COMPARISON OF PHYSICAL FITNESS COMPONENTS OF RURAL AND URBAN SECONDARY SCHOOL FEMALE STUDENTS IN HADIYA ZONE.

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A THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN SPORT SCIENCE.

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Acronym

AAHPER=American Alliance for Health, Physical Education and Recreation

ACSM=American collage of sport medicine.

BMI=body mass index

BPM=beat per minute

CDC=center for disease control.

CHD=coronary heart disease.

CVD=cardiovascular disease.

FGD=focus group discussion

MHR=maximum heart rate

NASPE=national association for sport and physical education.

NIDDM=non-insulin dependent diabetes mellitus.

No=number.

POC=process of change.

RFSR=rural female student response

RHR=resting heart rate

RM=repetition maximum

S.D=standard division.

SCT=social cognitive theory.

SEM=standard error of mean.

SOC=stage of change.

TRA=teacher response alternative.

TTM=Tran theoretical model.

U.S=united state

UFSR=urban female student response.

VS. =verses

ABSTRACT

In the present study, an attempt has been made to compare physical fitness components namely speed, strength, endurance, agility and flexibility between female students belonging to rural and urban set-ups. The study is carried out on 80 female students, 40 rural and 40 urban of Homecho Vs. Yikatite 25/67secondary school in Hadiya zone. The data was collected by use of measurements of height and weight as well as by application of tests like jumping, stepping, running, flexibility test, etc. The data are analyzed and compared with the help of statistical procedures in which arithmetic mean, standard deviation (S.D), standard error of mean (SEM), t-test were employed. 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.

Key words- Physical Fitness, Rural, Urban, Explosive Strength ,Speed Agility , Flexibility and Quality of physical fitness.

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CHAPTER ONE

INTRODUCTION

This chapter deals with the background of the study, statement of the problem, objective of the study, significance of the study, delimitation of the study, limitation of the study, operational definition and organization of the study

1.1 Background of the study

Physical education is one of the subjects which are offered at the primary education level of Ethiopia. If provides with both theoretical and practical activity which are accompanied by physical exercises or skill development. The aim of this practical field of study is to produce students who are physical, mentally, emotionally and socially fit citizen through the medium off physical activity that have been selected with the view of realizing this outcomes.

Concept of physical fitness is as old as humankind. Throughout the history of mankind physical fitness has been considered an essential element of everyday life. The ancient people were mainly dependent upon their individual strength, vigor and vitality for physical survival. This involved mastery of some basic skill like strength, speed, endurance, agility for running, jumping, climbing and other skills employed in hunting for their livings.

Over the past four decades, there has been an increase in the prevalence of overweight and physical fitness deterioration in adult across all genders, ages and racial/ethnic groups (Ichinohe et al. 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, respiratory problems, gout 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 (Boucherd and Shepherd 1994). Low levels of physical activity and cardio-respiratory fitness are both associated with higher risk of all cause and disease specific mortality (Thune et al. 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.

Regular physical activity prevents or limits weight gain, and gain in body mass index (BMI) (Kyle et al. 2001)

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 ability at the body to adopt and recover from strenuous exercise. Chaudhary (1998) studied the difference in physical fitness of urban and rural students studying in Yekatite 25/67 andHomecho secondary school.

Human body is a gift by nature. Life in the computer age is not less than the blessings of God. Scientific discoveries have changed the entire face of our planet. It has changed the entire face of our planet. It has changed the thorny life into the bed of roses. Good health provides sound and solid foundation on which fitness rests and at the same time fitness provides one of the most important key to health and living one‘s life to fullest. In villages which formed the first habitation of civilized man rural sports grew out of sheer necessity. Joint defense against on sleight of a common foe and dangerous animals must have given birth to sports like wrestling, running, jumping, weight lifting and such performing arts as measuring strength by holding wrists, twisting hands etc. Same is the case with games and sports in rural and urban settings. We notice that there is a lot of difference in the interest of children. Like we observe that in rural areas children are indulging in minor, indigenous activities and field games like football, kabaddi, kho-kho, hockey, wrestling, athletics etc. whereas, in urban we find children playing basketball, swimming, badminton, tennis, squash, golf etc. The main cause of difference is the availability of facilities and financial support of parents.

The urban people with the growth of cities has come a great transformation in the living habits of society. The city is the hub of much social life, and it influences its standards. Intellectual growth and habits, moral codes and conditions, behavior patterns and cultural conditions resolve around it. New communities, new group, new ethnic relations and a multitude of classes make of the city an intricate and complex unit of modern society.

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 life style have their origins early in life. This is when an active lifestyle should be established. Fitness begins at birth and should continue throughout a 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. The 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 students is major factor to be considered. So, School physical education programmers should include multi furious activities appropriate to each age group. 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 has two dimensions viz health related fitness and motor fitness (Dinneci et.al.1990, Malina, 1994.Malina et.al, 1995). 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 (1971), 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.

Physical fitness can be thought of as an integrated measure of most, if not all, the body functions (skeleton muscular, cardio respiratory, hematoma-circulatory, psycho neurological and endocrine–metabolic) involved in the performance of daily physical activity and/or physical exercise. Hence, when physical fitness is tested, the functional status of all these systems is actually being checked. This is the reason why physical fitness is nowadays considered one of the most important health markers, as well as a predictor of morbidity and mortality for cardiovascular disease (CVD) and for all causes.1–4 Physical fitness is in part genetically determined, but it can also be greatly influenced by environmental factors. Physical exercise is one of the main determinants.

Childhood and adolescence are crucial periods of life, since dramatic physiological and psychological changes take place at these ages. Likewise, lifestyle and healthy/unhealthy behaviors are established during these years, which may influence adult behavior and health status. Thorough reviews have recently discussed the associations between physical activity at young ages and its short/long-term consequences on health.5–10 However, less is known about

physical fitness and health outcomes in young people.9 in the last years, an increasing amount of research on physical fitness and health in childhood and adolescence has been published.

1.2 Statement of the Problem

Thistopic is stated as –Comparison of physical fitness components between urban and rural secondary school female student in Hadiya zone.

Sport organizations are expected to play a great role in the development of a country‘s sport in general, and give appropriate and integrated service to players and coaches in the sport organizations. Coaches and athletes are highly dependent on one another, and this coach-athlete relationship is a crucial component of sport. Accordingly, research is needed to investigate how various coaches‘ characteristics and behaviors relate to athletes psychological responses and experiences (Price & Weiss, 2000).

All-round fitness is a key to quality of life. To be able to carry out daily tasks without undue fatigue or to enjoy leisure-time pursuits requires a certain degree of fitness. A person looks better, feels better and thinks better and so lives better. Likewise, physical fitness is closely associated with good health. (Blair et al 1989) showed that people with good fitness level have less prevalence of heart disease risk than those with low level of fitness.

Compared with inactive, people moderately or vigorously active people are less likely to suffer premature all-cause mortality, cardiovascular diseases (CVD) such as coronary heart diseases (CHD), stroke and high blood pressure; colon cancer; non-insulin dependent diabetes mellitus (NIDDM); and osteoarthritis (USDHHS, 1996). Plowman (1992) suggests that muscle fitness is necessary to prevent back-pain. A higher level physical fitness is associated with a lower risk of developing hypertension, which is related to coronary heart disease (Marti, 1991) . Furthermore, adequate flexibility and sufficient muscular strength and endurance may reduce risk of low back pain as well as muscular and joint injury (Liemohn et al, 1988) .Recent research shows that physical activity is one of the most important factors related to maintaining good health (Corbin and pangrazi , 1993; USDHHS,1996) physical activity can help control body weight (Epstein & Wing, 1980) and reduce risks of cardiovascular diseases (Morries et al 1980).

The purpose of this study was compare the rural and urban female students and to find out which of these two categories is more physically fit in response to tests administered so as one can

improve the standard and level of physical fitness in rural and urban female students in Homecho and Yekatitesecondaryschool in Hadiya zone.

