances of practitioners on muscle strength during fitness exercises dealt with upper body strength and track improvements. This test allows practitioners to follow fitness schedules over time and compare own upper body physical strength to others of the same age and gender.

The traditional military style pushup stance is best for men who should only touch the floor with hands and toes whereas the bent knee position exercise is an option for women. Conducting push up exercises is by keeping back straight and kneeling on the floor and placing hands on either side of chest that counts of the number of pushups were recorded.

### **2.4.2 Test for Cardio Vascular Endurance**

The test for cardio vascular endurance is most commonly associated with apposite changes in a health maker shuttle run conducted with the treadmill and cycle ergo meter that demonstrate acceptable validity and reliability of measurements. Based on the relationship to health as well as reliability and validity, progressive shuttle run such as the 20-meter shuttle run is appropriate for measuring cardio vascular endurance.

### **2.4.3 Test on muscular endurance**

The **sit-up test** parameter was selected to assess the strength and endurance of the abdominal and hip flexor muscles as crucial for core stability and back support.

Participants in this test conducted exercises by lying on backs with knees bent, feet flat on the ground and heels between 30.48 cm and 45.72 cm from buttocks and interlocked behind the head with the arms. The participants do sit-ups activities until their elbow touches their knees from the point they return to the floor and repeat the motion as many times as possible after the command word "ready go." The number of sit-ups completed in the allotted 30 seconds is scores. It is

helpful to increase the bone mineral density quickly in both boys and girls during the development years, particularly in adolescence periods.

#### **2.4.4 Definition and structure of endurance**

In general, aerobic endurance is the amount of oxygen intake during exercise. This definition isn't enough to define aerobic endurance exactly. (Bompa & Haff, 2009) suggested that endurance could be classified as several ways such as aerobic endurance, low intensity exercise endurance or define as the ability that allow a player to perform activities continually for a long duration. Endurance is directly or indirectly of high importance in all sports. It is however not easy to define endurance, but there is agreement regarding the following aspects endurance: it related to doing work for a long time of period, it relates to working under fatigue conditions, it involves a large number of muscles and it involves work efficiency. (Heyward, 2006) defines endurance as "the ability of the heart, lungs, and circulatory system to supply oxygen and nutrients to working muscles efficiently". Schnabel, et al., (2003); Thiess & Schnabel, (1995) also defines endurance as the resistance ability to fatigue, (Shephard & Astrand, 2000) have also used to the concept of ability to resist fatigue for defining endurance as "the ability to do sports movements, with the desired quality and speed, under conditions of fatigue". In context of field sports has (Mahler, 1995) defined endurance as the ability to perform dynamic exercises that involving large muscle groups at moderate to high intensity for extended periods. In addition the researcher defines endurance is the ability to carry out lengthy mobile activity of moderate intensity which mobilizes the functional capacity the organs, particularly of the heart and circulatory system and the respiratory system. It demands participation of large muscle groups and has a positive influence on the level of the participants.

#### **2.4.5 Level of flexibility**

The sit and reach test was employed to gauge the how are flexible of the hamstring and lower back muscles. It entails sitting with legs extended straight ahead on the floor by placing feet and shoulder-width apart and soles flat against the box.

The tester holds both knees flat against the sit and reach equipment. Participants reach forward as far as they can along the measurement line, palms down and hands on top of each other. The fourth practice reach is held for at least two seconds while the distance is noted after the first three. It is also to verify that the legs stay flat, the fingertips stay level without jerky movement

whereby the distance before and beyond is recorded in the score with accuracy to the closest centimeter. . Principles of Training on Regular Exercise Work Out. .

#### **2.4.6 Effect of Regular Physical Exercise on Muscle Strength**

The American Academy of Pediatrics recommends that strength training programs for children should be conducted by trained adults. These programs should consist of high repetitions and low resistance to emphasize muscle balance, flexibility and proper technique. Muscles that tend to be weak in children include the triceps, hamstrings, abdominals, rhomboids, hip abductors, and the tibia is anterior (Katz, 2008). Children should avoid weight lifting, power lifting and body building until they reach full maturity. Too strenuous strength training can damage epiphysis plates. Rope jumping, jumping jacks, hopping, star jump, squat jump, squats, bear walk, push up crawl, sit up squat thrusts etc. are some important exercises to developed strength of children (Katz, 2008).

#### **2.4.7 Effect of Regular Physical Fitness Exercise on Muscular Endurance**

Muscular endurance, which represents multiple muscle contractions or a sustained muscle contraction over a period of time, for example during running, climbing, swimming, jogging, running on tread mill at the gym there will be muscle contraction those muscle contraction can assists the improvements of muscular endurance. During aerobic exercise, minute ventilation increases and an increased load is placed on the respiratory muscles. Both the frequency and the speed of contraction in the muscle are increased (Harms *et al.*, 2000).

#### **2.4.8 Effect of Regular Physical Exercise on Cardiovascular Endurance**

Cardiovascular endurance (CVE) is one of the most important measures of overall health. A person's level of cardiovascular endurance helps to prevent disease, quality of life, and ability to react to acute physical and mental stress. For healthy individuals, higher cardiovascular endurance also indicates an elevated level of physical fitness (Eric, 2009).

Aerobic exercises use large muscle groups to increase heart rate. This causes faster breathing which maximizes the oxygen and nutrients in the blood cells. During

maximum aerobic exercise, the trained individual has increased maximum oxygen consumption and is better able to process oxygen and fuel can provide more energy to working muscles. Aerobic capacity is the most widely accepted single indicator of one's cardio respiratory fitness level and it is one of the best types of activity for training and maintaining allow percentage of body fat (Probart *et al.*,1991).

Physical exercise in childhood has a range of benefits during childhood including healthy growth and development of the muscular-skeletal and cardio-respiratory system, maintenance of energy balance and thus a healthy weight, avoidance of cardiovascular disease risk factors such as hypertension and high blood cholesterol, and the opportunity for social interaction, achievement and mental well-being. There is strong evidence that physical exercise is important for children's psychological well-being. Children with lower activity levels have a higher prevalence of psychological and emotional distress (Steptoe and Buter, 1996).

#### **2.4.9 Effect of Regular Physical Fitness Exercise on Muscle Flexibility**

Moderate to vigorous level activity for at least 60 minutes every day's. Moderate to vigorous activity includes everything from sport, physical education and formal Flexibility exercises should be held to the point of tension for 15 seconds or longer, and be performed 3 to 7 days per week (Tony and Susana, 2006). Even though children will often gravitate naturally toward ballistic stretching, the focus should be on slow, controlled static stretching. Some good examples of flexibility or stretching exercises for kids are shoulder stretch ,triceps stretch ,sit and reach ,quadriceps stretch ,hamstring stretch ,calves stretch etc (EETC Inc., 2002). Generally all children and young people should be active, at exercise to active play and other physically demanding activities such as dancing, swimming or skateboarding. It also includes everyday activities such as walking and jogging (WHO, 2010).

