JIMMA UNIVERSITY

COLLEGE OF NATURAL SCIENCE

DEPARTMENT OF SPORT SCIENCE

A COMPARATIVE STUDY ON SELECTED HEALTH RELATED PHYSICAL FITNESS COMPONENTS IN CASE OF KELLEM WOLEGA ZONE BETWEEN URBAN AND RURAL HIGH SCHOOL STUDENTS IN SEYO WOREDA.

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Abbreviations and Acronyms

BMI Body Mass Index

CAD Coronary Artery Diseases

CRD Complete randomize design

PQ Physical Qualities

PRE Progressive Resistance Exercise

PRT Progressive Resistance Training

SPSS Statistical package software

WHO World Health Organization

CVD Cardiovascular disease

CHD Coronary heart diseases

NIDDM Non-insulin dependent diabetes mellitus

BIOGRAPHICAL SKETCH

The author was born on May 4, 1974 in KellemWollega at Dambi Dollo city. The researcher was attended his Primary school at Olika Dingil grade 1-8, and grade 9-12 at Kellem Comprehensive Secondary high School . I graduated with BEd degree in Physical Education in 2010 from Jimma University. Then served for the last 7 years in different high school being a physical education Teacher.

Finally in July 2011 joined School of Graduate Studies at Jimma University to pursue my MEd. degree in the field of Sport Science.

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ABSTRACT

The study was conducted to compare selected health related physical fitness components of urban and rural male students of sayo secondary school. Forty (20 male from urban and 20 male from rural) students have been selected as subjects and their age were16-20 years. The main instrument of data collection was standardized field tests, such as Twelve minute run copper test, Sit and reach test, Ninety degree push-up test and Wall and sit test. A total of 40 respondents were used for the study. In the selection of the sample population stratified and simple random sampling were used. Descriptive statistics such standard deviation and mean were employed as method of data analysis. More over inferential statistics particularly T-test was used for comparing between rural area students and urban area students on selected health related physical fitness components. The finding of study shows that there are significant difference between rural and urban secondary schools grade 9 students in their cardiorespiratory, muscular endurance, muscular strength and flexibility. Thus, rural secondary school students perform better on Twelve minute run copper test, Sit and reach test, Ninety degree push-up test and Wall and sit test than urban students. Finally, policy makers and physical education teachers should attend the issues of health related physical fitness is *possible recommendations were forwarded based on the major finding so as to minimize problem encountered the implementation of teaching quality physical education.*

Keywords: *Twelve minute run, Sit and reach test, Ninety degree push-up test and Wall and sit test.*

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CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Concept of physical fitness is as old as humankind. Throughout the history of mankind physical fitness has been considered an essential element of ever day life. The ancient people were mainly dependent upon their individual strength, vigor and vitality for physical survival. This involved mastery of some basic skills like strength, speed, endurance, agility for running, jumping, climbing and other skills employed in hunting for their livings. Physical fitness is deterioration in adult across all genders, ages and racial/ethnic groups (Ichinohe, 2004). The negative effects of degraded physical fitness on both the individual and society are serious and multi-dimensional. It can cause many risk factors to health including coronary heart disease, certain forms of cancer, diabetes, hypertension, stroke, gall bladder diseases, osteoarthritis, and respiratory problems and is associated with increases in all-cause mortality (Cataldo, 1999).

In adults, relationship among physical activity, health related fitness, and health are fairly well established. Low levels of physical activity and cardio-respiratory fitness are both associated with higher risk of all cause and disease specific mortality (Thune, 1998). Physical fitness is the ability to perform daily activities willingly and actively. Physical fitness includes not only components of sports but those of health as well as regular physical activity prevents or limits weight gain, and gain in body mass index (Kyle, 2001).

The National College of Health Risk Behavior Survey reported that 35% of American college students are overweight (Lowry, 2000). This is not surprising considering that more than two thirds of American adult classified as overweight (Flegal, 2002), making weight gains America's leading health problem (Mokdad, 2001). The expert committee of the World Health Organization (WHO) described physical fitness as "the ability to undertake muscular work satisfactorily." Every person has a different level of physical fitness which may change with time, place of work, situation and there is also an interaction between the daily activities, and the fitness of an individual, the point if where to put the level of optimum fitness. From the physiological point of view physical fitness may say to be the ability of a body to adopt and recover from strenuous exercise.

In the past, the normal routine of daily living required vigorous work and physical activity. Children did more walking for transportation and played outside more often. Today, concerns about safety prevent many parents from even allowing their children to play in their neighborhoods. Machines, communication devices, computers, video games and other electronic conveniences have greatly diminished wealth enhancing levels of physical activity from our lives. Obesity has reached unprecedented levels among children and adults (Flegal, 2002).

Many children are not developing fitness habits our do they value physically active lifestyle. Sedentary behaviors have become common place. Schools have the potential to improve the health of young people by providing instruction in physical education that promotes enjoyable lifelong physical activity. Diseases and health problem resulting from an inactive lifestyle have their origins early in life. This is when an active lifestyle should be established (Kyle, 2001)..

Fitness begins at birth and should continue throughout person`s life. Physical activity and fitness behaviors 'should be normal and necessary part of everyone`s life. Fitness improves s general health and it is essential for full and vigorous living. Physically fit child feels more alert and eager to do things. A weak child is a weak brick in the wall of the nation. The wealth of a nation depends entirely upon the health of every citizen of the country. Hence physical fitness of school children is major factor to be considered. So, School physical education programmers should include multi furious activities appropriate to each age group (Lowry, 2000). The complex nature of physical fitness can best understood in terms of its components such as cardio-vascular endurance, strength, flexibility and muscular endurance. In addition to these components of physical fitness there are many other factors which contribute to physical fitness including heredity, living standard, nutrition, hygienic conditions, environmental and climate factors etc.

In general sense, health can be related with physical fitness According to a recent view point, Physical fitness has two dimensions via health related fitness and motor fitness. Physical fitness is a highly complex phenomenon. In the literature various definition of Physical fitness is given. According to President's Council on Physical fitness and sports (2005), Physical fitness is the ability to carry out daily tasks with vague and alertness without undue fatigue and with ample energy to energy leisure time pursuits and to meet unforeseen emergencies. Many research studies says exercise are important for the development of all physical fitness but few research were done on the area of health related physical fitness components such as cardiovascular

endurance, muscular endurance, muscular strength, body composition and flexibility. Now days in our country Ethiopia, because of sedentary life style most people are attacked by chronic disease such as coronary heart disease, hypertension, diabetes, and so on (ACSM,1998).

This is caused by lack of awareness. In Sayo school people are living sedentary lifestyle due to poor culture. So the research was done in this place by keeping the aim to compare the health-related physical fitness components among Rural and Urban female Student of Jahan Sayo Secondary School.

In the history of human kind, physical fitness has been considered as a vital element of everyday life of an individual. In being so, the ancient people were mainly dependent up on their individual strength, vigor and vitality for physical survival (Manmeet Gill, et al, .2010). These involved performances of some basic skills like strength, speed, endurance, flexibility, agility for running, jumping, throwing and climbing for the persistence of hunting, gathering food and building shelter for their living (Ozdirenc, Gelecek, 2005).

In connection to the idea stated above, international journal of behavioral social and movement science (IJBSMS, 2012) define the concepts of physical fitness as old as mankind, keeping in mind the survival of the fittest, down through the ages, as only strong and agile invader, protect themselves and their property. It is a fact that, physically fit people are in a better position to bear the rigorous and abnormal stress and strain, than those who are less physically fit. The basic movement like running, throwing, climbing, jumping lifting etc. requires specific physical attributes such as muscular strength, muscular endurance, cardiovascular endurance, strength, balance and coordination (W.H.O, 1981).

In the light of this, the expertise committee of the world Organization (1981) describes physical fitness as the ability to undertake muscular work satisfactorily and in capacity to carry out various forms of physical activities without being unduly tired including qualities important to the individual health and well-being. Likewise, regular participation in various exercises increases physical fitness. As a result, high level of physical fitness is desirable for a full productive life. However, sedentary living habits and poor physical fitness have negative impacts on both health and daily living. Every person has a different level of physical fitness which may change with time, place of work and situation. There is also an interaction between the daily activities and the fitness of an individual, the point if where to put the level of optimum fitness.