1. 3. Research Question

- What is the status of fitness in their daily life activity in rural vs urban secondary school female students?
- What are the major factors that affect the quality of physical fitness in rural and urban secondary school students?
- How to develop physical fitness component?
- What is the consequence of physical fitness in rural vs. urban secondary school female students?
- What are the methods of developing physical fitness quality?
- What are the significant different between in rural and urban student fitness components?

1.4. Objective of the Study

General Objective: The main objective of this study is to investigate physical fitness levels of Rural and Urban secondary school Female Students inHadiya zone.

Specific Objectives:

The specific objective of the study is:

- To examine the quality of physical fitness in rural and urban secondary school students.
- To study physical fitness components in Homechovs.Yekatite 25/67 secondary school female students.
- To measure the physical fitness quality in rural vs. urban secondary school female students.
- To find out the methods of developing physical fitness quality.
- To examine the quality of physical fitness components in rural and urban secondary school students.

- ❖ To identify factors that affects the quality of physical fitness in rural and urban secondary school students.
- ❖ To find out the static strength, speed, flexibility, endurance and agility between urban and rural female student.

1.5. Significance of the Study

The expert committee of the World Health Organization described physical fitness as ―the ability to undertake muscular work satisfactorily.‖ Physical fitness is the capacity to early out, reasonably well, various forms of physical activities, without being unduly tired and includes qualities important to the individual‘s health and work, situation and there is also an interaction between the daily activities, and the fitness of an individual, the point of ability at the body to adopt and recover from strenuous exercise.

- To provide accurate factors that affect physical fitness quality.
- To integrate the new results of the research finding with other research judgment.
- To investigate some of the problems in physical fitness quality.

1.6 . Delimitations of the Study

- The study was delimited to Homecho and Yekatite secondary school female student in Hadiya zone the age 15-18 years group only.
- The data wascollected from 80 (40 rural and 40 urban) female studentsinHomecho and Yekatite 25/67 secondary school in Hadiya zone.
- The study was delimited to fundamental skill and level of fitness; such as strength, speed, endurance, agility and flexibility.

1.7. Limitations of the Study

While conducting this study, the researcher encountered three major limited factors that canaffect on the quality of the research work. There are lacks of experience and money constrains. The second was lack of comprehensive local previous research literatures in the area under investigation and the willingness of students to complete questionnaires for fear of confidentiality of their result might have influenced the validity of the data in the study. The results could not be

generalized to all secondary school in the region, however, it is appropriate and relevance to Homecho and Yekatite 25/67 (rural vs. urban) secondary school respondents employed in this research.

1.8. Operational Definition

Strength:-is the ability to overcome external resistance or exert influence against it or is to considerable degree the precondition for rapid movement.

Flexibility:-is the ability of a joint to move through its full range of motion.

Endurance:-is the ability to carry out mobile activity of a long period at relatively high intensity at a given optimal level.

Speed:-is the ability, within a given situation, to execute mobile activity in as short a time as possible.

Agility:-is the ability to change the direction of the body in an efficient and effective manner and to achieve this you require a combination of balance.

Physical education:-Any planned program of motorcar activities that help individuals to develop and control the body.

Physical activity:- Any muscle skeletal movement that results in an expenditure of energy.

Physical fitness:-The ability of a person to function effectively and efficiently to enjoy.

Skill:-is the ability to react readily and effectively to unexpected mobile tasks with coordinated complex mobile activity.

Homecho:-the name of rural secondary school in Hadiya zone.

Yekatite 25/67:-the name of urban secondary school in Hadiya zone.

1.9 Organization of the Study

This study is organized under five chapters. The first chapter highlights the paper; and why to study. 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 deals how to make the research, the targets to shot upon, and how the data to be analyzed. Chapter four analyzes data of different sources and nature to achieve the objective of the study. The final chapter is to summarize, conclude, and forward suggestion and recommendations based on what is obtained in chapter four.

CHAPTER TWO

Review of related literature

2.1. The concept of physical education

Concept of physical fitness is as old as humankind. Throughout the history of mankind physical fitness has been considered an essential element of everyday life. The ancient people were mainly dependent upon their individual strength, vigor and vitality for physical survival. This involved mastery of some basic skill like strength, speed, endurance, agility for running, jumping, climbing and other skills employed in hunting for their livings.

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2.2. Defining Quality Physical Education

Physical education is at the core of a comprehensive approach to promoting physical activity through schools. All children, from prekindergarten through grade 12, should participate in quality

physical education classes every school day. Physical education helps students develop the knowledge, attitudes, skills, behaviours and confidence needed to be physically active for life, while providing an opportunity for students to be active during the school day. Leading professionals in the field of physical education have developed a new kind of physical education that is fundamentally different from the stereotypical roll out the balls and play classes of decades past that featured little meaningful instruction and lots of humiliation for students who were not athletically coordinated. Professional associations, academic experts, and many teachers across the country are promoting and implementing quality physical education programs that emphasize participation in lifelong physical activity among all students.

Quality physical education is not a specific curriculum or program; it reflects, instead, an instructional philosophy that emphasizes

- Providing intensive instruction in the motor and self-management skills needed to enjoy a wide variety of physical activity experiences, including competitive and noncompetitive activities.
- Keeping all students active for most of the class period.
- Building students- confidence in their physical abilities.
- Influencing moral development by providing students with opportunities to assume leadership, cooperate with others, and accept responsibility for their own behavior.
- Having fun!

The importance of making physical education fun was illustrated by a national survey of students in grades which found that enjoyment of physical education class was one of the most powerful factors associated with participation in physical activity outside of school.

Quality physical education is more than just fun, however; it is also a serious academic discipline. Physical education and health education are recognized as important components of the education curricula. The National Standards for Physical Education explicitly identifies what students should know and be able to do as a result of a quality physical education program. These standards provide a framework that can be used to design, implement, and evaluate physical education curricula.

2.3. Quality of Physical Education

- Emphasizes knowledge and skills for a lifetime of physical activity.
- Is based on national standards that define what students should know and be able to do.
- Keeps students active for most of the class time.
- Provides many different physical activity choices.
- Meets needs of all students, especially those who are not athletically gifted.
- Features cooperative, as well as competitive, games.
- Develops students self-confidence and eliminates practices that humiliate students (e.g., having team captains choose sides, dodge ball and other games of elimination).
- Assesses students on their progress in reaching goals, not on whether they achieve an absolute standard.
- Promotes physical activity outside of school.
- Teaches self-management skills, such as goal-setting and self-monitoring.
- Focuses, at the high school level, on helping adolescents make the transition to a physically active adult lifestyle.
- Actively teaches cooperation, fair play, and responsible participation in physical activity.
- Is an enjoyable experience for students?

2.4. The aim of physical education

The aim of physical education should bringing an individual physically active and to enhance the development of the whole person, includes the refinement of motor skills, the development and maintenance of fitness for optimal health and well-being, the attainment of knowledge about physical activities an exercise, and the fostering of positive attitudes conductive to lifelong learning and life span participation (William 1964).

According to William (1964, page 331) ―physical education should aim to provide skilled leadership and adequate faculties which will offer an opportunity for the individual or group to act in situations which are physically whole some mentally stimulating and satisfying socially sound".

These qualities mentioned above by –William is the vital components which physical education should target atthecontribute its part as general education.

2.5. Objective of Physical fitness development

The long term, overall objective of physical education program is to maintain and improve the health of human beings. This refers to all aspects of health including physical, mental, social, and emotional. It applies to all individual, regardless of race, color, economic students,creed and national origin.

Physical development objective help build big muscles and develop the human organic system. (Organic refers to the digestive, circulatory, excretory, heart regulatory, respiratory and other systems of the human body)As Charles Bucher (1993, page 27) stated as in his book –it results in the ability to sustain adaptive efforts, to recover, and to rest fatigue" this objective also as physical fitness, physical conditioning organic development or biological development is concerned with increasing the capacity of the body for movement.