**Principles of individual difference:** simple means that, because we all are unique individuals we all have slightly different response to an exercise program. This is another way of saying that one size does not fit all when it comes to exercise well designed exercise programs should be based on our individual difference and responses to exercise. Some of the difference is body size and shape, genetics, past experience chronic condition, injuries and even gender. For example women generally need more recovery time than men and older. With this mind, you may not want to follow an “off the shelf” exercise program may find it help full to work with coach or personal trainer to develop customized exercise program. Consider when creating your own exercise program including exercise science principles (Edge and Bishop 2006).

**Principles of over load:** the exercise science principles of over load states that a greater than normal stress or load on the body is required for training adaptation to take place means in order to improve our fitness strength or endurance need to increase the work load accordingly. It must be gradually stressed by working against a load greater than it is accustomed to increase endurance muscle work for a longer period of at higher intensity are accustomed to or at higher intensity level(Edge and Bishop 2006).

**Principle of progression:** is says a gradual and systematic increasing of work load over and a period of time will result the improvement of fitness without risk of injury. If over load occurs too slowly, improvement is unlikely but over load that is increased rapidly may result in injury or muscle damage. The principles of progression also stressed the need for proper rest and recovery continual stress on the body and constant over load would result in exhaustion and injury you should not train hard all time as would risk over training and decrease fitness (Edge and Bishop 2006).

**Principle of specificity:** we have all heard to phrase “practice makes perfect” well this is the principles of specificity in action this simply states that exercise a certain body part or component of the body primarily develop that part. (Edge and Bishop 2006).

**Principles of adaptation:** refers to the ability to adjust to increase or decreased physical demands it is also one way we learn to coordinate muscle movement and develop sport specific skills such as batting, swimming freestyle. Repeatedly practicing a skill or

activity masks its second nature and easier to perform Principles of Training (Edge and Bishop 2006).

**Principle of use or disuse:** it implies that when it comes to fitness you do actually “use it or lose it” this simply means that your muscle hypertrophy with use and atrophy with disuse this also explains why recondition or lose fitness when we stop exercise (Joel; B’Hadson;1998).

**Over training:** it is to over load your body through over training when you increase your training load increase its frequency intensity or duration, you must match the training increase your bodies capability. You must also keep in mind the speed with you respond to training. If you make the load to high or became fatigued and will no longer respond to the demands you placed on it (Joel; B’Hadson;1998). . .

#### **2.4.10 Data Quality Control**

To insure the data quality, all the test procedures, collection data’s and handling information would be carried out in accordance with standard protocols and measurements and the researcher would use two assistances to collect data in order to avoid errors, training would be given for assistances on how to use data collecting instruments and measurement during data collection and the researcher would give awareness for the subjects about the test and recommended preconditions while the test administered as well as the objectives of the study to contribute something that expected from them. To ensure the reliability and validity of the result the pre test would administered before a treatment is begin and during treatment test administered and post treatment is would administered two days later on their treatment is terminated.

### **2.4.11 Ethical Consideration**

The study would be deal with the ethical issue related to the investigation. It will be protected the privacy of research participant and can make guaranty and confidentiality of the information that will be given to the study and risk harm due to participation. Participation of subjects in this study is purely a voluntary based activity and their right not to participate and can resign at any time of training session would be respected there for the study would conduct all session based on the university rule, code of conduct and policies concerning research ethics. Since the subject would be volunteers they wouldbe refraining from the situation if they are not ready or not feel comfort at any time they want Ethical approval will be obtain from institutional esearch ethics review committee (IRERC) of Haramaya University College of Health Science. The protocol would be approved by the university guidelines and written consent would be given and in form the concerned bodies.

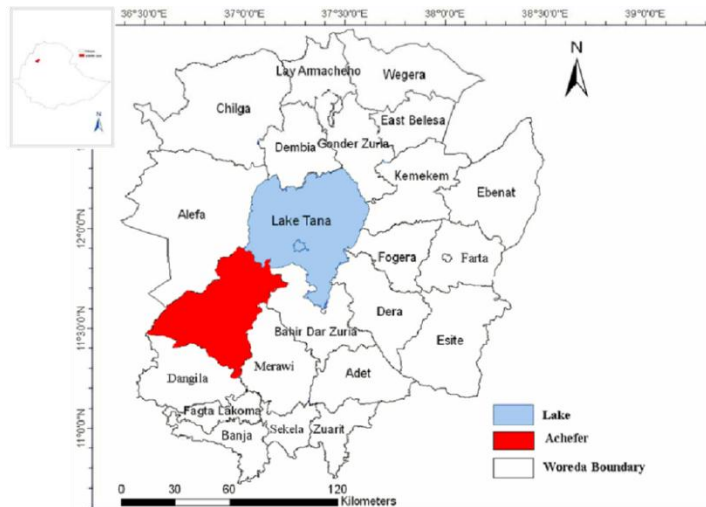
poor,6 or 15% trainers below average 6 or 15% trainers scored average, 5 or 12.5% trainers scored above average and 7 or 17.5% score excellent and after training 4 or 10% trainers scored poor, 6 or 15% trainers scored below average, 8 or 20% average, 8 or 20% above average and 14 or 35% trainers scored excellent performance in general, the performance of the participants' of flexibility level was improved thought physical exercise. The result showed that after training performed better sit and reach test after 12 weeks of physical exercise program compared pretest finding.

## Chapter three

### 3. Research Methodology

#### 3.1 The study site

The research was carried out at Durbete Secondary Schools found in South Achefer District located in west Gojjam Zone of Amhara Regional Notational State. Achefer was a woreda in Amhara Region, Ethiopia. It was named for the historic district of Achefer, which was first mentioned in the 16th century. It was 498 km far away from the capital city of Addis Ababa, Ethiopia. Durbete town was bordered on the south by 10km from Dangla town, on the west south Achefer Liven town far from 35km ,on the north Bahir Dar 60 Km from Durbete ,on east Fersbet woreda from Durbete 43km Part of the MirabGojjam Zone, Achefer was bordered on the south by the AgewAwi Zone, on the west by the Semien Gondar Zone, on the north by Lake Tana, on the northeast by Bahir Dar Zuria, and on the southeast by Merawi; the Lesser Abay River defined the woreda's eastern boundary. The woreda included Dek Island. The administrative center was Yesmala; other towns in Achefer included Durbete, Liben, Kunzela, Chiba and Wandegge. Acheref was divided for DebubAchefer and SemienAchefer woredas. Based on figures published by the Central Statistical Agency in 2005, this woreda has an estimated total population of 326,195, of whom 160,763 are men and 165,432 are women; 24,565 or 7.53% of its population are urban dwellers, which is about the same as the Zone average of 7.6%. With an estimated area of 2,515.64 square kilometers, Achefer has an estimated population density of 129.7 people per square kilometer, which is less than the Zone average of 174.47. The 1994 national census reported a total population for this woreda of 238,255 in 45,400 households, of whom 121,895 were men and 116,360 were women; 14,197 or 5.96% of its population were urban dwellers. The largest ethnic group reported in Achefer was the Amhara (99.77%). Amharic was spoken as a first language by 99.86%. The majority of the inhabitants practiced Ethiopian Orthodox Christianity, with 98.77% reporting that as their religion, while 1.18% were Muslim.