From the physiological point of view, physical fitness may be ability of the body to adopt and recover from strenuous exercise (Kamla-Raj, 2010). For most individuals, increase in physical activity increases physical fitness. Hence, physical activity and physical fitness are closely related in that physical fitness is mainly not entirely determined by physical activity patterns over recent weeks or months. That's why; genetic contributions to fitness are important but probably account for less of the variation observed in fitness than is due to environmental factors, particularly physical activity (Bouchard, C., and L, .pe' Russe, 1994).

Many researchers strongly support the regular exercises helps one to keep a strong and healthy and to prevent cardio vascular diseases. Physically fit person, heart beats at a lower rate and pumps more blood per beat at rest. As a result of regular exercises and individual's capacity to use oxygen is increased systematically energy production depends on internal chemical or metabolic change. Health, Fitness and performance are poorly correlated phenomena. Health is generally defined as the freedom from disease, fitness strictly relates to a man's ability to meet the demands of his environment and excellence in performance.

The link between physical fitness and activities has been demonstrated in sport, physically fit will be individual are able to perform at a higher relative intensity than their rivals. Therefore, the present comparative study was attempted to investigate the current status of physical fitness rural students and urban students in JahanSeyo Secondary School.

1.2. Statements of the Problem

Physical fitness is backbone of the human life. Physical fitness has a great role in life, but to maintain physical fitness and functions of internal organs daily exercise is must. Different people do different exercises according to their interest, for example–swimming, running, walking, calisthenics and yoga exercises etc. But which exercise has high and low influence on physical fitness and health status.

Even if it remains unknown to what extent fitness instruction has been included in physical education program, fitness test program has been implemented in most schools as millions of young people have experienced fitness testing (Placek, et al., 2001).Interestingly, both US and the republic of Chain start systematic youth fitness testing in schools in the early 1950s for complete different reasons. The force in the US was unsatisfactory performance of American youth compared to European youth on the Kraus Weber test (Freedsonet et al, 2000; Seinfeld and Vogel, 1989). By contrast, the national wide impetus to follow the model of the Soviet Union was one of the primary reasons for the PRC to implement the national fitness test in schools (Ili, 1996).

The underlying assumptions for testing youth people's fitness in physical education program in both countries, however, were almost identical. It was widely believed that the identifications deficiency of fitness through testing could help teachers to implement appropriate intervention and motivation for youngsters to practice in more physical activates (Fan, 1996: Pangrazi, 2001). Similarly, fitness program in both countries have undergone revolutionary revisions over the years (Keating, X., D, 2003).

The results and experience gained from several European studies suggest that physical form is a key indicator of the health of children and adolescents (Ruiz, et al., 2006) and is a predictor of health in later life (Ruiz et al., 2009). Regular monitoring of the level of physical activity and physical fitness of the entire population should be considered a public health priority (World Health Organization, 2010). Monitoring involves constant measuring and/or estimating (collective test) levels of physical activity and physical fitness of the individual as well as the evaluation of the data (C N S P E C, 1990).

Raising the self-esteem of young people and allowing them to reach their potential through high quality of physical fitness is every research certainly in our Ethiopia context. Hence, the researcher of this study wants to realize the current statues of physical fitness level of Jahan Seyo students in terms of their fitness, health, confidence, self-esteem, their ability to concentrate and their readiness to learn.

For that reason, the participants for the studies were planned to involve in test at beginning of second Semester. Students get exposure to physical fitness related training at second semester. Therefore, it is very important to examine the significance difference between the participants of health related physical fitness. The researcher observed the difference between rural and urban areas of Kellem Wollega Zone shows a difference because the city students engaged in more of watching television, movies and recently sociali media particularly engaged in facebook and others. While, rural students were engaged in running, throwing and walking long distance from village to village. It is hoped that, the study helps to fill out the fitness level gap between the two categories. The following basic research questions were tested to explore the significant relation or difference between physical fitness performance levels of health related physical fitness status between rural and urban students at JahanSeyo Secondary School.

1.3. Research Question

- There was difference between muscular strength in urban and rural secondary school students at Jahan seyo secondary school?
- Is there any difference between cardiovascular endurance in urban and rural secondary school students at jahan seyo secondary school?
- Is there any difference between muscular endurance in urban and rural secondary school students at jahan seyo secondary school?
- Is there any difference between flexibility in urban and rural secondary school students at jahan seyo secondary school?

1.3. Objectives of the Study

The general objective of this study was to compare some selected health related physical fitness level between urban and rural high school students Jahan Sayo High School students.

1.4. Specific Objectives

- To assess difference between urban and rural secondary school students in muscular strength at jahan seyo secondary school.
- To examine difference between urban and rural secondary school students in cardiovascular endurance at jahan seyo secondary school.
- To identify difference between urban and rural secondary school students in muscular endurance at jahan seyo secondary school.
- To investigate flexibility difference between urban and rural secondary school students in flexibility at jahan seyo secondary school.

1.5. Significance of the Study

The success and competence of any physical fitness depend upon the ability of the performer to effectively achieve the given task on time. Therefore, the issues that were discussed in this study have the following importance:

- ❖ The study was expected to contribute in the identification of student physical fitness level of physical fitness status between rural and urban students at Jahan Seyo Secondary School.
- ❖ It is intended to create awareness towards the problem among physical education teachers in general and students in particular.
- ❖ To provide a hint to the school management and other concerned bodies as to fulfill necessary facilities and equipment for the departments of physical education students.
- ❖ To stimulate the interest of individuals to conduct research on the same issues for further investigation.
- ❖ To establish norms for investigators and thus make objective comparisons between students of different ages, height, weight and pulse rate level of competition in the college.

1.6. Scope of the Study

Conducting the study was in comparative study of some selected health related physical fitness components of urban and rural male students of JahanSayo secondary, Kellem Wollega zone.

The study delimited to total of 160 students (40 students sample) whose age ranged from 16-18 years of Jahan Seyo high school students. The present study delimited to high school level only (grade 9) students. The study delimited to selected health related physical fitness variables.

1.7. Limitations of the study

In this study following are the limitations which were not being taken into consideration. Socio-economic status, religion, Personality traits and habits, Diet and daily routine of the subjects were not being considered, there was no control over the cost of the equipment used by the subjects and also no specific motivational technique was not being used while collecting data, Family backgrounds of the subjects were not being considered.

1.8. Operational Definition of Terms

Physical fitness: - a set of attributes or characteristics that people have or achieve that relates to the ability to perform physical activity.

Body mass index: Body mass index concentrates on an individual's height and weight to determine and estimated body fat level .

Cardiovascular endurance: is the ability of the heart circulatory and respiratory system to supply oxygen during sustained physical activity.

Health Related physical fitness variables: Health-related physical fitness consists of those components of physical fitness that have a relationship with good health.

Flexibility: is a health-related component of physical fitness that relates to the range motion available at a joint.

Rural areas (also referred to as "the country" or "the countryside") are large and isolated areas of a country, often with low populations.

Urban areas: Urban areas (also referred to as "the city") are places that have the density of population more than 400 persons in square per kilometer. Urban area is more frequently called a city or big town with have all the facilities and have more development..

Muscular endurance: is the ability of a muscle or muscle group to resist fatigue and to make repeated contractions against a defined sub maximal resistance.

Muscular strength: is the ability of a muscle or muscle group to exert maximum force .

Variables:-Something that varies or is prone to variation .

1.9. Organization of the Study

This study was organized under four chapters. The first chapter highlights the paper and why the study conducted. Chapter two reviews related literature to distinguish previously discovered areas to cover the ground for what is to be obtained in this study. Chapter three dealt with the

design and research methodology, instruments of data collection, sampling techniques, procedure of data analysis and interpretation. Chapter four dealt with result and discussion.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. Aim of physical Education:

To a large extent general education was physical education in early societies for the environment made great demands on physical condition of man. Youth who lacked in physical courage stamina and skill were a danger to the community. It the chances of group survival, the tribe encouraged both to develop the strength, endurance, agility and skills needed to withstand the rigors of outdoor life, to obtain the necessities of life and to engage in aggressive and defensive action.