The short term and long term physiological and psychological benefits of physical fitness and exercise are well documented. This section will define the components of physical fitness and review current research across all of these components. Physical fitness is divided into three components: health-related, skill-related, and physiologic components. The health related components of physical fitness are cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition. The physiologic components of fitness are metabolic fitness, morphologic fitness, and bone integrity. The skill related components of physical fitness are speed, power, agility, coordination, balance, and reaction time (Whaley 2006, 3). These definitions of the physical fitness components come from the American College of Sports Medicine (ACSM), the largest sports medicine and exercise science organization in the world and widely accepted as the standard for information and reference in sports medicine. Crossfit.com is an on-line fitness community that has become extremely popular for its daily workouts based on a concept of functional movements that are constantly varied and performed at high intensity. Cross fit emphasizes the importance of functional fitness and has modified the ACSM definitions of skill and health related components of fitness to arrive at the components of functional fitness: cardiovascular endurance, stamina, strength, flexibility, power, speed, coordination, accuracy,

agility, and balance. The Cross fit information was obtained during a two-day certification course conducted at Ft. Leavenworth, KS in December 2008 and is also available at www.crossfit.com.

A sustained physical fitness program has many long term benefits. Regular physical activity results in a stronger heart muscle than a sedentary lifestyle. A stronger 9 heart is capable of a greater stroke volume which means with each beat of the heart, more oxygen carrying blood reaches the body (Corbin 2008, 65).A higher stroke volume reduces the number of beats per minute (bpm) required by the heart. A person with a high stroke volume will, therefore, have a lower resting heart rate (RHR). An individual s maximum heart rate (MHR) is largely dependent on his age which can roughly be determined with the equation: 220 – age = MHR. The difference between an individual s RHR and MHR is considered the heart rate reserve (HRR). The HRR is an indicator of an individual s capacity for work (Fahey 2007, 73). An individual s work capacity is further determined by his maximal oxygen consumption (VO2max). VO2max is a measure of the endurance capacity of the cardiovascular system and the muscular system and is influenced by genetics, gender, fitness status, and age (Powers 2006, 89; Fahey 2007, 64). The increased blood flow caused by increased fitness levels can also increase blood and oxygen flow to the brain increasing mental capacity. Increased blood flow to the skin increases the amount of sweat produced and reduces the time before onset of sweating thus reducing core body temperature. Increases in total blood flow increases endothelium function resulting in better control of blood pressure and increases in nitric oxide secretion (Johnson 1980, 817). The increase in nitric oxide secretion positively affects energy levels (Fahey 2007, 65).

In addition to the physiological advantages of exercise, individuals can experience many psychological and emotional benefits from physical training.

2.6. Quality Life of Personal Training

- Quality Life Personal Training offers individualized functional fitness training for people from all walks of life.
- Located in Anderson Township in Cincinnati, Ohio.
- Owned and operated by personal trainer and fitness professional Joe Moses, NASM - CPT, Titles Certified Golf Fitness Instructor
- Small, intimate exercise studio with only one client at a time - no audiences, no distractions.

- Individual clients are taught integrated muscular development, strength training, core stabilization, and flexibility training based on each individual's unique physical condition and personal goals
- Whatever your fitness needs - weight loss, specific sport training, post-rehabilitation, or just getting in shape, training sessions with Joe will improve your health and energy as well as motivate you to live a more healthy and fit lifestyle.

2.7. The development of fitness test battery for youth

In the early 1950s, physical fitness testing indicated that European children had higher levels of fitness than American children. This led the United .States former President Eisenhower to establish what has become the President‘s Council on Physical Fitness and Sport. American Alliance for Health, Physical Education, Recreation(AAHPER Youth Fitness Test (1961) was designed to evaluate the fitness levels of the American children (Morrow et al., 2000); it includes performance related tests that measured strength, endurance, running, agility, and jumping ability (Safrit, 1990).

During the 1970s physical education professionals and agility, and jumping ability (Safrit, 1990). During the 1970s physical education professionals and researchers became more interested in health-related fitness (Safrit 1990). Because the AAHPER Youth Fitness test items included a 50-yard dash and a standing long jump that were not evaluate the fitness levels of the American children (Morrow et al., 2000); it includes performance related tests that measured strength, endurance, running, agility, and jumping became more interested in health-related fitness (Safrit1990). Because the AAHPERYouth Fitness test items included a 50-yard dash and a standing long jump that were not considered health-related fitness items, however, the 600-yard run is not a good measure of aerobic capacity.

The health-related fitness test, its components include more health-related items such as cardio respiratory fitness, body composition, musculoskeletal fitness, which has a strong relationship with overall health. The test use the norm-reference standard, it just compare with other children and youth rather than to tell the level the children ought to achieve for health. The test use Criterion-referenced standard, it tell children must achieve all minimum level of its items to be considered fit. It compares with the standard, or criterion.

The standards fitness grams were established by a panel of experts who used a combination of professional judgment, normal data, and empirical data (Cureton& Warren, 1990). It is a timely break-through in the youth fitness field. The program of fitness gram is much more than just an assessment of physical fitness. Students who participate in the health-related test receive personalized reports on their performance. They are also given valuable feedback on ways to establish positive exercise behavior geared to improving their level of physical fitness. It helps students learn at a young age that regular exercise can pave the way for a lifetime of good health. To date, over 8 million children have been tested under the Fitness gram format in North America, and it is rapidly becoming the standardized measure for assessing students in U.S. and Canada (Collis, 2000).

The development of fitness tests in school systems in European countries occurred twenty years after the development of the American model. The Belgium and the Netherlands published their test batteries in the 1960s; other countries followed their lead. A more coordinated effort began in 1978, when upon the initiative of the Council of Europe Committee for the Development of Sport, aims and concepts of a Euro fit test battery were formulated. Between 1980 and 1982, the evaluation and choice of both motor fitness and endurance fitness tests were carried out, and as a result of their international effect, in 1983 a provisional and in 1988 a final Euro fit handbook was published in French and English. The test items cover strength, power, speed, flexibility, balance, endurance, as well as body composition measured with height, weight and skin fold thickness (Kemper & Van Mechelen, 1996). Euro fittests are aimed at measuring abilities rather than skills, but development of the Euro fittest battery is an important step in Europe. However, it is only a first step. Although the Euro fit handbook allows people to use these tests, it still needs to construct norm-referenced or criterion-referenced scales in the future.

2.8. Physical Fitness and Quality hunt

Physical fitness is a broad term used to describe the physiology of the body as it relates to health. Correct vision and adequate hearing are two senses that make it easier for hunters to have a safe, successful hunting season. Cardiovascular and muscular well-being helps hunters to hunt safe and return home to their family.

All hunting activities require good eyesight and hearing for success and safety. Good eyesight is necessary to positively identify the legal game species being hunted, other hunters, and non-target species. Good hearing allows hunters to detect approaching animals and to locate the game animal being hunted.Alabama‘s vast small game resources provide opportunities to hunt many different species. Each of these game species requires different hunting methods and thus different levels and types of physical fitness. Small game hunting usually requires extensive walking and carrying of equipment and harvested game. This requires good cardiovascular fitness and some strength fitness. In Alabama, small game seasons begin in the heat of late summer and continue through the cold of winter. In dealing with the different environments and climactic conditions being in good physical shape not only makes the hunting experience more pleasurable, but also safer. Big game hunting in Alabama is for three primary species: deer, hog, and turkey. Big game hunting methods are as diverse as the hunters that pursue them. Big game hunting includes some walking, with turkey hunting generally requiring more than the other big game species.