**Figure 1 Map of the study site**

### **3.2 Research design**

In research population design, 30 students (15 males 15 females) of age 16–19 year olds were chosen as practitioners using methods for purposeful sampling from Durbete Secondary School in which the practitioners are subjected to pretest assessment to determine their performance status before training exercises and record for uses as a baseline data. Conduct practical training exercises on health related fitness components including Muscular Strength, Muscular Endurance, Cardiovascular Endurance, flexibility for three days a week (7:00 to 8:00) on Mondays, Wednesdays and Fridays for totally 36 days with 3 months (January, February and March 2024).

The exercises incorporate materials used for measuring health-related fitness component exercises were worksheets to record performances, balance, jumping ropes, whistle, measurement meter and related tools.

Posttests were conducted using test parameters like 90° push up, sit and reach and step up on health related components employed as variables to test the effects of teaching exercises in comparison with the results of pre-tests data.

### **3.3 Methods**

Data collection methods were through tests of the performances of practitioners applied during pretest and posttests using overt observation worksheets.

Descriptive methods were used to analyze and evaluate data in the forms of both quantitative and qualitative strategies.

The pretest was conducted to measure the performances of practitioners and determine their status four fitness of health related components (muscular strength, muscular endurance, cardiovascular endurance and flexibility).

Posttests were employed to assess the performances of the practitioners on the same components (variables) to investigate improvements on health related fitness components after 3 months exercises in comparison with the pre-test results to find improvements.

### **3.4 Data collection tools**

#### **3.4.1 Observation worksheets**

Overt observation work sheets were used to collect data on the performances of practitioners while conducting exercises on four health related components during the pre-test and posttests.

#### **3.4.2 Data collection procedures**

Primary data were gathered using standardized rules of fitness parameter tests through the pre-test and posttest on:

- 1. Muscular strength(minute)**
- 2. Muscular endurance(repetition)**
- 3. Cardiovascular endurance(repetition)**
- 4. Flexibility(centimeter)**

##### **1. Muscular Strength test by 90° push up**

Muscle-strengthening activities include lifting weights, working with resistance bands, heavy gardening such as digging and shoveling, climbing stairs, hill walking, cycling, dance, push-ups, sit-ups and squats. The muscular strength and muscular endurance tests were based on the rules and principles stating that participants must keep their back straight, knee on the floor and hands on either side of their chest.

Males conducted the activities based on standard rules by assuming a prone position on the floor, placing their palms face down on the floor, raising their body off the ground and stabilize their lower body degrees with their feet and repeated trice as one and continued until they stop repeating activities.

Females have options of using the “bent knee” position in particular, otherwise follow the same steps.

## **2. Muscular Endurance test by Sit up**

Muscle endurance is the ability to do something over and over for an extended period of time without getting tired. In order to improve muscle endurance, overloading specific muscle groups and working them to fatigue is important. Exercises like pushup squats, sit-ups lunges and planks improve muscle endurance.

In addition to increased lung capacity and maintaining a healthy weight, there are many additional benefits associated with muscular endurance training such as reduced risk of heart disease, lower cholesterol levels and lower blood pressure, improved sleep, reduced anxiety and reduced depression.

Hence, the practitioners lie on their backs with their knee bent, feet flat on the floor and their heels between 30 and 45.72 cm from their buttocks to begin. When given the order "ready go", the practitioners worked out exercises cross their arms behind their heads and performed sit-ups until their elbows touch their knees and return to the floor and continue to perform as many sit-ups as they can in one minute.

## **3. Cardiovascular Endurance test by step up**

Cardiovascular endurance is the ability of your heart and lungs to fuel your body with oxygen. The test dealt with the 3m step up test to investigate the effect of estimating the effect of a one-minute step-up test cardiovascular endurance based on 30.48cm steps of skewed metronome set to be 96 beats per minute with accurate count of rhythm. The test begins with starting the stopwatch and March up and down the step while listening to the metronome beat—up, up, down, down for 3m and when the time is over, the up step stops immediately, sit down on the step and count beats using pulses at wrist or neck.

## **4. Flexibility test by sit and reach**

Sit-and-reach and other similar tests that require a person to flex the hip to touch the toes are the most common field tests of flexibility designed to assess low-back and upper hamstring (complex of three posterior thigh muscles) flexibility.

Flexibility test was employed to evaluate the hamstring and lower back's flexibility in which the practitioners took body warm up exercises for at least a minute to perform the test. The practitioners prepared their legs perfectly straight and their hands reaching past or touching their toes to place them on the flat box and then sitting on the floor with their legs extended

and taking off their shoes and bent forward at the hips by using their lower back muscles to reach forward and conducted the exercises.

The test is by marking a baseline on the floor where a ruler is placed perpendicularly to the baseline, which crosses the baseline at 15 38.1 cm, sit with the heels on the baseline with feet 30.48 cm apart with the legs straight and slowly bends forward to reach the furthest point of the ruler.

### **3.5 Data sampling techniques**

Purposive sampling technique was used to select 30 practitioner populations (15 males and 15 females) from 1670 students enrolled in Durbete Secondary School. Selected practitioners fulfilled the criteria set as being healthy, nonathletic and volunteer to participate in conducting fitness exercises as practitioner population.

**Table 1 Data sampling techniques**

<b>Grade</b>	<b>9</b>	<b>10</b>	<b>Total</b>	<b>Study population</b>
<b>Males</b>	<b>350</b>	<b>400</b>	<b>750</b>	<b>15</b>
<b>Females</b>	<b>400</b>	<b>520</b>	<b>920</b>	<b>15</b>
<b>Total</b>	<b>750</b>	<b>920</b>	<b>1670</b>	<b>30</b>

## Chapter four

### 4. Data Evaluation and Results

#### 4.1 Data display

##### 1. Age distributions of the study population.

**Table 2 Age distribution of the study population**

Age	Number	Percentile
16 years	10	33.33%
17 years	8	26.66%
18 years + above	12	40%

The above table 2 shows the age distribution of selected populations in which 10 practitioners of age 16 years old account for 33.33%, 8 practitioners of age 17 years old accounting for 26.66% and the rest 12 practitioners of age 18 and above years old accounting for 40% of the populations.

##### 2. Health related fitness components selected for this study

**Table 3 Test parameters and measurements**

Health related fitness components	Test parameters	Measurement
<b>Muscular Strength (MS)</b>	12 minutes	400 meter run
<b>Muscular Endurance (ME)</b>	1 minute 90° Push-ups	Repetitions
<b>Cardiovascular Endurance (CVE)</b>	8 minutes step up	Repetitions
<b>Flexibility</b>	Sit and reach	20 cm height

Table 3 shows health related components: Muscular strength (MS), Muscular Endurance (ME), Cardiovascular Endurance (CVE) and Flexibility selected for this study on which the pre-test and posttests measurements were conducted on performances of the students throughout pertinent exercises.

##### 3. Data gathering processes

Data were collected while practitioners conducted pretest and posttests exercises using pertinent parameters or rules to assess their performances on all selected health related fitness components. Accordingly, the performances of practitioners during the pretest and posttests on each component were listed in tables and demonstrated in graphs underneath.