2.2. Meaning of Physical Fitness

Human life is based upon the body he keeps. All the activities of life are done with the help of body. Nature has created humans to perform various activities efficiently. Today modernization has made human life more easy, as most of the work is performed by the machines. The sedentary life style of man has reduced the efficiency of humans. fitness not only to improve our abilities but also to improve our health and wellness. This will also help to develop healthy environment around us along with community health, thus, nation was benefited. By organizing physical fitness programmers, we can improve our fitness, wellness and health

Most authors define 'physical fitness's the capacity to carry out every day activities without excessive fatigue and with enough energy in reserve for emergencies. Emphatically this definition is inadequate for a modern way of life. By such a definition almost anyone classify himself as physically fit Gatchell (1977)

According to Clarke (1971) Physical fitness is the ability to carry out daily task with vigor and alertness without undue fatigue and ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies. Fitness is a broad term denoting dynamic qualities that allow to satisfy the needs regarding mental, emotional stability special consciousness and adoptability spiritual and oral fear and organic health are consistent with heredity. Physical fitness means that the organic system of the body are healthy and function efficiently vigorous tasks and leisure activities beyond Organic development, muscular

strength and stamina. Physical fitness implies efficient performance in exercises Bucher and Prentice (1985)

2.3 . Importance of physical fitness

Every individual must know the importance of physical fitness. In other words, one must have a fundamental knowledge of anatomy and physiology. This fundamental knowledge enables person to understand physical fitness. Physical fitness is the capacity of a person to function steadily and smoothly when a situation arises. Physical fitness makes you feel mentally sharper, physically comfortable and more with your body and better able to cope with the demands that everyday life makes upon you. Increased physical fitness not only improves health but improves your performance at work. Hundreds of American companies have backed with idea financially by employing full time directors of fitness for their work. Jackson (1985). The benefits of physical fitness are numerous. The person who is physically fit has greater amount of strength, energy and stamina an improved sense of wellbeing better protection from injury because strong well developed muscles safeguard bones, internal organs and joints and keep moving parts limbers and Improved cardio respiratory function Bucher and Prentice (1985).

It is necessary for every individual to be physically fit to perform their daily work with ease and to take part in various activities effectively. Everyone should be fit enough through participation in physical activities to develop the different physical fitness components.

2.4. Physical Education and Physical Fitness

The primary aim of physical education is not to develop star athletes, winning team of expert performance but a national vitality with character values and physical fitness. It aims to develop youth into citizen who have the capacity to enjoy vigour and interesting life. Mathews (1967)

According to Falls,(1971) “Physical fitness is an important objective of physical education program and the program is directed toward achieving the objectives through specific development exercises as well as games and activities that help to improve physical fitness”.

Harrison Clark (1971) opines "Neuro-muscular coordination of individual which include his ability to learn new skill finally to achieve competency in physical activities in essential to all phase of physical education".

2.5. The Need for Fitness Education

Fitness is that state which characterizes the degree to which a person is able to function efficiently. Fitness is an individual matter. It implies the ability of each person to live most effectively within his potentialities. Falls(1980) Physical activities help a man achieve high degree of physical conditioning. In schools there is a compulsory physical activities program for all boys and girls, so it would be interesting to find out which of the components have better physical fitness. There are many physical fitness tests to evaluate the ability of the students to carry out daily tasks without undue fatigue.

2.6. Physical Exercise and Physical Fitness

Exercise is the means to an art, vigorous and lengthy life, inactivity will kill you. Many people say that exercise makes them feel better and more relaxed number of studies have shown that people improve psychologically as well as physically as a result of running program. There is a lot of circumstantial evidence to suggest that this relaxing effect is caused by the release of endorphin –morphine –like substances which occur naturally in the brain. "If you make an investment in exercise it makes you conscious of other reasonable health habits. You are not about to waste your investments, Morehouse and Brass (1975)

According to Lumpkin(1986) "Exercise means using or exerting body play" refers to the resultant action or what the participants do during physical exertion. "Games" range from amusements or diversions to competition with significant outcomes governed by rules. Freedom from work or duties describe "Leisure" which may or may not be used for physical activity similarly "Recreation" refers or renews one's strength and spirits after toil again with or without activity. "Sport" encompasses all these diversions and physical activities that aredo for pleasure and success."

2.7. Health related Physical Fitness

According to current thinking in the physical education profession, physical fitness is either health related or performance related. In keeping with wellness trend today and an emphasis on all aspects of healthful living in addition to stressing performance or motor skill related to fitness. This aspect of physical fitness concerns the development of qualities necessary to function efficiently and maintain a healthy life style. Each of the components of health related fitness cardio respiratory endurance, muscular strength and endurance, flexibility and body composition Bucher and Prentice 1985.

According to Bucher and Wuest (1987) "Health related physical fitness is concerned with the development of those qualities that often protect against disease and frequently are associated with physical activity. Then health related physical fitness is important to everyone and should be stressed by physical educators".

Spiraling health care costs and realization of benefit to be gained from participation in health and fitness activities have prompted many colleges, corporation and other organization to establish program for their students and client able. They have found that such program promote good health and also make economic sense since poor health is cost by in terms of illness, primitive death, development productivity and absenteeism Bucher and Prentice. Performance related Physical FitnessKoKo (1985) says, "General physical fitness is the capacity of the body to perform work to resist disease and infection and to resist physical stress imposed by such things as heat, cold, atmospheric pressure changes at high attitude or under water and the forces of jolts and vibrations".

Thomas (1962) opines, "Physical fitness is the total fundamental capacity of an individual to perform a given task". Exercise is not always performed in a sport or training when you paint your room or change a flat time you are exercising and when you exercise or number of important bodily changes influence psychological functioning in every striking ways if you are eventually to organize a realistic personal program of exercise it is important that you understand these changes.

Physical fitness is an adaptive state which can be defined as a set of attributes that people have or achieve which relate to the ability to perform physical activity (Howley, 2001). Physical fitness

can be divided into health related fitness and skill or performance-related fitness. Health-related fitness consists of those components of physical fitness that are affected by habitual physical activity and that are related to health status. Health-related fitness has been defined as a state of being able to perform daily activities with vigor, and traits and capacities that are associated with a low risk of premature development of hypokinetic diseases and conditions (Bouchard & Shephard, 1994). On the other hand, skill or performance-related fitness is linked to the attributes related to performance outcomes in various sports or in certain occupations. Tremblay, Boudreau-Larivière and Cimon-Lambert (2012) observed that promoting healthy physical activity (PA) behaviors in children between the ages of 0 to 5 years has immediate impacts on the health and well-being of children and serves as a powerful strategy to prevent or minimise the occurrence of chronic diseases in later life. According to the Toronto model presented by Bouchard and Shephard (1994), the components of health-related fitness are defined as morphological, muscular, motor, cardio respiratory and metabolic fitness. Morphological fitness refers to body composition and bone strength (Skinner & Oja, 1994). Body composition describes the amount of fat mass and fat free mass and considers also whether body fat is peripherally or abdominally distributed (Howley, 2001).

Muscular or musculoskeletal fitness refers to muscular strength, muscular endurance and flexibility, and motor fitness refers to postular control (Skinner & Oja 1994). Cardiorespiratory fitness reflects the ability of cardiovascular and respiratory systems to supply oxygen to the working muscles during heavy dynamic exercise (Howley, 2001), and direct measurement of maximal oxygen uptake (VO2max) during a maximal exercise test is regarded as the gold standard for the evaluation of cardiorespiratory fitness. Metabolic fitness refers to carbohydrate and lipid metabolism usually defined usually by glucose tolerance, insulin sensitivity, lipid profile and the ratio of lipid to carbohydrate oxidized at rest of during steady-state exercise (Bouchard & Shephard, 1994). Fitness is considered an important marker of health already in youth, (Ruiz, Ortega, Meusel, Harro, Oja & Sjostrom, 2006) and there is increasing evidence that high levels of fitness during childhood and adolescence have a positive influence on adult health status (Ruiz, Ortega, Meusel, Harro, Oja & Sjostrom, 2006). Several meta-analyses showed a decrease in cardio respiratory fitness during recent years and stabilization in muscular strength (Macfarlane & Tomkinson, 2007). Available original reports all around the world show different trends depending on geographical region (Eisenmann & Malina, 2002). This review is meant to

decipher the handy researches so as to suggest implications for early physical and health education programme in school.