Cardiovascular fitness is required as hunters may walk several miles daily on terrain that varies from flat, sandy habitat to different degrees of mountainous topography. Big game hunting also requires good strength or muscular fitness. With deer and hogs weighing from 50 pounds to as much as 200 plus pounds and turkey as heavy as 20 pounds, harvesting and retrieving them can be hard work. Retrieving big game animals may require dragging, or carrying them out of the field, and depending upon the terrain this could require a tremendous amount of strength.

Big game hunting methods may also include climbing into tree stands. The act of climbing into a tree stand takes good physical fitness. Hunters that use tree stands should always use a full body harness and a rope system that keeps them attached to the tree at all times. These are designed to stop the hunter from hitting the ground if the tree stand fails or the hunter falls out of the stand. If a hunter gets into this situation and the harness and rope system work, the hunter will be hanging from the tree with tremendous pressures on the body. Safely descending to the ground after falling from a stand requires both cardiovascular and muscular strength to minimize increased risk of injury or death.

Physical fitness skill component summary

Physiological fitness	health related fitness	skill related fitness	sport
Metabolic body	Body composition	Agility	Team
Morphological	Cardiovascular fitness	Balance	Individual
Bone integrity	Flexibility	Coordination	Lifetime
Other	Muscular endurance	Power	Other
	Muscle strength	speed	
		Reaction time	

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

Skill-related physical fitness: -consists of those components of physical fitness that have a relationship with enhanced performance in sports and motor skills. The components are commonly defined as agility, balance, coordination, power, speed and reaction time. Prior to the last 40 years the distinction between health-related and skill-related physical fitness was not typically made.

2.8.1. Health-related physical fitness components

Body Composition: -is a health-related component of physical fitness that relates to the relative amounts of muscle, fat, bone and other vital parts of the body (USDHHS, 1996).

Cardiovascular Fitness: -is a health-related component of physical fitness that relates to ability of the circulatory and respiratory systems to supply oxygen during sustained physical activity (USDHHS, 1996). Cardiovascular fitness is also referred to as cardiovascular endurance, aerobic fitness and cardio respiratory fitness. A VO2 max test in the laboratory setting is considered to be the best measure of cardiovascular fitness. Commonly administered field tests include the One mile run/walk, the 12-minute run, the PACER run for children and various bicycle, step, and treadmill tests.

Cardiovascular endurance: - is defined as the ability of the lungs, heart, and blood vessels to deliver adequate amounts of oxygen and nutrients to the cells to meet the demands of prolonged physical activity. The American Heart Association (2004b) reported that cardiovascular disease is the number one killer in America. Therefore, activities promoting cardiovascular fitness are extremely important in the prevention of this life threatening disease as well as other degenerative illnesses that can be related to poor cardiovascular endurance.

Flexibility: -is a health-related component of physical fitness that relates to the range of motion available at a joint (USDHHS, 1996). Some experts specify that flexibility requires range of motion without discomfort or pain (Howley& Franks, 1997). Flexibility is specific to each joint of the body, thus there is no general measurement of flexibility as there is for cardiovascular fitness. Flexibility is typically measured in the lab using measurement devices such as a goniometric, flex meter and in the field with test exercises such as the sit and reach, and the zipper.

Flexibility: - is defined as the joints ability to move through a full range of motion. Excellent flexibility provides various health related benefits, which include improved physical performance, greater freedom of movement, improved posture, an increase in physical and mental relaxation, and a decrease in the risk of injury. Although an individual‘s level of flexibility is primarily due to genetics, gender, and age, it is important to recognize that the level of physical activity plays an

important role as well. In simple terms, the less physically active we are, the less flexible we are likely to be.

Muscular Endurance: -is a health-related component of physical fitness that relates to the muscle's ability to continue to perform without fatigue (USDHHS, 1996). Muscular endurance is specific in nature. For true assessment of muscular endurance it would be necessary to test each major muscle group of the body. Lab and field tests of muscular endurance are similar and are based on the number of repetitions that can be performed by the specific muscle group being tested (example: repetitions of push-ups or abdominal curls). Muscular endurance can be measured isometric ally (static contractions) or isotonic ally (dynamic contractions).

Muscular endurance: - is the ability of the muscle to work for long periods of time without getting tired. Muscular strength and endurance are extremely important for everyday living. Daily activities such as climbing stairs, carrying groceries, as well manual labor, require both strength and endurance of the muscles.
Although it is often times overlooked, flexibility is yet another key component to health related fitness.

Strength: -is a health-related component of physical fitness that relates to the ability of the muscle to exert force (USDHHS, 1996). Strength is specific in nature. For true assessment it would be necessary to test each major muscle group of the body. Lab and field tests are similar and involve the assessment of one repetition maximum (the maximum amount of resistance you can overcome one time). 1RM tests are typically conducted on résistance machines. Strength can also be assessed using dynamometers. Strength can be measured isometric ally (static contractions) or isotonic ally (dynamic contractions).

Probably the most outwardly visible sign of an individual‘s level of physical activity is body structure or body composition. Body composition is the percentage of fat and muscle that makes up a person‘s body (Rimmer, 1994). For good health, an individual should maintain a proper ratio of one to the other. When levels of body fat are high, an individual is at greater risk for a variety of health problems. High percentages of body fat are strongly correlated with arthritis, heart disease, hypertension, and diabetes. There are many different ways to find body composition; however, not all are accurate. Height and weight charts are probably one of the least accurate means of finding

body composition. An individual‘s muscle mass is not taken into consideration; therefore, someone may be considered obese when in reality they have a large amount of lean muscle in the body. Body mass index (BMI), another commonly used measure of body composition, assesses one‘s body weight relative to height. A person with a BMI under 18.5 is considered underweight. BMI values of 18.5-25.9 is considered normal, 25-29.5 is considered overweight, and 30 or over is considered obese. The National Center for Chronic Disease Prevention and Health Promotion (2004) provides an easy-to-use, web-based process for calculating BMI.

2.8.2. Skill-related Physical Fitness Components

Agility: - is the ability to quickly change body position and make directional changes in body movement. A text book of PE for you define agility is the ―ability to rapidly and accurately change the direction of the entire body in space 3.” (1999, pate 53) Wayne A. Payne and Dale B. Bahn define” Agility is the ability to move quickly with frequent direction position, enhance your performance in a in variety of activities.” (1989, page 71). This is the combination of speed and coordination. It allows you to efficiently change direction and body position at speed.

Balance: - is the maintenance of equilibrium while stationary or while moving. The harmonious development of physical, mental and spiritual aspects a person. Balance is the ability to maintain equilibrium in other words, something is balanced when is seems as something natural and simple to perform, or is balance when its center of gravity is over its area of support.

Coordination: - is the ability to use the sense and body parts in order to perform motor tasks smoothly and accurately. But according to John etal (*1996 page 97*) defined as ―Coordination involves putting the relevant motor programs in the right order and effectively using the neuron muscular system to produce smoothly an efficient movement. ―Hence, coordination is the ability to integrate sensor and motor systems to produce efficient movement.

Power:-is the ability to transfer energy swiftly in to force. And also it is an explosive strength, is the ability to effectively integrate strength and speed to produce maximum muscular force at a maximum speed. It is the rate at which energy is expended or work is done. Then J.shorkey(*1997 page 145*) define power ―work divide by time, or the rate of doing work if one can perform the

same work better than the other with in the same time interval, then we have got a better power. It combines strength (force) and velocity or speed (Distance/time)

Speed: - is the ability to perform a movement quickly. It is the time takes us to respond to a stimulus. John etal (1996 page 96) also state that ―Speed is basically how fast you can move partial your body or the whole of your body, and is measured in meters per second." Therefore, speed is the rate of movement and often refers to the ability to move rapidly and it is an important factor in all explosive sports and activities that require sudden changes in space.

Timing: -is the ability to perform movements and actions of the body or body-part at a particular moment to produce to best effect. This is the time between a stimulus being perceive and the first movement made in response to it. It also depends on how long you take to process the information and this can be improved with practice.