#### 4.1 Muscular strength pretest and posttest using 1m 90° Push-up exercises

**Table 4 Performances of practitioners on muscular strength**

Practitioners	Performances		
	Pretest	Posttest	Improvement
M1	25.6	27.6	2
F1	25.5	26.9	2
F2	25.4	26.7	1.3
M2	25.7	27.0	1.6
M3	25.7	26.8	1.1
M4	25.3	27.8	2.5
F3	25.2	25.4	0.5
F4	25.9	27.4	1.5
M5	25.5	26.9	1.4
F5	25.6	26.8	1.2
M6	24.9	26.4	2.5
F6	26.0	26.5	0.5
M7	26.3	27.2	0.9
M8	25.6	28.2	2.6
M9	24.8	26.6	1.8
F7	26.2	27.3	1.1
M10	24.8	26.2	1.4
F8	25.0	26.3	1.3
M11	25.1	26.4	1.3
F9	25.9	27.2	1.3
M12	25.9	27.1	1.2
M13	25.8	26.9	1.1
F10	25.7	26.8	1.1
F11	25.8	26.8	1.0
M14	26.2	27.5	1.3
F12	24.9	26.8	1.9
F13	25.8	27.2	1.4
M15	24.8	26.3	1.5
F14	25.4	26.7	1.3
F15	25.5	26.0	0.5
<b>Total</b>	<b>765.8</b>	<b>805.7</b>	<b>39.9</b>
<b>Average</b>	<b>25.52</b>	<b>26.85</b>	<b>1.33</b>

**Legend**

M= Males

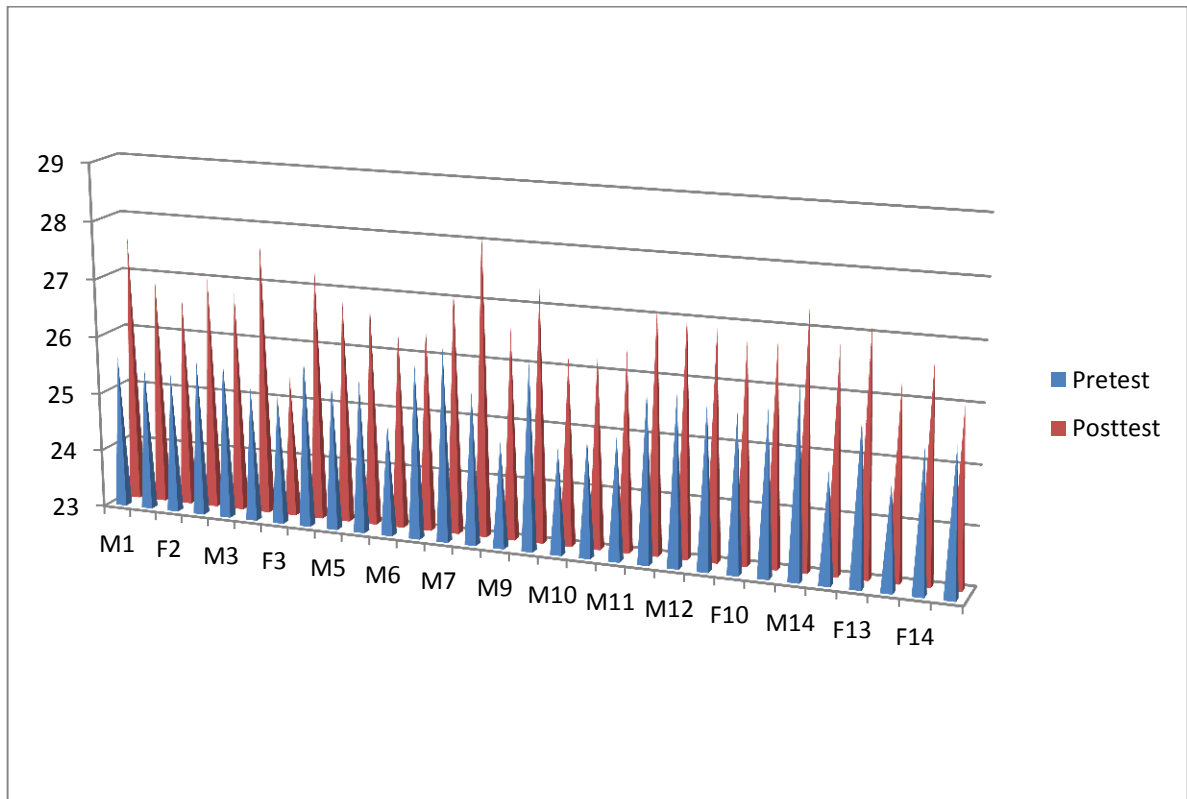
F= Females

The above table 4 describes the muscular strength of practitioners measured during the pretest and posttest results in three sets of repetitions through pushup tests. Muscular strength exercises and the performance of the practitioners on selected variable of the pretest and posttest parameters were listed in table 4 above that shows improvements.

The pretest performance measurement shows the ability of the participants before taking any training exercises on muscular endurance whereby the posttest results demonstrate the performances of practitioners after training exercises for three consecutive months.

The total pretest of muscular strength was 765.8 and its average value was 25.52 whereby the posttest average of measurement was founded 805.7 with the average value accounting for 26.85. The total average performances of muscular endurance of all 30 practitioners during the pretest was **25.52** whereby the average performances during the post test was 26.85 with an improvement of muscular strength by 1.33 as comparative analysis of the pretest and posttest performance of practitioners.

Hence, after 12 weeks training exercises value of the pretest shown up on the posttest was better and improved positively.