2.8. Factor affects of health related physical fitness

2.8.1. Health risks

The World Health Organizations' (WHO)publication on global recommendations on physical activity for health identifies physical in activity as the fourth leading risk factor for global mortality (Janssen etal., 2005;WHO: Geneva,2010).Health related physical fitness refers to the components of fitness the tare closely related to health such as cardio respiratory fitness, musculo skeletal fitness, motor fitness and body composition(Ruiz etal., 2011).

Ortegaetal.,(2008)suggests that physical fitness should be thought of as an integrated measure of most, if not all, of the body's systems responsible for carrying out our daily physical activities. Physical activity is considered one of the most important health markers, and a predictorofmorbidityandmortality, forcardiovasculardisease (WHO:Geneva, 2010).

Therefore, the promotion of physical activity plays an important role in minimizing the development of chronic diseases of lifestyle(Min-Lee et al., 2012).In addition, it aids in injury prevention and contributes to quality of life and psychological health (Stafford,1998).

2.8.2. Genetic factors

According to the NCCDPP there are certain genetic characteristics that leave some individuals more susceptible to excessive weight gain Further more,it is important to understand that the evidence strongly argues that a genetic susceptibility needs to exist in conjunction with a contributing environmental or behavioral factor to have a significant effect ton weight gain (Haworth et al.,2012). The extent to which the genetics affects BMI is varied in the literature. The estimates of its effect from twin studies range from as much as 50% to 90%(Maesetal,1997).

Genetic factors and environmental factors do affect BMI in both the clinical and normal range of BMI. Therefore obesity is the extreme response to the same genetic and environment factors (Haworth etal.,2012).The rapid rise in there ate of overweight and obesity over the past decade can not only be attributed solely to genetic factors. Human genetic makeup has not changed over the past three decades but there has been annul arm in grise in the rate of obesity and over

weight in school aged children(eddyetal.,2012;McVeighetal.,2004;Janssenetal.,2005; Haworth etal.,2012;www.cdc.gov).Thus, this suggests the importance of the behavioral and modifiable factors in the prevention and management of overweight and obesity.

2.8.3. Environmental factors

There are multiple environmental factors that can have an effect on achild's weight, rate of weight gain and amount of physical activity that they take part in(www.cdc.gov).These include the child's home, child are, the child's school and community environment. Vukovićetal.,(1998)found that physical activity was closely related to parental physical activity patterns in younger children and that the parent's physical activity was the predictor of intention for par taking in physical activity in future. Hence, children and youth are likely to develop the same habits as their parents with regards to both calorie intake and physical activity patterns(www.cdc.gov).

Child are all so has a critical role to play, since most children of working mothers spend an enormous amount of time at child care centers. Healthy eating habits and physical activity during the developmental stages can have an influence on developing healthy future habits(Salmon etal., 2005).The home and child care environments are even more important now since there has been a worldwide increase in access to sedentary recreational opportunities such as televisions, computer and video games (Salmon etal.,2005).

Furthermore, the majority of young people aged 5 to 17 are enrolled in schools. The amount of time spent in school and on the community play grounds can have a huge influence on whether children and youth adopt healthy or unhealthy habits (www.cdc.gov).

2.9. Components of Physical Fitness

There is no single measure of physical fitness and no single way of achieving it. However, these are three major qualities which contribute to overall fitness, they are strength, stamina and flexibility.

"The achievement of total fitness depends upon combining these three main strands, strength, stamina and flexibility" Gardon Jackson (1985).

According to Mathews (1967) "Total fitness refers to individual capacity to measure and live effectively in the environment. AAHPER fitness is that state which characterizes the degree

and which the process is able to function. Fitness is an individual matter. It implies the ability of each person to live most effectively with potential ability to function and depend upon the physical, mental, emotional, and social land spiritual components of fitness, all of which are related to each other and are mutually independent.

"Fitness means the development of components muscular strength, muscular endurance cardiovascular endurance and flexibility"

Physical Fitness: According to Bucher (1958) Physical fitness is "the ability of an individual to live a full and balanced life. It involves physical, mental, emotional, social and spiritual factors and the capacity for their wholesome expression". Physical fitness refers to practical performance of exercise that calls for the number of experiences, they are the feeling of happiness in the process of correct performance of movement, feeling of "confidence, self-satisfaction, surprise and unhappy in the process of confusion and disappointment etc.

It is a positive quality, extending on a scale from death to "abundant life". All living individuals have some degree of physical fitness which varies considerably in different people and in the same person at different times.

It is not as broad in its meaning as 'total fitness'. It include, adequate degree of health, posture, physique, proper functioning of vital organs, nutrition, and good health habits along with an adequate amount of endurance, strength, stamina and flexibility Clark and David (1978) .

2.10. Physical Fitness

Physical fitness has been defined "as the development and maintenance of a sound physique and a soundly functioning organs, to the end that the individual realizes in an optimum measure his capacity for physical activity as well as for mental accomplishment unhampered by physical drains or by a body lacking in physical strength and vitality" Ebel, (1966).Physical fitness as the capacity of an individual to perform given physical takes involving muscular effort Mathews (1973). Physical fitness as the capacity of an individual to perform physical work William (1970). In the words of Willgoose, Physical fitness is

"The capacity for an activity which must be enough to perform the give task" Willgoose(1968). According to Hubert Dhanaraj, (1968) Physical fitness refers to the ability of the body to tolerate stress in all its kinds and maintenance manifestations.

2.11. Selective Variable of physical fitness

2.11.1. Flexibility

Flexibility is the measurement of the achievable distance between the flexed position and the extended position of a particular joint or muscle group. This measurement depends on the length and looseness of the muscles and ligaments due to normal human variation and the shape of the bones and cartilage that make up the joint (Chek, 2002).

Wuest and Lombardo (1994) have defined flexibility as the ability of the various joints of the body to move through their full range of motion. Insel*et al*. (2001) refer to flexibility as the ability to move the joints through their full range of motion. To them flexibility is not a significant factor in the everyday activity of most people, but inactivity causes the joints to become stiffer with age, causing poor posture, back, shoulder and neck pains. Prentice (1997), has defined flexibility as the ability to move freely throughout a full, non-restricted, pain-free range of motion about a joint or series of joints.

The importance of flexibility to health, good posture and physical performance is even appreciated by animals like the cat and the dog that stretch after sleeping to maintain good joint mobility. Every person needs some flexibility to perform efficiently and effectively in daily life. Body builders, who have developed bulged muscles through improper weight-training, usually sacrifice flexibility in order to develop muscle strength. In strength training, it is important to ensure that all movements are carried through their full range of motion to satisfy the good thumb rule; " stretch what you strengthen and strengthen what you stretch "(Scott, 2002).

It is interesting to know that there is no ideal standard for flexibility. There is little scientific evidence to show that a person who can reach 2 inches past his or her toes on a sit-and-reach test is less fit than the person who is able to reach 6 inches past his or her toe. Too much flexibility as well as too little flexibility could be detrimental (Corbin et al., 2003).To develop flexibility, it is recommended that muscles are stretched past normal length until resistance is felt. For duration, the stretch should be held from 5 to 10 seconds initially, building to 30 to 45 seconds (Wuest et al., 1994).

Several sit-and-reach tests (SRs) are commonly used in health-related and physical fitness test batteries to evaluate the hamstring and lower back flexibility (Jackson, A.W. & Langford, N.J., 1989; Hoeger et al, 1990; Hui and Yuen, 2000). Such field measures are only moderate indicators of hamstring extensibility. However, the SRs are frequently used to evaluate the hamstring muscle extensibility because the procedures are simple, easy to administer, require minimal skills training and are particularly useful in large scale extensibility evaluation in the field setting (Hui and Yuen, 2000) .

For its effective application, the participants sat on the floor, with their shoes off, their legs straight, and feet against the flex meter foot stop. Before the test the researcher asked the participant: do you have a back injury or is there any other reason you should not try to touch your toes? If the participant's answer was positive, the flexibility test was started. When participant reached forward and touched the stretch foot for 3 seconds, the best measurement of the three was recorded in centimeters (MortezaJourkest, et al, 2011).