Physical Activity is defined as bodily movement produced by the contraction of striated muscle that substantially increases energy expenditure (USDHHS, 1996; ACSM, 2000). This definition includes exercise, which is planned, structured, and repetitive physical activity aimed at improving maintaining physical fitness, organized sports or striated muscle that substantially increases energy expenditure (USDHHS, 1996; ACSM,2000).

This definition includes exercise, which is planned, structured, and repetitive physical activity aimed at improving maintaining physical fitness, organized sports or games (football, basketball), transport (walking, cycling), occupational physical activity(manual labor, household chores) and non-organized, recreational physical activities(Okely, Patterson &Boothet, 1998; ACSM, 2000). Exercise can be divided into aerobic exercise and anaerobic exercise. Aerobic exercise, which uses oxygen to keep large muscle groups moving continuously at intensity that, can be maintained for at least 20 minutes. Aerobic exercise uses several major muscle groups throughout the body, resulting in greater demands on the cardiovascular and respiratory systems to supply oxygen to the working muscles. Aerobic exercise includes walking, systems to supply oxygen to the working muscles. Aerobic exercise includes walking, jogging, and swimming, and is the form recommended for reducing the risk of heart disease and increasing endurance. Unlike anaerobic exercise, anaerobic exercise involves heavy work by a limited number of muscles, for example during weight lifting. These types of activities are maintained only for short intervals, and the

supply of oxygen is insufficient for aerobic metabolism, resulting in a substantial oxygen debt and anaerobic metabolism within those muscles. Another example is sprinting, in which the exercise is high in intensity but short in duration, resulting in substantial oxygen debt. Weight lifting and other types of anaerobic exercise increase strength and muscle mass, but are of limited benefit to cardiovascular health (Microsoft Encarta Encyclopedia Deluxe 2003).

2.9. Physical activity and health

Physical activity of moderate intensity has been recommended for health and well-being since the time of Hippocrates (460–370 BC). The Greek physician Hippocrates, the `father of medicine`, advised that "Eating alone will not keep a man well; he must also identified that physical activity is a major modifiable risk factor in the reduction of mortality and morbidity of many chronic diseases (USDHHS, 1996; Armstrong, Bauman& Davies, 2000). Since the 1970´s a number of studies regarding the benefits of physical activity, the health benefits of regular physical activity (aerobic exercise) have been affirmed and summarized in reports from governmental and non-governmental organizations. U.S. Surgeon General (USDHHS, 1996), U.S. National Institutes of Health1996), U.S. Centers for Disease Control and Prevention (Pate et al., 1995), American College of Sports Medicine-ACSM (Pate et al., 1995), American Heart Association (Blair&McCloy, 1993) have concluded that regular physical activity is associated with important health benefits.

U.S. Surgeon General Report that summarized the current consensus regarding the health benefits of physical activity concluded the following (USDHHS, 1996):

- People of all ages, both male and female, benefit from regular physical activity.
- Significant health benefits can be obtained by including a moderate amount of physical activity (e.g., 30 minutes of brisk walking or raking leaves, 15 minutes of running, or 45 minutes of playing volleyball) on most, if not all, days of the week. Through a modest increase in daily activity, most Americans can improve their health and quality of life.

2.10. Influencing Factors

2.10.1. Factors that Affecting Physical Fitness Program

Factors that affecting physical fitness programs are stated by many scholars in different ways. Then, Percival etal (*1992 page 91*) explained to develop safe effective, health enhancing exercise program that gaits everybody means looking at a member of factors such as age, current health,

status, personal interest, personality type, finance, the climate you live in and the availability of exercise facilities and other that we need to take into account.

There are two major factors that influence each of the health related fitness components: physical activity and nutrition. Education in both areas is critical in helping an individual to develop overall physical health.

The benefits of physical activity have been viewed as important in our society for many years. However, it was not until the second half of this past century that evidence from a scientific standpoint began to support these beliefs (Cooper, 1991, 1999). There is an accumulating body of evidence to support the fact that young children are becoming less physically active and more overweight and obese. For example, the Centers for Disease Control (CDC; 2000) reported that physical inactivity has contributed to the 100% increase in the prevalence of childhood obesity in the United States since 1980. In addition to issues regarding obesity, many studies on physical activity have shown that the body responds to exercise in ways that have positive effects on the cardiovascular, respiratory, endocrine, and musculoskeletal systems. More specifically, physical benefits of exercise such as increased muscle strength, range of motion, flexibility, posture, and endurance, all promote self-sufficiency and decrease feelings of depression, dependence, and lack of control. Regular participation in physical activity also appears to reduce anxiety, improve mood, and enhance an individual‘s ability to perform daily tasks. Also, emerging research in animals and humans alike suggests that physical exercise may boost brain function, improve mood, and otherwise increase the capacity for learning (Kong, 1999).

Proper nutrition is the other major factor that influences physical development. Many adults have been taught incorrect information about nutrition and are teaching this to their children (Willett, Skerrett, &Giovannucci, 2001). For the well-being of our children, adults need to become more aware of what proper nutrition encompasses and attempt to instill proper nutritional habits in children from an early age. Unfortunately, some of the information coming from respected sources is inaccurate (Willett, 2001). For example, the Dietary Guidelines for Americans published by the United States Department of Agriculture (1995) suggests that the daily diet should contain 6 to 11 servings of foods high in carbohydrates such as bread, cereal, rice, and pasta. However, the suggestions from faculty at the Harvard School of Public Health (Willett, et al.) propose these foods should be used sparingly. While both suggest eating healthy foods such as grain products, fruits and vegetables, low-fat dairy products, beans, lean meat, poultry, fish, or nuts, the

recommended portions of each are often quite different (see Willett, 2001 for a detailed comparison).

It is also important that adults teach children healthy eating by example. Children should not only hear educators and other adults telling them how they should eat, but they should also see those around them eating these same healthy foods. There is a caveat in the recommendations from experts: dietary guidelines are intended for children over the age of two years. Infants from birth to the age of two need a higher amount of fat intake in their diet because of their rapid growth rate. The American Heart Association (2004) states that beginning around the age of two, toddlers can be moved on to the recommended dietary guidelines recommended for adults. Parents should consult their family pediatrician for more specific dietary guidelines for an infant. Staying up-to-date on current information regarding nutrition and following recommended dietary guidelines are important factors in being able to help properly educate our youth.

2.10.2. The view on physical fitness assessment

Historically, physical fitness assessments for children and adolescents have been a mainstay of the physical education curriculum. If used correctly, fitness assessments can enhance instruction of fitness concepts, provide diagnosis of fitness needs for individualexercise prescription, facilitate fitness goal-setting and self-monitoring skills, and promote fitness knowledge and self-testing skills (Whitehead et al., 1990). However, there are many factors other than physical activity that can influence a child‘s performance on physical fitness tests (e.g., maturation, heredity, predisposition / trainability and body composition). An overemphasis on fitness testing in the curriculum can send the wrong message to children about physical activity. For example, some children may get discouraged in physical education if they score poorly on fitness tests despite being physically active. Alternately, children may incorrectly believe that they don‘t need to be active if their fitness levels are in the healthy fitness zone. Studies have demonstrated that negative feedback from fitness testing can lead to reduction in a child‘s level of intrinsic motivation toward physical activity (Whitehead & Corbin, 1991). These concerns have caused many experts to question the continued emphasis on physical fitness testing in the curriculum (Kemper &van Mechelen, 1996).

Recently, there has been a conceptual shift in the physical education field toward the promotion of physical activity. While fitness is still a desirable outcome, more emphasis is being placed on promoting the behavior of physical activity. For example, in the current National Association for

Sport and Physical Education (NASPE) definition of a ―physically educated person", three of the five components refer specifically to physical activity (NASPE, 1995). In addition to having good skills and reasonable levels of fitness, a physically educated person participates in regular activity, knows the benefits of participation and values the contribution activity can make to a healthy lifestyle.