**Graph 1 Muscular strength improvements**

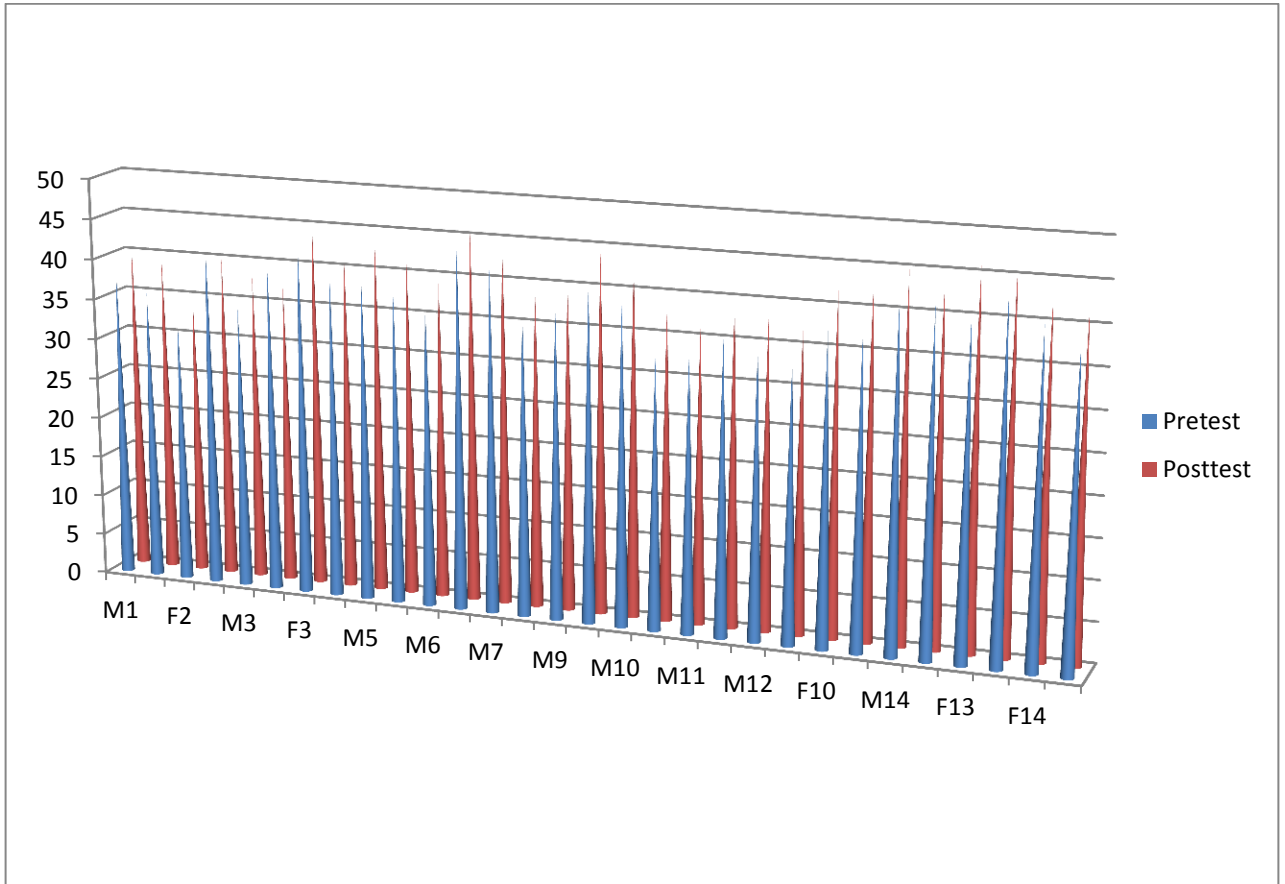
#### 4.2 Muscular endurance pretest and posttest using 1m sit up exercises

**Table 5 Performances of practitioners on muscular endurance**

Practitioners	Performances		
	Pretest	Posttest	Improvements
M1	38	40	2
F1	36	39	3
F2	32	34	2
M2	42	40	-2
M3	35	38	3
M4	40	37	-3
F3	43	45	2
F4	39	42	3
M5	40	43	3
F5	38	41	3
M6	37	39	2
F6	44	46	2
M7	42	44	2
M8	37	39	2
M9	38	40	2
F7	41	44	3
M10	39	43	4
F8	33	38	5
M11	34	36	2
F9	36	39	3
M12	35	38	3
M13	34	37	3
F10	38	42	4
F11	39	43	4
M14	43	45	2
F12	42	44	2
F13	41	46	5
M15	44	46	2
F14	41	43	2
F15	39	42	3
<b>Total</b>	<b>1160</b>	<b>1233</b>	<b>73</b>
<b>Average</b>	<b>38.66</b>	<b>41.1</b>	<b>2.43</b>

The above table 5 presents three sets of repetitions of step up test results measured while practitioners conducted exercises during pretest and posttests.

The total pretest score was 1160 with its average scores of 38.66 whereas the total score of the posttest was 1233 with its average score of 41.10 that totally makes an average performance improvements of 2.43 after 12 weeks of health related fitness training exercises.



**Graph 2 Muscular endurance improvements**

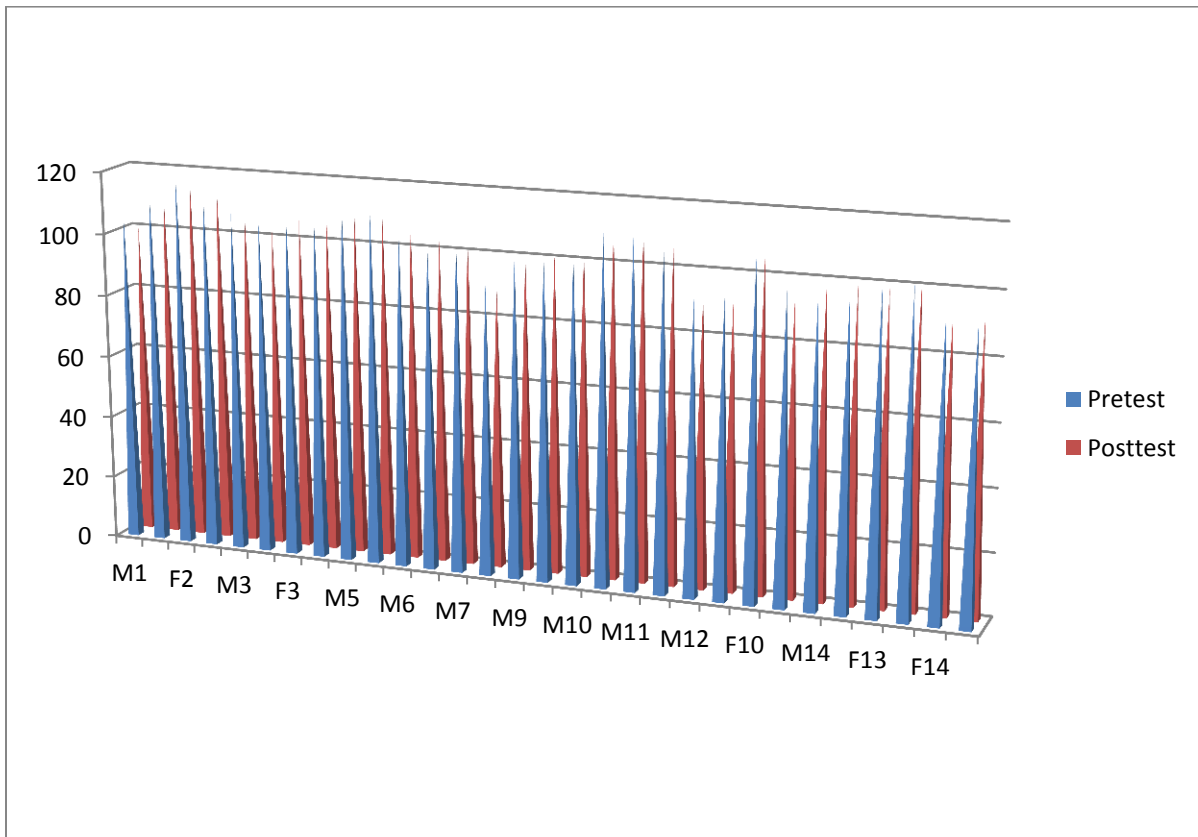
### 4.3 Cardiovascular endurance pretest and posttest using step up exercises

**Table 6 Performances of practitioners on cardiovascular endurance**

Practitioners	Performances		
	Pretest	Posttest	Improvements
M1	105	100	-5
F1	113	110	-3
F2	118	117	-1
M2	113	113	0
M3	109	108	-1
M4	106	102	-4
F3	108	106	-2
F4	110	105	-5
M5	114	111	-3
F5	112	110	-2
M6	106	106	0
F6	104	103	-1
M7	105	104	-1
M8	92	90	-1
M9	101	100	-1
F7	102	101	-1
M10	104	103	-1
F8	111	110	-1
M11	112	111	-1
F9	108	106	-2
M12	93	92	-1
M13	94	93	-1
F10	107	105	-2
F11	98	96	-2
M14	99	98	-1
F12	100	99	-1
F13	101	99	-2
M15	103	101	-2
F14	95	93	-2
F15	93	92	-1
<b>Total</b>	<b>3136</b>	<b>3084</b>	<b>-52</b>
<b>Average</b>	<b>104.53</b>	<b>102.8</b>	<b>-1.73</b>

Table 6 describes the cardiovascular step repetitions test for 3 m measured during the pretest and posttests. The total scores measured in pretest were 3136 with the average score of 104.53 whereby the total measured scores of posttest was 3084 with the average mean value of 102.8.