According to Australian College of Sport & Fitness, (ACSF, 2013) measuring the distance from their toes to their fingertips, and record. If their fingers are passed their toes, the results are positive, if the fingers are behind the toes, the results are negatively determining the ability the participants measuring in centimeters by means of the chart indicated below.

Table 2. 1 Standardized rating scale of flexibility rating

Table 1: Standardized Rating Scale of Flexibility Rating		
	Urban	Rural
Very Poor	< -15	< -20
Poor	-15 to -8	-20 to -9
Fair	-7 to 0	-8 to -1
Average	+1 to +10	0 to +5
Good	+11 to +20	+6 to +16
Excellent	+21 to +30	+17 to +27
Super	> +30	> +27

2.11.2. Muscular Strength

Muscular strength is the maximum amount of force that can be applied by a muscle during a single maximal contraction. Throughout your life you need some strength to avoid injury, to meet emergencies, and to engage fully and independently in daily activities. It takes strength to wash your clothes, to lift and carry a basket, which is full of tomato, to lift and carry kids to change a flat tire; and to run quickly. Strength allows you to do more work and to move more work and to move more smoothly and efficiently. Students who perform regular appropriate exercise possess. Sufficient strength for participation in activities such as: jumping, lifting, running, pushing etc. Strength helps you to have good posture and prevent back pain and muscular injuries. Lack of strength in the back and abdominal muscles is associated with poor and lower back problems (Physical Activity Guidelines Advisory Committee, 2008)

According to Barrow and McGee (1979) strength is the capacity of the whole body or of any of its parts to exert force. According to Mathews (1973) Muscular strength is the force that a muscle or group of muscles can exert against a resistance in one maximum effort.According to Hockey (1973), strength may be defined as "The force, a muscle can exert against a resistance in one maximal effort". It is measured in units of pounds or kilograms.26

2.11.3. Types of Strength

There are three types of strength: dynamic strength, static strength, and isokinetic strength.

Dynamic Strength: Dynamic strength is also called isotonic strength. (I so means "same" and Tonic means "same."). It is defined as the maximal weight that can be lifted at one time. Dynamic strength required shortening or lengthening the muscle, causing a certain body part to move through a full range of motion. Weight lifting is the common form of isotonic training. Exercises such as sit-ups, pushups, chin-ups, are isotonic exercises. Because they require isotonic muscle contraction that involve part of body part of the bend then gradually relaxes and lengthen.

The major values of performing isotonic contraction in exercise are the increase of joint range of motion. In addition, isotonic movements tend to facilitate blood circulation and thereby helping to facilitate muscular endurance. In isotonic exercise a body part is moved and the muscles change in length, either, shortening or lengthening (Grosvenor D. (1984).

Static Strength: Static strength is a muscle's ability to exert a force without changing length. It is also called isometric strength. Metric means "length"; isometric means "some length".

Static strength demands forcefully contracting the muscles in a fixed position. That is, with no change in the length of the muscle or in the angle of the joint at which the contraction takes place. The measure of static strength is achieved when you exert maximal force against an immovable object. Attempting to lift or push an object that cannot be moved places the muscles in a state of static contraction.

In isometric exercise, you contract, your muscles but do not change their length. Even no movement of the body part occurs. Pushing your rigid arms against a wall while tightening your arms muscles in an, example of an isometric exercise.

Static strength is specific to the angle at which it was trained. Any gain in static strength is limited to the specific joint angle at which it was trained. Any gain in static strength limited to the specific joint angle at which the contraction is taking place. Static contractions are use in treatment (rehabilitation), and to gain strength at a "fixed point" of a lift (Mood et., 1983 Sports and Recreational Activities for Men and Women).

Isokinetic Strength: Isokinetic strength is strength that allows you to exercise with a constant resistance through the full range of motion. Kinetic means "movement"; Isokinetic refers to movement at fixed speed. It requires changes in the length of muscle while the contraction is performed at a constant speed. Isokinetic strength is measured with an expensive electronic or hydraulic apparatus. Isokinetic devices are designed so that regardless of the amount of force applied against a resistance it can only be moved at a certain speed. That speed will be the same whether maximum force or only half the maximum force applied. Consequently, when training isokinetic ally, it is absolutely necessary to exert as much force against a resistance as possible for maximum strength gains to occur. Several isokinetic devices are available commercially. A major disadvantage of these devices is their cost. Many of them came with a computer added printing device and are used primarily as diagnostic and rehabilitative tools in the treatment of various injuries (J, 1977. Physical education hand book, Allyn and Bacom).

2.11.4 Muscular strength and endurance

Muscular strength and endurance are two important parts of your body's ability to move, lift things and day-to day activities. Muscular strength is the amount of force you can put out or the amount of weight you can lift. Muscular endurance is how many times you can move that weight without getting exhausted (very tired).

According to Frits and Peter Hatting, (1979) Hand ball, there are five reasons why exercise is important

Everyone is aware of the importance of exercise, but do you know why exercise is important? Exercise benefits many different areas of your body and your life. Here are five good reasons why you should make exercise a regular part of your routine.

1. Weight Control: One of the most common benefits of exercise is that it helps you control and manage your weight. Exercise burns calories, which results in shedding pounds. Although rigorous exercise will burn more calories, even simple exercises such as a brisk walk can have a positive impact on weight loss.

2. Physical Fitness: Exercise doesn't just keep you trim—it helps you stay healthy. Regular exercise increases your overall level of fitness, which in turn boosts your immune system and makes you more resilient to illnesses like the common cold. Combined with your regular vaccinations, physical exercise might just be your ticket to getting through flu season in one piece.

3. Energy: One of the reasons to exercise regularly is that it gives you energy. Rather than going for that second cup of coffee, a workout can help oxygen flow more freely throughout the body and give you a much-needed burst of energy to get you through the day. It also increases your overall stamina, which can help you stay energized for longer to begin with.

4. Mental Health: Exercise has been proven to provide a mood booster, as it releases chemicals into your brain that help you feel happier and can ease the effects of depression, ADHD, and anxiety. It can also allow you to sleep better at night, which is important to maintaining an overall good mood.

5. Long-Term Health: In addition to all of the immediate benefits of regular exercise, it can help you stave off health conditions such as heart disease and diabetes in the long term. Working out increases your "good" cholesterol and decreases your risk of serious medical issues, especially those pertaining to the heart.

Exercise can help with a myriad of health issues and it's as easy as taking a simple walk. Try to work physical activity into your daily routine one step at a time!

2.11.5 Improving Muscular Strength and Endurance

There are many ways to improve muscular strength and endurance. A gym or fitness center is a good place to go if you're interested in doing resistance training (also called strength training, weight training or weight lifting). This involves working a muscle or group of muscles against resistance to increase strength and endurance.

Resistance training can include using: equipment like medicine balls, or weight machines, resistance tubes or bands during exercises, your own body as a weight, as you would do during pushups or sit-ups.

Of course, you don't have to go to a gym or buy exercise equipment to improve muscular strength and endurance. Doing normal daily activities like lifting groceries or walking up and down stairs can also help. You can also do many exercises at home that don't need equipment, such as push-ups and sit-ups. All you have to do is challenge your muscles to work harder or longer than they usually do.

Remember, if you're going to do strengthening exercises that involve lifting, it's important to use the correct techniques (Sport medicine 36(2): 133-49.

2.11.6 Factors Influencing Strength and Muscular Endurance

1. Types of muscle tissue

As written by Cooper, (1968), there are three types of muscle tissue those which have different structures and functions.

A. Smooth muscle tissue (those inside internal organs of the body): consists of long, spindle shaped fibers, with each fiber containing only one nucleus. The fibers involuntary and are located in the walls of esophagus, stomach, and intestines, where they move food and waste products through the digestive tract.

B. Cardiac muscle tissue (the heart muscle): is also involuntary and, as its name implies, is found only in the heart. These fibers contract in response to demands on the cardiovascular system.

C. Skeletal muscle tissue (those which are attached to the bones): consist of long, cylindrical, multinucleated fibers. They provide the force needed to move the skeletal system and can be controlled voluntarily.

2. Leverage is an important mechanical principle that influences strength

The body uses a system of levers to produce movement. Muscles are connected to bones via tendons, and some muscles (referred to as "primary movers") cross over a particular movement.

The movement occurs because when a muscle contracts it physically shortens and pulls the two bones connected by the joint together.