Incorporating physical activity assessments into the curriculum allows for better instruction on physical activity concepts and avoids some of the problems associated with fitness testing. An additional benefit is that by emphasizing a behavior, all children can be successful.

Many people assume that physical activity and physical fitness are directly related, but they actually represent very different things. Physical activity is a behavior, while physical fitness is a characteristic. While physical activity will contribute to physical fitness, the relationship is not as strong as one would expect. There are a variety of other factors that influence levels of physical fitness and many are beyond a person's control.

The relationship between physical inactivity and obesity is also not as high as would be expected (especially among children). Even if a relationship is present, it is not clear that it is a ―causal" factor. Physical inactivity can lead to obesity, but it is equally plausible that obesity leads to inactivity. The current consensus is that physical activity and physicalfitnessis reciprocally related (bi-directional arrow) and that they exert independent effects on health. This implies that a person needs to be physically active even if they have reasonable levels of fitness. Individuals with low levels of fitness can also obtain health benefits by remaining physically active. Because some of the factors influencing fitness are beyond a person's control (e.g. genetics and rate of maturation), emphasis should be placed on being physically active. The model presented above is useful in understanding the relationships between physical activity, physical fitness and health (Corbin, 2001) the complex relationships among physical activity, physical fitness, health wellness and etc.Source: Adapted from Bouchard et al., 1990

2.10.3. Heredity and physical fitness in children and adolescents

A significant amount of fitness test performance is explained by heredity (Bouchard, 1990; Bouchard et al., 1992). Various factors such as environment, nutrition, heredity, and maturation affect fitness performance as reflected in physical fitness test scores. Research shows that heredity and maturation strongly impact fitness scores (Bouchard et al., 1992; Pangrazi& Corbin, 1990).

The complex interaction among exercise, genes, nutrition and environmental factors Source: Adopted from Bray (2000). J. Appl. Physiol. 88: 788–792.These factors may have more to do with youth fitness scores than doe‘s activity level. Lifestyle and environmental factors also make a difference. For example, nutrition is a life-style factor that can influence test scores, and environmental conditions (heat, humidity, and pollution) strongly modify test performances. Some youngsters have a definite advantage on tests because of the physical characteristics they inherit. Even in an untrained state these children score better because of heredity. Recent research has shown that ―trainability" has strong genetic limitations (Bouchard et al., 1992). Trainability means that some individuals receive more benefit from training (regular physical activity) than do others.

2.10.4. Maturation and physical fitness in children and adolescents

Sexual maturation is a biological process, which occurs from the time the sex hormones start increasing in the body to the achievement of adulthood at the age of 21 for girls and 25years for boys. According to the report of USDHHS (2000b), it begins at puberty and is associated with rapid growth and appearance of secondary sexual characteristics. Physical educators know that some youngsters mature faster than others. If two children are the same age and sex, but one is physiologically older (advanced skeletal maturation), the more mature child usually performs better on physical fitness tests than does the less mature child. Examining fitness norms shows that. It is widely believed that biological maturity influences physical fitness test performance. Children can be advantaged or disadvantaged in physical fitness tests by being more or less mature than counterparts of the same chronological age (Jones et al., 2000). Studies examining skeletal age (Gruelich& Pyle, 1959; Krahenbuhl&Pangrazi, 1983) consistently show that a 5- to 6-yearvariation in skeletal maturity exists in a typical classroom of youngsters. For example, the classes of third graders who are all 8 years old chronologically range in skeletal age from 5to 11 years. This means that some youngsters are actually 5-year-olds skeletally and are trying to compete with others who are as skeletally mature as 11-year-olds. Effective programs must offer activities that are developmentally appropriate and suited to their level of maturity. Clarke (1971) indicated that the motor performance of boys is related to skeletal maturity in that a more mature boy usually performs better on motor tasks.

However, motor performance of girls appears not to be related to physiological maturity.

Physical education programs often ask students to learn at the same rate, even though this practice may be detrimental to the development of students who are maturing at a faster or slower rate. Students do not mature at the same rate and are not at similar levels of readiness to learn. Offering a wide spectrum of developmentally appropriate activities designed to help youngsters at different maturity levels encourages participation in physical activities. Malina& Bouchard (1991, p.274) indicated that early-maturing children of both sexes are taller and heavier than their average and late maturing and sexpeers from about age 6 onward. Armstrong &Welsman (2001) indicate that VO2 peak increased with age and maturation in both sexes. But when maximum oxygen uptake is adjusted per kilogram of body weight, it shows little change for boys (no increase) as they mature and a gradual decrease for girls (Bar-Or, 1983). This decrease in females is due toan increase in body fat and a decrease in lean body mass.

Armstrong et al. (1999) indicated that maturation did not influence the VO2 peak response to sub maximal exercise for 97 boys and 97 girls with a mean age of 12.2 years.Viru et al. (1998) indicated that a probability for an accelerated improvement in aerobicendurance was found for the periods of 11-15 years in boys and 11 - 13 years in girls (Consensus Index values were highest in 12 - 13 year old boys and in 11 - 12 year old girls).For both latter traits, the accelerated improvement was associated with the last stages ofsexual maturation.

Naughton et al. (2000) indicated that many young athletes were being encouraged totrain intensely for sporting competitions from an early age. Compared with studies in adults, less was known about the physiological trainability of adolescents. The velocity ofphysical growth during the adolescent years makes research with a group of young athletes particularly difficult. Naughton et al. (2000) expressed resistance-training studies in male adolescents and to lesser extent female adolescents and highlighted the substantial relative strength gains that could be obtained. Aerobic trainability in young boys appears to improve markedly during the adolescent years (>13yr). Studies of aerobic trainability inadolescent girls are too scarce to be conclusive. Sexual maturation that can be measuredby self-assessment of sexual maturity status shows moderate to high correlations in boys(r=0.63-0.93) and girl (r=0.55-0.88) (Roemmich and Rogol, 1995). Mota (2002) alsofound a significant influence of sexual maturity on the variance in aerobic fitness (5% in boys, 8% in girls) among 494 Portuguese children aged from 8 to 16 years.

2.10.5. Does physical activity affect physical fitness of children and adolescents?

The health benefits of regular physical activity for adults are now well established. The question is whether physical activity can increase physical fitness (especially aerobic performance) of children. Research results are split. Some researchers have found an increase in aerobic power through training; others report that training has no impact on the aerobic system. Payne and Morrow (1993) reviewed 69 studies examining training and aerobic performance in children and concluded that improvement was small to moderate in prepubescent children.

2.10.6. Physical activity and physical fitness of children and adults

A direct relationship between physical activity and specific health outcomes has been established primarily among adults. Research conducted on the health benefits of activity inchildren is not strong (Malina, 2001) and harder to detect (Baranowski et al., 1992). Malina
(2001) suggested that the presently available evidence indicated significant, but generally low to moderate relationships between childhood physical activity and health-relatedphysical fitness. Taylor et al. (1999) concluded that the relationship between childhood andadolescent experience in physical activity and adults exercise habits were weak overall. But they suggested a potentially important role for motor skill development and emphasized aneed to give young people a voice or choice in their physical activity and sport participation.

Bar-Or &Malina (1995) suggested that there were significant health benefits associated with physical activity for children, but that the relationship would likely be contingent on continued involvement over time. Therefore, a more important rationale for promoting physical activity is to establish long-term interest in physical activity. Thus, the goal for youth activity promotion should be to help children develop the cognitive and behavioral kills to help them be active through adolescence and into adulthood. Blair et al., (1989) present a conceptual model describing the links and relationships between children‘s physical activity and health. An important concept in this model is that there are reciprocal relationships between physical activity and health. Physical activity is needed for good health, but it is also true that a person must have reasonable levels of health and fitness to be able to participate in physical activity. The same is true regarding body composition as physical inactivity is both a cause and consequence of overweight and obesity. Physical inactivity clearly increases risks for becoming overweight or obese, but once a person is overweight physical activity becomes less enjoyable and more strenuous.