The average scores differences of the pretest and posttest results were -1.73 showing increase in performance decrease in heart beat that improve health related fitness of the practitioner.



**Graph 3 Cardiovascular endurance**

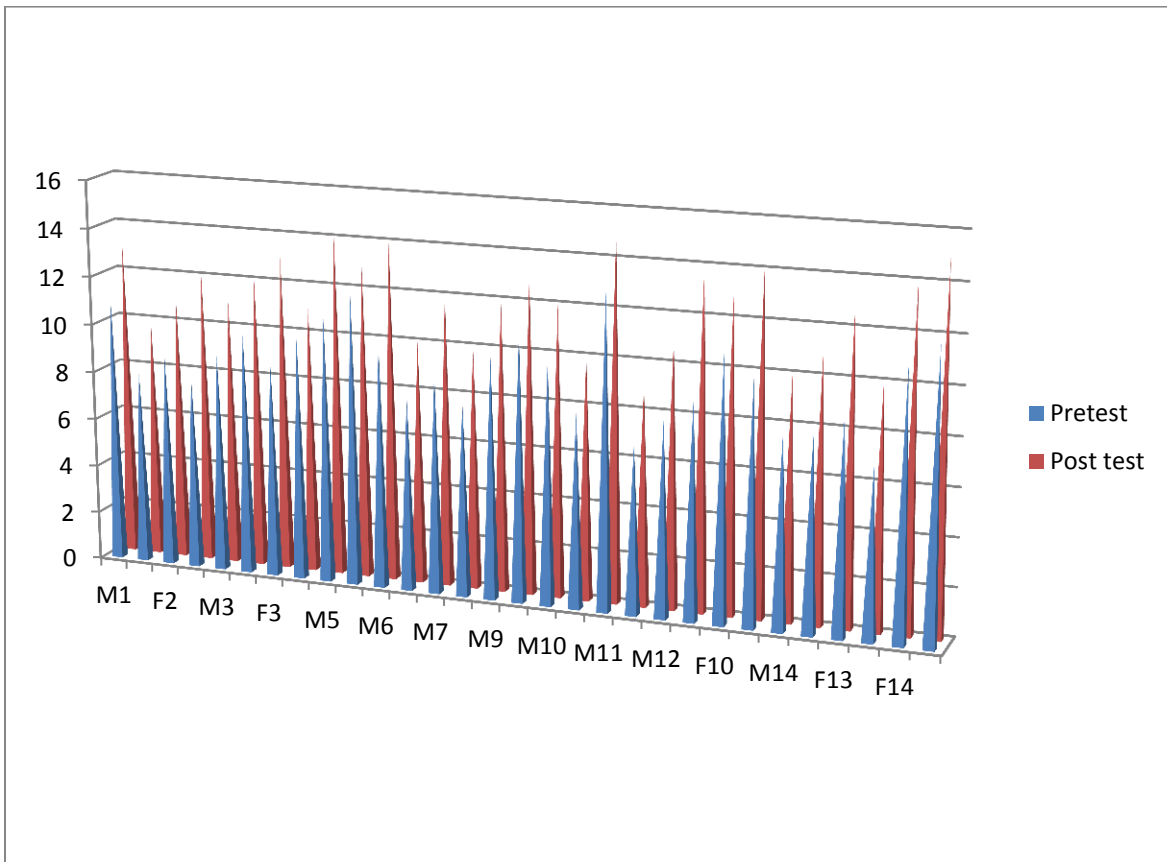
#### 4.5 Flexibility pretest and posttest using sit and reach exercises

**Table 7 Performances of practitioners on flexibility**

Practitioners	Performances		
	Pretest	Post test	Improvements
M1	11	13	2
F1	8	10	2
F2	9	11	2
M2	8	12	4
M3	9	11	2
M4	10	12	2
F3	9	13	4
F4	10	11	1
M5	11	14	3
F5	12	13	1
M6	10	14	4
F6	8	10	2
M7	9	12	3
M8	8	10	2
M9	10	12	2
F7	11	13	2
M10	10	12	2
F8	8	10	2
M11	13	15	2
F9	7	9	2
M12	8	11	3
M13	9	14	5
F10	11	13	2
F11	10	14	4
M14	8	10	2
F12	8	11	3
F13	9	13	4
M15	7	10	3
F14	11	14	3
F15	12	15	3
<b>Total</b>	<b>284</b>	<b>362</b>	<b>78</b>
<b>Average</b>	<b>9.46</b>	<b>12.06</b>	<b>2.6</b>

In table 7, the total performance scores of practitioners on flexibility during pretest were 284 with the average score of 9.46.

After 3 months of training exercise input, the performances of practitioners on flexibility during the posttests was 362 with the average score of 12.06 with score differences of 2.6 between the pretest and posttest indicating that much increment on the performances efficiency exercises.



**Graph 4 Flexibility performances**

## 4.2 Data Evaluation

### 4.2.1 Summary of displayed data

**Table 8 Performance results**

Variables	Pretest result	Posttest result	Improvement
Muscular Strength	25.52	26.85	<b>1.33</b>
Muscular Endurance	38.66	41.1	<b>2.44</b>
Cardiovascular Endurance	104.53	102.8	<b>-1.73</b>
Flexibility	9.46	12.06	<b>2.60</b>
Total	178.17	182.81	<b>4.64</b>
<b>Average</b>	<b>44.54</b>	<b>45.70</b>	<b>1.16</b>

Table 8 above presents comparisons among four fitness components including muscular strength, muscular endurance cardiovascular endurance and flexibility during pretest and posttest. During the twelve weeks of the teaching trainings the improvement of the practitioner performance was significantly increased from pretest training to post training on the groups. All tests had changes due to the teaching health related fitness in which they were engaged.