A person with long arms and legs has a mechanical advantage in most movements, since that is exerted can act over a longer distance.

Although it is not possible to change the length of your limbs, it is possible to learn to use your muscles more effectively.

3. Skeletal muscle tissue consists of different types of fibers that adapt differently to training.

There are three distinct types of muscle fibers, slow-twitch (Type *I*), fast-twitch (Type IIb), and intermediate (Type IIa).

The slow-twitch fibers are generally red in color and are well suited to produce energy with aerobic metabolism. Slow-twitch fibers generate less tension but are resistant to fatigue. Endurance training leads to adaptations in the slow-twitch fibers that allow them to produce energy more efficiently and to better resist fatigue.

The **fast-twitch fibers** are generally white in color and are well suited to produce energy with anaerobic processes. They generate greater tension than slow-twitch fibers, but they fatigue more quickly. These fibers are particularly well suited to fast, high-force activities, such as explosive weight-lifting movements, sprinting, and jumping. Resistance exercise enhances strength primarily by increasing the size (muscle hypertrophy) of fast-twitch fibers.

The **intermediate fibers** have biochemical and physiological properties that are between those of the slow-twitch and fast-twitch fibers. A distinct property of these intermediate fibers is 1that they are highly adaptable, depending on the type of training that is performed.

4. Muscular endurance and strength are part of the same continuum.

Though strength and muscular endurance are developed in different ways, they are part of the same continuum. Absolute strength is the maximal force that can be exerted at one time, while absolute endurance reflects the ability to sustain a submaximal force over an extended period of time. Most activities rely on various combinations of strength and endurance. For this reason, it is important to have sufficient amounts of strength and endurance.

5. Genetics, Gender, and Age affect muscle fitness performance.

Each person inherits a certain percentage of fast-twitch and slow-twitch muscle fibers. This allocation influences the potential a person has for muscle fitness activities. Individuals with a larger percentage of fast-twitch fibers will generally increase muscle size and strength more readily than individuals endowed with a larger percentage of slow-twitch fibers.

People with a larger percentage of slow-twitch fibers have greater potential for muscular endurance performance. Regardless of genetics, all people can improve their strength and muscular endurance with proper training.

For males, strength training is usually associated with marked increased with marked increase in muscle size. Whereas, for females strength training tend to develop sizable increase in muscle size but usually females acquire limited increase. The higher levels of testosterone found in the male are responsible for higher muscle size in combination with an overload resistance program. Females with higher testosterone levels tend to have more masculine characteristics, such as increased facial and body hair, deeper voice, and the potential to develop a little more muscle size.

Perhaps the most critical difference between male and female regarding physical performance is the ratio of strength to weight relative strength).The reduced strength /body weight ratio in female is the result of their higher percentage of body fat. The strength body weight training by decreasing the body fat percentage while increasing lean weight. Women have smaller amounts of the anabolic hormone testosterone and, therefore, have less muscle mass than men. In general, female, has less strength than male, but as previously pointed out; females can perform very capable strength activities.

Maximum strength is usually reached in the twenties and typically declines with age, it is not as dramatic as decreases in strength. As people grow older, regardless of gender, strength and muscular endurance are better among people who train than people who do not.

2.12. Muscular Endurance

Muscular Endurance is the ability to perform repeated contractions against a sub-maximal resistance (Anderson *et al.,* 1995). The ability of the muscle to exert a sub-maximal force against resistance repeatedly or to sustain muscular contraction continuously over time is characterized by activities of long duration but low intensity (Robbins *et al*., 1997).Corbin *et al*. (2003) define Muscular endurance as the maximum number of repetitions or muscle contractions one can Perform against a given resistance.

Endurance is the capacity for protracted work and is a measure of the ability to stave off fatigue. Barrow and McGee(1973)define Endurance is the result of a physiologic capacity of the individual to sustain movement over a period of time.

2.11.3. Muscular Endurance

Muscular Endurance is the ability to perform repeated contractions against a sub-maximal resistance (Anderson *et al.,* 1995). The ability of the muscle to exert a sub-maximal force against resistance repeatedly or to sustain muscular contraction continuously over time is characterized by activities of long duration but low intensity (Robbins *et al*., 1997).Corbin *et al*. (2003) define muscular endurance as the maximum number of repetitions or muscle contractions one can perform against a given resistance.

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2.11.4. Cardio-Respiratory Endurance

According to Willgoose(1968) Cardio-vascular endurance, also referred to as cardio-respiratory endurance and circulatory endurance, is a kind of physiological fitness demonstrated through an adjustment of the heart and lungs to prolonged physical exertion. According to Jenson and Fisher (1965) Cardio-vascular endurance --the endurance of circulatory system, is the ability to carry on its functions efficiently under conditions of heavy work. Cardio-respiratory endurance is the ability of the heart, lungs, and blood vessels to deliver essential nutrients, especially oxygen, to the working muscles and to remove waste materials from the body.

Thaxton (1988) It is identified as the most important component in health-related fitness, cardio-vascular endurance is the ability of the heart, lungs and vascular system to function efficiently for an extended period of time. Directly related to this function is physical working capacity. A heart and circulatory system that is functioning at a higher level, thus delivering more blood, is also making more O2 available for working muscles. This process increases the child's ability to work at a greater intensity and over longer period of time without debilitating fatigue.

CHAPTER THREE

3. METHODS AND MATERIALS

3.1. Descriptions of the Study area

The study was conducted in Oromia Regional State kellem Wollega sayo woreda. It is one of the Kellem Wollega Zones of the region with as its administrative center, dambi dollo. Hence, sayo woreda is one of the Woreda of the Zone. It has area coverage of 140869.069 hector or 1406.89km2 (GWLEPO, 2013) sayo woreda is absolutely located between $9^0$20' North to $9^0$30' North and $37^0$20' East to $37^0$30' East. On the North of the study area Iilbabor and to South of it Yemligi welal Woreda is located, to the West of the study area Hawa GelaneWoreda to the East of Anfilo Woreda, Kellem Wolega zone is located sayo woreda is also found 18 kilometer from Zonal administrative town (Dambi Dolo) and 652 kilometer to the West from regional administrative town, Adds Ababa.

3.2. Research design

Crossectional design was selected to address the current status of health related physical fitness level between JahanSeyo Rural and Urban students. This study employed quantitative methods of research to gather information through compression of students' active participation in selective health related physical fitness activities. To this effect, the methodology of the research involves sources of data, sample of population and sampling techniques, instruments, procedures of data collection and method of data analysis as stated below.

Of the many benefits of health related physical fitness testing, the major focus is to establish the strengths and weaknesses of the students. This study was done by comparing test results between students of two groups, rural and urban, involving in the same activities. The results of the groups were investigated through comparing results.

3.3. Source of Data

This study employed primary source has been taken on the male subject for the study .The source from urban and rural students in Jahan sayo secondary high school. Grade 9^{th} male only.

The sources of data in this research were primary data sources like the students of the selected school. The students were from rural and urban living area.

3.4. Populations of the study

The desired populations of the study were Jahan Seyo Rural and Urban students in 2017/2018 academic year. Therefore, out of total population of this study are 160 students from grade 9^{th} in Jahan Seyo Rural and Urban high school students.

3.4. Study variables

- On the basics of scientific literature, and expert discussion and suggestions the following ***Health Related Physical Fitness variables*** have been selected.

- Cardiovascular endurance
- Muscular strength
- Muscular endurance
- Flexibility

Table 3. 1 Variables and instrument of data collection

S.n	Variables	Tests	Measurement
1.	Cardiovascular endurance	12 minute run cooper test	Meter
2.	Muscular Strength	Wall sit test	Seconds
3.	Muscular Endurance	Nineeth degree push up test	Number of repetition
4.	Flexibility	Sit And Reach Test	Cms

3.5. Sample techniques and Sampling size

The desired populations of the study were Jahan Seyo Rural and Urban students in 2017/2018 academic year. Therefore, out of total population of Jahan Seyo Rural and Urban student, 40 male students were selected as the participant of the research. The sampling size of the study calculated according to carvaliyo in (1984) by arc vial application of material sampling techniques.