This is true for both children and adults. A second key concept is that good health requires that healthy behaviors be maintained over time. An active child will benefit from physical activity during childhood, but these benefits will not be retained unless the child adopts an active lifestyle as an adult. While fitness is important in childhood, the more significant, long-term objective is to promote activity habits so that active children eventually become active adults. This concept serves as one of the key aspects of the overall fitness gram philosophy.

Rowland (1996) indicated that a minimum of thirty minutes of daily physical activity was recommended, but sixty minutes of daily activity was a preferred dosage because children become less active as they mature.

2.11. Trends in physical activity over the lifespan

There is substantial evidence of a decline in physical activity over the lifespan. A number of international tracking studies have identified adolescence, typically between 13-18 years, asthe period of greatest decline in physical activity in both males and females over the lifespan (Caspersen, Pereira, & Curran, 2000; Kimm et al., 2000; Telama& Yang, 2000; Van Mechelen, Twisk, Post, Snel, & Kemper, 2000). However, as there is a lack of data on physical activity levels of children less than 10 years old, trends within childhood are unclear. It is possible that substantial declines in physical activity in childhood may also be apparent. While female adolescents are generally less active than males, most notably inactive in vigorous and strengthening activities (Hill, 2002; Hoos, Gerver, Kester, &Westerterp, 2003; Mota&Esculcas, 2002; Van Mechelen et al., 2000), the differences in rate of decline between genders is unclear. A review of studies found an average decline of approximately2003; Mota&Esculcas, 2002; Van Mechelen et al., 2000), the differences in rate of decline between genders is unclear. A review of studies found an average decline of approximately7.4% per year in girls, compared to 2.7% in boys (Sallis, 1993). Although many studies report rates of decline to be larger in females, a number of studies report significantly greater declines in males. Three recent studies of boys in the United States, Finland and Amsterdam found declines of approximately 1.8-3.7% in boys, compared to 1.2-1.3 % in girls (Caspersen et al., 2000; Telama& Yang, 2000; Van Mechelen et al., 2000).

During the age range of 30-44 years and 45-64 years, the percentages of males and females participating in sustained physical activity are relatively similar. However there is a widening gap

at retirement, with males actually increasing their physical activity by approximately 9%, while female activity levels remain unchanged (Caspersen et al., 2000).

It is likely that the typical leisure activities of men in retirement, such as golf and gardening are more active than the retirement activities chosen by women.

2.11.1 Declining physical activity throughout the lifespan

There is some evidence to suggest the decline in physical activity levels has a biological basis. Studies of a variety of animal species, such as insects, rodents and monkeys, show a decline in physical activity levels over the lifespan (Ingram, 2000). While some animal surveys show a linear decline, others find a greater decline at young ages, similar to human studies (Ingram, 2000). These studies suggest that decline in physical activity over the lifespan is at least partially a biological phenomenon. However, there is substantial evidence which points to a large, adaptable behavioral component. Numerous studies have shown that psychology, social and physical environments are related to physical activity (Sallis, Prochaska, & Taylor, 2000). In essence, while a decline in physical activity over the human lifespan is somewhat inevitable, the degree or slope of decline can be altered by intervention.

2.11.2 Trends in activity choice throughout adolescence

Declines in physical activity in adolescence are predominantly in vigorous activities and non-organized sports (Bradley, McMurray, Harrell, & Deng, 2000; Caspersen et al, 2000; Van Mechelen et al., 2000). The decline in non-organized sports is evident by the reduced numbers of adolescents found playing playground games or sports and games in local parks. As participation in non-organized sports decreases, participation in organized sports becomes even more important to overall activity level. As behavioral patterns with regard to organized sport are established early (Engstom, 1991), it is important that involvement in organized sports begin in pre-adolescence. This is particularly important for girls as girls‘ team sports, which are common in middle school, tend to drop off in high school (Bradley et al., 2000). In a study into the activity choices of 656 girls and boys tracked from ages 9-15 years in the United States, girls reported more social and sedentary activities with age. Girls aged 12–15 years reported mostly sedentary activities, with talking becoming the girls‘ primary leisure activity at 12 years of age (Bradley et al., 2000). In boys, there was a sharp increase in sedentary behavior at ages 12-15 years, however

more than 50% of boys still reported more vigorous activities than sedentary (Bradley et al., 2000).

While there are very little data on the mechanisms behind the dramatic decline in physical activity in adolescence, adolescence represents a time of increased study commitments and assimilation into adult work and family roles. These issues may act as barriers and will be discussed in Section 3.4 of the literature review.

2.12. Physical Education Programs

From an educational standpoint, it is imperative that standards be established that will guide the physical development of children and youth throughout their years of formal schooling. Effective physical education programs should set clear expectations of students, specifically designed as age appropriate. Expectations should not only cover the development of motor skills, they should include aspects of the cognitive and affective domains as well. Those in charge of setting standards, such as those implemented in South Carolina (South Carolina Department of Education, 2004), should be applauded for showing a commitment to the overall health of their children.

In South Carolina, seven different standards must be met if an individual is to be considered physically educated. All standards are addressed at each grade level, though each is modified so that it is age appropriate. In addition, all standards at each grade level are given an example of assessment that are used to monitor student learning and development. For example, physical education standard number one states that students should be able to demonstrate competency in many movement forms and proficiency in a few movement forms. The standard is then modified for age appropriateness so that, in preschool and kindergarten, the standard specifies that students should be able to display most fundamental movement patterns (e.g., throwing, receiving, jumping, and striking) in simple conditions and demonstrate control of the varied use of these patterns.

Each standard includes several benchmarks so that student learning can be monitored. An example of a benchmark for preschool and kindergarten is: the student will travel with control forward, backward, and sideways using a variety of locomotors patterns and change directions quickly. In addition to the benchmarks, an example of assessment is given which includes teacher observation along with criteria for assessment of the movement patterns. If the task is to demonstrate a locomotors skill (e.g., slide, hop, skip, or gallop), the teacher assesses the task and

three points are given if the student demonstrates each pattern at a level of mature form. If the student demonstrates the beginnings of each pattern but it is not fully developed, two points are given. Finally, one point is given if there is no evidence that the student can demonstrate the pattern at the time. This is just one example of the format used for students in the state at each grade level. The South Carolina Department of Education (2004) website provides further information regarding effective physical education programs and a complete list of state standards. It is of utmost importance that all educational systems adopt these kinds of standards and make a more concerted effort to hold educators accountable for teaching and measuring them. These issues will be addressed later in the paper.

2.13. Age-appropriate Activities

As educators and parents consider how to help children develop the five health-related fitness components it is important to consider the age-appropriateness of activities. Obviously, one would not expect a young child in the first or second grade to participate in the same type of muscular strength and endurance training as a senior in high school. It is necessary to develop exercise prescriptions for both the elementary, middle grades, and secondary levels. The goal of the prescriptions is to increase the activity level of all students to at least 60 minutes per day by suggesting activities which students can engage in outside of the classroom. Within this prescription, detailed instructions must be given for activities that are age appropriate for the development of each health-related fitness component; students can chart the time spent engaged in the various activities for their math classes and write about their exercise in their language arts classes. It is important to consider that fitness activities need to be made fun for children or they will not want to participate. For most individuals, giving a direct command to go out and run two laps will not be an interesting activity in which to participate.

In the area of cardiovascular endurance some fun activities for elementary age and middle school students might include: flag tag, a 15-minute fun circuit, or a family fun walk. In a game of flag tag, each student puts a flag in their back pocket. On the signal the students begin chasing others around the designated area, attempting to grab as many flags as they can. At the end of 1 minute, stop the game; the person with the most scarves is declared the winner for that round. The 15-minute fun circuit includes stations for jump rope, jumping over a hoop, jumping jacks, and mountain climbers. Adding music to the fun circuit makes the activity even more appealing. The family fun walk is an activity that can take place at home. With the family, students are

encouraged to take a brisk 20- minute walk throughout the neighborhood. A list of items to be found along the walk can be compiled to make the walk into a scavenger hunt type of activity.