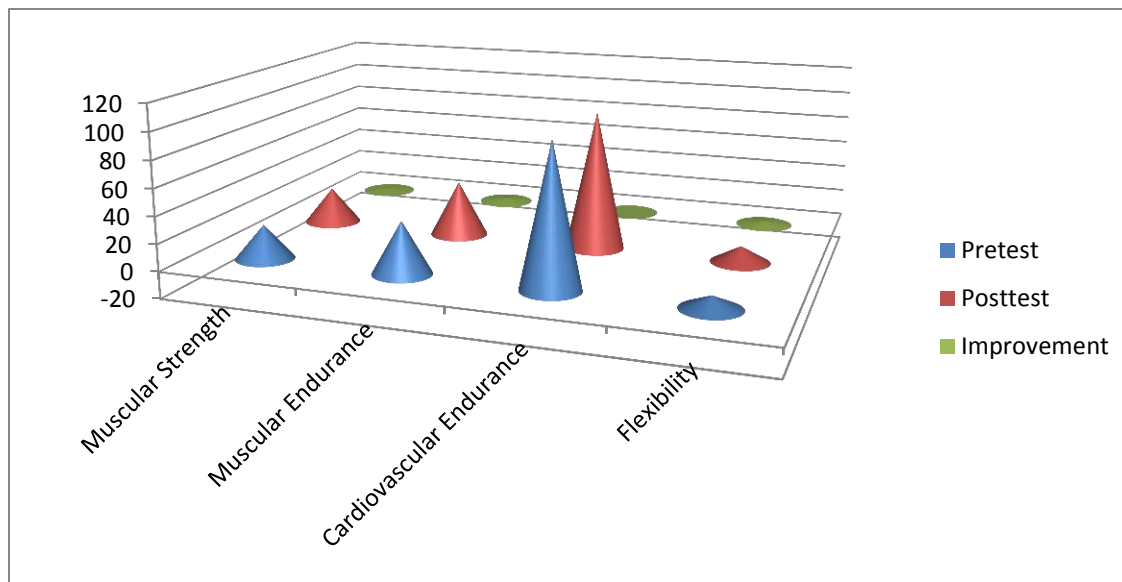
The pretest performance values of the muscular strength were 25.52, which was at the beginning of exercise without any training and the posttest performance values after 3 months training was 26.85 showing an average difference scores 1.33, which indicates improvements in health related fitness of participants.

In assessing muscular endurance, the average score of performances during the pretest was 38.66 without any training exercises, but after 3 months practical training, it was improved and increased to 41.1 with differences of score increments of 2.44 during the posttests.

As indicated table 8, the average score values of performances on cardiovascular endurance at first without exercises during the pretest was 104.53 beat per minute that decreased to 102.8 beats per minute after 3 months training exercises during the posttest.

The beat rate of cardiovascular endurance during the pretest was 104.53, which was reduced to 102.8 after 3 months exercises and decreased the average beat rate per minute by 1.73 recorded as (-1.73) shows endurance improvements.

The average performance score values of flexibility during the pretest without intervention was 9.46 increased to 12.06 after 3 months training exercises in which the performances practitioners increased by 2.60 and improved flexibility during the posttest.



**Graph 5 Average scores of health related fitness improvements**

## 4.3 Results and discussion

### 4.3.1 Results

The performance of practitioners was measured comparing the results of the pretests against the posttest.

As a result of assessments, the average performance of practitioners on muscular strength was improved by 1.33 while the average performance on muscular endurance was by 2.44.

The average performance improvement on cardiovascular endurance was reduced the heart beat rate by 1.73 (-1.73) showing that the heart beat endurance was improved by 1.73 per minute whereby flexibly performance was improved by 2.6 showing improvements all over 4 components of health related fitness.

### 4.3.2 Discussion

The result of the study revealed a new systems of improving health related fitness through exercises. In muscular strength measurement, counting the total number of performed pushups were taken and its average number of pushups of different age groups are recorded (Golding, 1986).

The site up test exercise was conducted to guarantee the hip flexors' and abdominal muscles' strength and endurance, which is crucial for core stability, back support, and back health. This is According to Boreham et al. (2002), reaching a high skeletal mass in one's childhood can lower

the likelihood of experiencing osteoporosis, which is a condition in which excessive loss of bone mass over time.

In doing exercises, the practitioners have improved even attitudes towards sports and body flexibility and class room activities.

The test is sitting on the floor with legs extended straight ahead, feet flat against the box, shoulder width apart and both knees held flat against the sit-and-reach device by the examiner.

Health Improvement describes our work to improve the health and wellbeing of individuals or communities through enabling and encouraging healthy choices as well as addressing underlying determinants of health such as poverty and lack of educational opportunities.

Regular exercise and physical activity promotes strong muscles and bones, improves respiratory, cardiovascular health and cross over health conditions and enhance being healthy and active that also supports to maintain a healthy weight, reduce risks for type 2 diabetes, heart disease and reduce risk for some cancers.

## **Chapter five**

### **5. Summary, Conclusion and Recommendation**

#### **5.1 Summary**

The study was conducted at Durbete Secondary School grades 9 and 10 male and female students to examine the health-related physical fitness and improve performances through training exercises. The muscular strength and muscular endurance tests were based on the rules and principles stating that participants must keep their back straight, knee on the floor and hands on either side of their chest.

Males conducted the activities based on standard rules by assuming a prone position on the floor, placing their palms face down on the floor, raising their body off the ground and stabilize their lower body degrees with their feet and repeated trice as one and continued until they stop repeating activities. Cardiovascular endurance is the ability of your heart and lungs to fuel your body with oxygen. The test dealt with the 3m step up test to investigate the effect of estimating the effect of a one-minute step-up test cardiovascular endurance based on 30.48cm steps of skewed metronome set to be 96 beats per minute with accurate count of rhythm

Flexibility test was employed to evaluate the hamstring and lower back's flexibility in which the practitioners took body warm up exercises for at least a minute to perform the test. The practitioners prepared their legs perfectly straight and their hands reaching past or touching their toes to place them on the flat box and then siting on the floor with their legs extended and taking off their shoes and bent forward at the hips by using their lower back muscles to reach forward and conducted the exercises.

An experimental investigation study design using pretest-posttest on various exercises was used. Selected practitioners have undergone both pretest and posttest measurement tests awhile performances recorded using overt observation checklists.

The pretest and post-test findings on pertinent fitness components were measured served as the primary source of data. Descriptive and inferential statistical models were employed to evaluate the data. Based on the study's findings and discussions was put to the test.

## **5.2 Conclusion**

The study was concluded with satisfying finding on components subjected to the study. The results of posttest measured after 3 months training exercises linked to health-related fitness of muscular strength, muscular endurance, cardiovascular endurance and flexibility have been improved and demonstrated successfulness all over. Physical fitness of female and male students, like muscular strength, muscular endurance, cardiovascular fitness and flexibility brought a radical change in the role of though planned exercise improving fitness. This showed that training fitness is an effective method to keep individuals health and fitness. From the results of the research findings, it was shown that decrement in recovery rate heart rate of the participants in three minute step test. The main reason for the result of decreasing was twelve weeks the improving of health related physical fitness though on planning exercise for this study. Based on the result obtained physical training was the effective method for improving explosive shoulder, biceps and triceps of both male and female students. To improve students' physical fitness programmed fundamental training method plays a great role. Generally, the present study indicated that twelve weeks of well-designed improving health related physical fitness though planned exercise.

## **5.3 Recommendations**

Based on the findings, the following recommendations are provided.

- Incorporating structured training exercises in teaching physical and health related fitnesses is a lifelong important to all.
- All four components of health related fitness into account in teaching physical education class.
- The physical education class is required to be at least three days a week to enhance active participation of students to increase levels of fitness with a focus on teaching training.
- Physical education is a base to improve the overall fitness state of all learners as fitness to sport competition recreational activities and work and live.
- Considering the benefited of regular physical exercise physical education teachers, coaches and other considered bodies should use regular physical exercise program improve their students health related physical fitness.