Table 3. 2 Sample size determination formula

S.n	Different Total populations	Simple size		
	Range	Low	Medium	High
1	51-90	50	13	20
2	91-150	8	20	32
3	151-280	13	32	50
4	281-500	20	50	80
5	501-1200	32	80	125

3.6. Instruments of Data Collection

There are probably hundreds of standard fitness tests used and hundreds of variations of these. They can range from elaborate and expensive laboratory tests to simple and inexpensive field tests. Each test also has many advantages and disadvantages that can ultimately determine which is the most appropriate test to perform.

For this study, standardized test of health related physical fitness was involved in view of research criteria of availability, reliability and validity to confirm the consistency of data. To test physical fitness in this study twelve minute run test, ninety degree push up test, wall sit test,sit and reach test. The selected components was strength, endurance, and flexibility that were measured by different means and methods: muscular strength is measured by wall sit; flexibility is measured by sit and reach test and muscular endurance is measure by ninety degree push up, cardio vascular endurance is measured by twelve minute run test and interventions in selective health related physical fitness test in order to identify the condition encountering the overall physical fitness or performances level of the two subjects Jahan Seyo Rural and Urban students.

3.7. Fitness Test Analysis

The American Alliance for Health, Physical Education, Recreation and Dance youth fitness test was selected for the purpose of developing norms. A parameter of health related physical fitness variables was recorded especially for per test.

3.7.1. Wall and sit test

The purpose wall sit test is to measure the strength of the thin and legs. Stand comfortable on both feet with your back against a smooth wall, Slide your back down the wall to assume the position shown in the diagram, There is to be a 90° angle at the hip and knee, When you are ready, Lift one foot 5cm off the ground, Assistant starts the stop watch, Balance for as long as possible, The watch is stopped when you put your foot back on the ground and Take a rest and then repeat the test with the other leg.

3.7.2 Push-up test

The subject lay down on her back with knee bent held feet on the floor and heels not more than 12 inches from the buttocks, then put her hands on the back of the neck with finger clasped and placed elbow square by on the mat. Their foot was being hold by a partner to keep them in contact with the floor. The number of sit ups done in one minutes was be taken as her score.

3.7.3 Sit and reach test

This test involved sitting on the floor with legs stretched out straight ahead with bear footed. The soles of the feet were placed flat against the box. Both knees were locked and pressed flat to the floor. With the palms facing downwards, and the hands on top of each other or side by side, the subject reaches forward along the measuring line as far as possible. Ensure that the hands remain at the same level, not one reaching further forward than the other. The participants were asked to pull forward their body as much as possible and hold the possibility for one-two seconds while the distance was recorded. The score was being recorded to the nearest centimeter or half inch as the distance reached by the hand.

3.7.4. Twelve minute run

The subject was being asked to take a standing position and start. At the signal ready? Go! The subjects start running the 1,600Mrun/Walk. For this test the participant had to maintain the pace to complete the race. The distance covered score was taken to complete the course in minutes and seconds.

3.9. Method of data analysis

To determine the significant differences of physical fitness level between the two subjects, the data was analyzed and compared by the help of Statistical Package for the Social Sciences

(SPSS; version 20). In the procedure, frequency, percentage, mean, standard deviation and independent "t" test was used to compare the data of grade 9 rural and urban students. As a result, "t" values anticipated to be valid either less than or greater than 0.05 on two-sided tests were considered statistically significant.

3.10. Ethical Issues

The study was deal with the ethical issue related to the investigation. It protected the privacy of research participant and makes guaranty and confidentiality of the information that has 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 have been respected. Therefore the study was conducted all action based on the university rule, code of conduct and policies concerning.

CHAPTER FOUR

4. Data presentation, analysis and Interpretation of data

To compare the health related physical fitness of students of Jahan Sayo High School Rural and Urban Students was selected randomly 20 students from each group which were students of school. The mean age of all the selected students was 16-18 year. The selected health related physical fitness components for assessing the intervention groups were cardio vascular endurance, flexibility, muscular strength and muscular endurance. Further, for assessment of health related physical fitness. *i.e.* cardio vascular endurance twelve minute run test (Sec), for flexibility sit and reach(mm), muscular strength wall sit test (numbers) and muscular endurance ninety degreepush-up test (numbers) test were respectively used. Before evaluating the selected health related physical fitness components the researcher had explained and given proper demonstration to all the students so there should not be any misunderstanding. The data were collected after the physical education class. The teacher had prepared the data collected plans for each intervention group and taken the help of co-students for collecting the data on selected health related physical fitness. The analysis of variance was used as statistical tool used to compare all the selected class on the health related physical fitness.

The data collected on selected health related physical fitness were analysized with appropriate statistical tool and presented in table form.

4.1 Demographic information of the respondents

The personal information of students like, personal information of student urban and Rural educational were presented under the following figure and followed with discussions.

Table 4.1 Demographic information of Jahan Seyo secondary school students

Name of school :Jahan Seyo High School students		Urban	Rural
Age	11-13	0	0
	14-16	20	20
	17-19	0	0
Sex	Male	20	20
	female	0	0
Grade	9^{th}	20	20

As above table indicate that the age of respondents between 16-18 years, the all respondents were male students and also all respondents are grade 9th students.

`4.2 Analysis of Cardio Vascular Endurance Test

Table 4.2 Twelve minute run test result

Place	Mean	N	Std. Deviation	Std. Error Mean	Df	T-value	Sign
Rural	2699.60	20	87.87	19.64	19	8.434	0.00
Urban	2034.70	20	330.50	73.90			

Rural area students Twelve minutes Run test (M = 2699.60m, SD = 87.875m) reported significantly higher than urban area students Twelve minutes Run Test (M = 2034.70m, SD = 330.505m), at (19) = 8.434, p <. 05. From the above analysis one can easily understand that students who came from the rural areas covered 2699.60m while urban students mean average shows 2034.70m. . from this data one can safely conclude that rural area students are more involved in cardiovascular related activities that urban area students. Thus, comparative study reports rural students have better endurance than urban students. However, according to international reveals normative data for the sit & reach test both urban and rural students found in the marginal fitness zone (Brian, 2005).

4.2 Analysis of Muscular Endurance

Table 4.3 Push-up test results

Place	Mean	N	Std. Deviation	Std. Error Mean	Df	T-value	Sign
Rural	17.10	20	1.372	.307	19	-6.714	0.00
Urban	14.75	20	.968	.216			

Rural area students Ninety degree push-up test item (M = 17.10, SD = 1.372) reported significantly higher than urban area students ninety degree push-up test item (M = 14.75, SD =

.968), t(19) = -6.71, p < .05. With regard to rural student's comparison of ninety degree push-up test item with urban students, then rural students were stronger than the urban students. From this data one can safely conclude that rural area students are more involved in muscular endurance acivites than urban area students. However, both of them shows marginal fitness zone in comparison to international standards (Brain, 2005).

4.3 Analysis of Muscular Strength

Table 4.4 Wall sit test result

Place	**Mean**	**N**	**Std. Deviation**	**Std. Error Mean**	**Df**	**T-value**	**Sign**
Rural	34:65	20	3:55	.79	19	5.07	0.00
Urban	29.:55	20	3:79	.84			

Rural area students Wall sit test item (M = 34:65, SD = 3:55) reported significantly higher than urban area students Wall sit test item (M = 29:55, SD = 3:79), at (19) = 5.07, p <. 05. The above t-test comparison shows that students from rural area sit for 34:65second while urban area students sit for 29: 55 second. This implies that the majority of rural students perform wall sit test by far better than the urban one. In comparison to international standard both of them ranges between marginal fitness zone. This shows that students things and legs strength demand physical fitness, strength training so that they can improve their strength (Brain, 2005)

4.4. Analysis of Flexibility

Table 4.5 Sit and reach test result

Place	Mean	N	Std. Deviation	Std. Error Mean	Df	T-value	Sign
Rural	6.75	20	1.02	.22	19	18.48	0.00
Urban	2.90	20	.852	.19			

Rural area students Sit and reach test items (M = 6.75, SD = 1.02) reported significantly higher than urban area students Sit and reach test items (M = 2.90, SD =.852), at (19) = 18.48, p <. 05. Rural students mean score 6.75 cm shows that they have more stretched lower back muscle and hamstring muscle than urban students 2.90m.from this data one can safely conclude that rural area students are more involved in flexibility activities than urban area students. The students' lower back and hamstring flexibility was reported to be below average when compared to the previous work (Davis et al, 2000).