- Physical education teachers coach and other considered body should be aware of the effect of regular physical exercise on health related physical fitness The government and ministry of education should create and organized regular physical training time for students before they start the class.
- Young people need to participate in regular physical activities to prompt health related fitness this can be help to improve cardio vascular endurance, muscle strength, endurance, flexibility, body composition and to reduce the possibility of obesity.

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## 7. Appendices

### 7.1 Standard norms and parameters for testing all 4 components fitness

#### 1. Cardiovascular endurance test

Evaluation	3m Step up test (beats/min)
Excellent	<79 b/m
Above average	99-80 b/m
Average	105-100 b/m
Below average	127-106 b/m
Poor	>128 b/m

Source: American College of Sports Medicine (2010)

#### 2. Muscular endurance test

Performance Level Count	sit-ups test 1 m for men ( 16-19) ages
Fantastic	>48
Above normal	42-47
On average	38-41
Lower than the usual	33-37
Sadly	32

#### 3. Flexibility test

Performance Level	Sit and Reach (cm)
Outstanding	>14
Good	11-14
Above average	7-10
Lower than average	4-6
Sadly	<4

Source: Davis et.al. (2000)

#### 3. Muscular strength test

Performance level	90° pushups for 1 minute
Superb	>39
Higher than Norman	29-38
On average	Between 23 and 28
Below average	Between 18 and 22
The state of poverty	< 17

Source: Canadian Physical Activity, Fitness and Lifestyle (2001)

## 5. Weekly training schedule

W	Days	Session	Exercise	Time	Repetition	Rest	Duration	Intensity
1	Monday Wednesday Friday	Goggling, Warming ,cooling down	Stretching Walking Goggling	5min 3min 5min	1×5 1×3 2×5	30 S b/n each exercise	40 minute	Lower intensity
2	Monday Wednesday Friday	Main activity Cooling down	Pushup Pull-up Walking	5min 3min 4min	1x5 1x3 2x6	30s rest b/n each exercise	40 minute	Lower intensity
3	Monday Wednesday Friday	Walking Main activity Cooling	Sit and reach test, Cooling down	3min 4min 5min	3x3 2x5 2x4	30s rest b/n each exercise	40 minute	Lower intensity
4	Monday Wednesday Friday	Warming up Main activity	Stretching Walking Pull up	5min 3min 4min	2x4 3x4 1x6	30s rest b/n each exercise	40 Minute	Lower intensity

## 6. Second month training plans

Week	Days	Session	Exercise	Time	Repetition	Rest	Duration	Intensity
1	Monday Wednesday Friday	Main activity Cooling down	Sit and reach test Cooling down	3min 5min 2min 4min	2x3 3x5 2x5 2x4	30 s rest b/n each exercise	40min	Moderate
2	Monday Wednesday Friday	Goggling, Warming ,cooling down	Step-up Rope jump Walking	4min 3min 2min 5min	1x4 2x3 2x2 2x5	30second rest b/n each exercise	40min	Moderate
3	Monday Wednesday Friday	Warming up Main activity	Pushup Pull-up Walking	3min 2min 4min 1min	3x3 2x2 1x4 1x1	30 s rest b/n each exercise	40min	Moderate
4	Monday Wednesday Friday	Walking Main activity Cooling	Stretching Walking Goggling	2min 5min 3min 1min	2x2 2x5 3x3 1x1	30s rest b\n each exercise	40min	Moderate

## 7. Third month weekly training regimens

Week	Day	Session	Exercise	Time	Repetition	Rest	Duration	Intensity
1	Monday Wednesday Friday	Primary action Cooling down	Jogging Walking Arm flexing	7, 3,4 and 8 minutes	1x7 2x3 1x4 2x8	30s rest b/n each exercise	50 minutes	High Intensity
2	Monday Wednesday Friday	Searching Push up Main activities	Step up Walking Jogging Cooling down	3min 4min 2min 6min	1x3 2x4 3x2 1x6	30s rest b/n each exercise	50 minutes	High Intensity
3	Monday Wednesday Friday	Stretching arm flexor Cooling down	Warming up Main activity	8min 5min 2min 3min	1x8 2x5 3x2 2x3	30s rest b/n each exercise	50 minutes	High Intensity
4	Monday Wednesday Friday	Walking Jogging Sit and reach	Warming up Rope skipping	3min 5min 4min 6min	2x3 3x5 4x4 1x6	30s rest b/n each exercise	50 minutes	High Intensity

### 8. Data collection on four health related components of fitness

Student code	Age	Height	Weight	Muscular strength		Cardiovascular endurance		Muscular endurance		Flexibility	
				Push-up test minute		3 m step up test heart beats		Sit up in 1 minute		Sit and reach test	
				Pt	Post	Pt	Post	Pt	Post	Pt	Po
M-1	16	1.70	53	25.6	26.6	91	88	38	40	11	13
F-1	18	1.43	47	25.5	25.9	80	78	36	39	8	10
F-2	18	1.39	48	25.4	25.7	74	73	32	34	9	11
M-2	18	1.60	54	25.7	26.0	73	72	42	40	8	12
M-3	17	1.50	54	25.7	25.8	75	73	35	38	9	11
M-4	16	1.45	53	25.3	26.8	72	72	40	37	10	12
F-3	16	1.50	55	25.2	25.4	76	74	43	45	9	13
M-5	17	1.55	53	25.9	26.4	78	76	39	42	10	11
F-4	17	1.60	49	25.5	25.9	75	73	40	43	11	14
M-6	18	1.73	56	25.6	25.8	76	74	38	41	12	13
F-5	18	1.54	52	24.9	25.4	77	75	37	39	10	14
M-7	19	1.62	55	26	26.5	81	79	44	46	8	10
M-8	16	1.66	56	26.3	26.2	83	76	42	44	9	12
M-9	18	1.58	53	25.6	26.2	84	75	37	39	8	10
F-6	17	1.62	49	24.8	25.6	79	77	38	40	10	12
M10	18	1.71	56	26.2	26.3	78	76	41	44	11	13
F-7	16	1.48	55	24.8	25.2	73	72	39	43	10	12
M11	17	1.72	51	25	25.3	88	83	33	38	8	10
F8	16	1.62	49	25.1	25.4	79	74	34	36	13	15
M12	16	1.66	53	25.9	26.2	77	75	36	39	7	9
M13	16	1.59	52	25.9	26.1	76	74	35	38	8	11
F9	16	1.54	54	25.8	25.9	78	76	34	37	9	14
F10	16	1.59	50	25.7	25.8	74	73	38	42	11	13
M14	17	1.64	55	25.8	25.8	75	72	39	43	10	14
F11	18	1.67	51	26.2	26.5	76	73	43	45	8	10
F12	17	1.61	51	24.9	25.8	79	75	42	44	8	11
M15	17	1.66	57	25.8	26.2	80	77	41	46	9	13
F-13	18	1.50	55	24.8	25.3	82	78	44	46	7	10
F14	19	1.53	56	25.4	25.7	84	80	41	43	11	14
F15	17	1.60	56	25.5	25	81	78	39	42	12	15

## **STATEMENT OF THE AUTHOR**

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