4.6. Discussion

The finding of the study reveals that rural students have better strength than the urban students. In agreement with this study Abate (2013) indicates that the Hadiya Zone secondary school students mean and standard deviation values for strength variable for rural and urban students were recorded as 124.51, 7.29 and 113.02, 12.38, respectively. It shows that rural students have performed significantly better than their urban counter parts.

The study suggested that rural students have better endurance urban than students. Previous finding was consistency with (Ibid, 2013) shows that the mean and standard deviation value on the endurance variable of the rural and urban female students were recorded as 66.35, 5.65 and 73.36, 7.14, respectively. It depicts that the rural students have performed significantly better as compared to their urban counter parts.

The study reveals that rural students have better flexibility than students. In agreement with this study Abate (2013) indicates that the mean and standard deviation values on the flexibility variable for rural and urban female students were recorded as 2.45, 1.46 and 2.76, 1.14, respectively. Therefore, the urban students have performed slightly better than their rural counter parts.

Rural students were better in health-related fitness compared to the urban students as a whole. However, there were more students from the urban scored for 5 Star (Bintang) (39.3%) grade and 4 stars (31.1%) as well if compared to the rural students were 37.5% and 29.2% respectively. Moreover, the 3 star achievement in grade, the rural samples scored much higher percentage (33.3%) than the urban students (19.7%) and that had made the rural students got a higher overall score than the urban (comprised 3 stars and above) (Tan, 2013) .

In consistency with this finding study conducted in Hadiya, Ethiopia reported that rural female students were found to be superior in strength, endurance, and speed. Urban female students on the other hand, were found to be heavier and superior in tasks like flexibility and agility (Abate, 2013).This study's results indicate a trend: urban students performed "indoor" tests better than rural students; the opposite may be true for rural students. Living environment, socio-economic-status, or cultural correlation differences could be decreased during school experiences (Nicola & Dario, 2015).

Similar research output in comparison between urban and rural students of Italians and Croatia reveals that Croatian students achieved better results in the standing broad jump, while Italian students performed better trials in sit-and reach. Italian girls had equal performances in sit-ups to Croatian girls, and boys' groups were on average very similar in standing broad jump trials. Boys performed more sit-up cycles and longer standing broad jump, while girls achieved better results in the sit-and-reach test. In particular, the sit and-reach test revealed very poor mean results in boys (max. = 2.35 cm; min. = –2.35 cm) as reported by (Nicola & Dario, 2015).

The students of urban students had performed well in all the selected health related physical fitness when it compare to students of rural students. The study conducted Mortezajourkesh, 2011 & Dart L. & Davis, M. (2008) had proved that regular involvement in physical activities improve the muscles strength and muscle endurance which is one of the major causes to bring the difference among the selected students.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with summary of the major finding of the study, the conclusions drawn from the finding and recommendations forwarded for the concerned bodies.

5.1 Summary

The primary purpose of this study was the significance difference between urban and rural high school students on selected healthy related physical fitness variables. For this purpose, 160 male high school students aged from 16-18 participated in this research. Subjects were divided in to two groups of 20 students from urban and 20 students from rural based their population and the students from this school were selected by using random sampling method. The data collected on selected 40 male subjects of different students including urban and rural students revealed that the some selected heath related physical fitness components. The variables were cardio vascular endurance, muscular endurance, muscular strength, flexibility. Tests were taken at one time. After collecting the data, independent t-test were used to find out the significant difference at P= 0.05 level between the urban and rural high school students some selected health related physical fitness variables.

The finding of this study reveals that there were statistical significance difference were found in some of the health related physical fitness components. The results also revealed that, there were statistical significance difference were found in muscular endurance, muscular strength, cardiovascular endurance and flexibility variables (health related physical fitness variables).

5.2. Conclusions

Generally, based on the major findings the following point's conclusions were drawn.

- ❖ The study reveals that rural grade 9th secondary school students performed better flexibility mainly lower back muscle and hamstring muscle than students.
- ❖ The study suggested that rural grade 9th students have better endurance especially calf and hamstring muscle urban than students.
- ❖ The finding of the study reveals that rural students have better strength particularly pectorial muscle and arm muscle than students
- ❖ The study suggested that rural grade 9th students secondary school had better cardiorespiratory endurance than rural students secondary school

5.3 Recommendations

Based on the major findings and conclusions of the study, it is important to state the following points as recommendation.

- ➢ The policy makers of the ministry of Education and sport commission must develop strategies to prevent the decreasing level of physical fitness among urban high school students.
- ➢ The physical education teachers of urban high school must work with the sport commission to organize intramural sport competition within the school to involve all students and both sex.
- ➢ The high school management should provide enough sport materials which helps the physical education teachers to involve all students in physical activity to improve their physical fitness level.
- ➢ The physical education teachers must focus on practical aspect of the subject rather than focusing on the theoretical part and the Ministry of Education must follow up the commitment of these physical education teachers.
- ➢ Similar research may be conducted to compare health related physical fitness variables cardio vascular endurance, muscular endurance, muscular strength, flexibility.

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Appendices A

JIMMA UNIVERSITY

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The international physical fitness awards or qualifying standards

Table 1.Sit and reach test (boys)

Classification	Women	Men
Normal range	101mm to +250mm	+152mm to +202mm
Average/mean	+50mm	+25mm
Desired range	+50mm to +152mm	+25mm to +127mm

Table 2. Rating scale for ninety degree push-up test (boys)

Boys (age)	17-26	27-39
Classification	Number of repetitions	Number of repetitions
High performance zone	29+	27+
Good fitness zone	20-28	18-26
Marginal zone	16-19	15-17
Low fitness zone	<16	<15
	29+	27+

Table 3.Rating scale of trunk lift test for boys

Classification	Age	Age
	17-26	27-39
High performance zone	31+	28+
Good fitness zone	24-30	22-27
Marginal zone	19-23	17-21
Low fitness zone	<19	<17

Table 4. Rating scale of wall sit test (boys)

Classification	scores in seconds
High performance zone	60 and above
Good fitness zone	40-59
Marginal zone	30-39
Low fitness zone	Less than 30

Table 5. Rating of twelve minute run test scores in meters (boys)

Boys (age)	17-26	27-39
Classification	Distance covered	Distance covered
High performance zone	2880m+	2560m+
Good fitness zone	2480-2879m	2320-2559m
Marginal zone	2150-2479m	2080-2319m
Low fitness zone	<2150m	<2080m

Appendices B

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Table 1. Twelve minute Run Test

Respond ace		Performance test	Mean	Average mean	SD	T-value	m-df	sign	Df
Rural	Urban	Twelve minute run test							
2687	2000								
2600	1898								
2600	1700								
2800	2010								
2600	1999								
2777	1444								
2600	2400								
2666	2350								
2600	2144								
2777	1190								
2726	1579								
2800	2400								
2670	2217								
2680	2143								
2650	2200								
2570	2250								
2800	2405								
2850	2210								
2770	2117								
2769	2038								

Table 3.**Wall sit test item**

Respond ace		Performance test	Mean	Average mean	SD	T-value	m-df	sign	df
Rural	Urban								
37	38								
33	35								
35	32								
38	36								
39	35								
32	30								
35	28								
28	30								
25	26								
37	25								
38	28								
34	30								
33	27								
35	27								
32	25								
37	26								
37	27								
39	28								
34	29								
35	29								

Table 2.**Ninety degree push-up test item**

Respond ace		Performance test		Mean	Average mean	SD	T-value	m-df	Sign	df
Rural	Urban	Ninetydegree push up								
15	19									
12	17									
15	16									
13	17									
12	17									
15	19									
15	16									
14	16									
15	17									
14	17									
15	16									
15	16									
15	16									
18	17									
16	18									
16	18									
15	17									
16	18									
14	18									
15	17									

Table 4 **Sit and reach test items**

Respond ace		Performance test		Mean	Average mean	SD	T-value	m-df	sign	df
Rural	Urban	Sit and reach test								
5	3									
6	2									
7	4									
5	2									
5	3									
6	2									
7	2									
8	3									
7	3									
8	3									
7	4									
8	4									
8	4									
8	4									
7	4									
6	2									
7	2									
7	3									
6	2									
7	2									