For middle grade or secondary age students, flag tag can be modified into rollerblade flag tag. The same directions would apply with the exception that the students are rollerblading instead of jogging. Jumping rope is another cardiovascular activity that older students can enjoy. Creating task cards and routines as well as setting the activity to music is an excellent way to engage students in a cardiovascular workout. It is also important to consider that basic activities such as jogging, walking, swimming, and aerobic dance are also considered excellent activities for people of all ages that promote cardiovascular endurance.

When most people think of muscular strength and endurance training, they immediately think of weight training in the weight room. However, educators should be aware that weight training is not a feasible activity for younger children. There are many activities that students of all ages can engage in without ever entering a weight room facility. For elementary age children, activities like tug-of-war, push-up routines, and the use of a stability ball can all assist in the development of muscular strength and endurance. Middle school and secondary level students can also use the stability balls, yet they may also safely begin workouts within the weight room environment. It is crucial for educators and parents to understand that teaching proper technique as well having proper supervision are key elements in a successful weight lifting program.

Body composition can be developed through a variety of activities. The stability ball can be used to perform sit-ups and crunches for students of all age levels. Each activity can be modified to fit the ability level of all students. For example, level one would consist of sitting on top of the ball, lying back and performing a certain number of sit-ups. In level two, there is a slight increase in the difficulty of the task. At this level, the student slides down the ball with their back at a slight angle. The student then attempts to perform the set number of sit-ups. Level three would be the most difficult. The student would lie down with their back on the ground, and their legs on top of the ball while performing the sit-ups. Older students can also use weight training as a method of developing body composition. Educators and parents need to also consider the importance of proper diet along with these methods of exercise when attempting to develop body composition.

The development of flexibility is mainly acquired through stretching programs. Stretches can be categorized on a continuum from static (no motion) to ballistic (rapid motion) (Kurz, 1994). Static stretching involves stretching a muscle to the farthest point and holding the stretch. Isometric

stretching is a type of static stretching which involves resistance of muscle groups through the tensing of the muscles. This type of stretching is considered one of the best ways to increase flexibility. Passive stretching is sometimes referred to as relaxed stretching. During a passive stretch, an individual would assume a position and hold it using another part of the body, a partner, or an apparatus of some type. This type of stretching is good for cooling down after a workout because it helps to reduce muscle fatigue and soreness. Active stretching includes assuming a position and holding it there with no assistance other than using the strength of your agonist muscles. Active stretches are usually very difficult to hold for more than ten seconds and should not be held any more than fifteen seconds. One would find this type of stretching in an activity such as yoga. Dynamic stretching involves moving parts of one‘s body and gradually increasing reach, speed of movement, or both. Dynamic stretching can be useful as part of a warm-up for an aerobic workout. Ballistic stretching uses the momentum of a moving body part or limb in an attempt to force it beyond its normal range of motion. This type of stretching is not considered useful and it has also been known to lead to injury.

As mentioned earlier, any physical activity designed for young children needs to be made fun. Although stretching routines can be very monotonous, they can be made more exciting for young children by simply adding music and giving each stretch a unique name.

2.14. Classroom-based Activities

Although the physical education classroom is a critical area for the development of the physical domain, the push for more physically active students should not end there. Educators need to be aware that young children learn about the world through movement and physical activity. Classroom teachers should keep in mind that physical activity can be integrated within other subject areas to give children opportunities for more movement throughout the day.

One way to incorporate this physical activity would be to use a thematic approach to teaching units within the curriculum. An example of a thematic approach would be an Olympic Games theme. In the area of Language Arts, students can read books, write reports, and perform skits that pertain to the games and athletes of the Olympics. Students can be shown maps in Social Studies, where they can compare the geographical locations of where they live and the place where the games are being held. A scale could be made up that shows the number of steps taken that are equal to a certain number of miles. Students could be given pedometers to calculate how many steps they have taken since the last class period. Each day when the students enter the classroom,

they would go to the map and chart their ―distance traveled" toward the sight of the Olympic Games. In math class, students can be introduced to the use of stopwatches. Teachers can have the students‘ time each other in a few physical skills and the data collected can be analyzed and graphs can be made using the results. Finally, in physical education classes, students could participate in activities similar to those of the Olympic Games. Through the use of this theme, each subject area teacher will have then done a small part in incorporating some type of physical activity into their classroom.

2.15. Parent Involvement

In addition to introducing children to physical activity through physical education programs and integrated curriculum parents can be encouraged to become involved in this aspect of their children‘s development. Children today are leading a more sedentary lifestyle than ever before (U.S. Department of Health and Human Services, 2001). The days of coming home from school and playing outside until dark have been replaced with activities such as watching television, surfing the internet, and playing video games. However, there are many things that parents can do to get children out of the house and involved in some type of physical activity (New York Online Access to Health, 2004). Some of these activities may include taking family walks or bike rides, going to the park or other recreational facilities, encouraging participation in extracurricular activities, and encouraging playtime outdoors. Parents should also get involved in school activities. They can ask their children what they are doing in physical education or better yet, visit them in class. Encouraging them to practice skills learned or practicing with them can be an effective way to keep them turned on to physical activity.

2.16 The Tran theoretical Model (TTM)

According to the TTM, recovering from problem behaviors or successful behavior change involves movement through a series of stages (Prochaska, DiClemente, & Norcross, 1992).

The various stages of change include pre-contemplation (are not currently physically active and have no intention of doing so in the near future) and contemplation (not currently physically active but who have an intention to start in the near future). Individuals in the next stage, preparation, according to Marcus and Simkin(1994) are individuals who are currently exercising

some, but not regularly. The action stage represents people who are currently active, but have only recently started. The last stage is the stage of maintenance. It includes those who are currently physically active and have been for some time, usually at least six months (Biddle &Mutrie, 2008) .

A recent study located differences within a stage. Three subgroups of contemplators existed: early and middle contemplators, and those in pre-preparation. Early contemplators are viewed as individuals who have low self-efficacy, view few benefits and many disadvantages of exercise and are at risk of regression. Middle contemplators are individuals with low self-efficacy and approximately equal pros and cons towards exercise. Individuals in pre-preparation are those who are ready to move to the next stage (i.e., stage of preparation), elicit high self-efficacy and report low disadvantages of exercise. Thus with its various stages, the trans-theoretical model helps delineate change in adoption of health related behavior.

The TTM assists individuals in making transitions across the various stages of change in exercise related health behavior (Prochaska& Marcus, 1994). The trans-theoretical model states that stage transition results from stage-specific cognitive and behavioral process.

According to Kim (2008), cognitive processes obtain information from an individual s own actions while information for behavioral processes is obtained from environment events.

People at different stages of change are hypothesized to use distinct processes of change. In a study detailing the association of stage and processes of change with adoption and maintenance of muscular fitness-related behavior, Cardinal &Kosma (2004) observed cognitive processes to peak in the contemplation stage while behavioral processes steadily increased from the pre-contemplation to maintenance stage at which point the behavioral processes leveled off. Stage-match intervention uses the main constructs of the TTM and is matched to the individual‘s stage of readiness for exercise behavior (Kim, 2008). Hence, stage-matched interventions use different strategies and techniques based on the stage the individual is in to bring about effective changes in exercise behavior. A recent study on Type 2 diabetics inSouth Korea (Kim, Hwang, &Yoo, 2004) compared a stage-based intervention with regular physical activity education advice. The stage based intervention included stage matched counseling strategies based on the main constructs of the TTM such as processes of change (POC), self-efficacy (SE) and decisional

balance (DB) along with individual exercise prescription and telephone counseling. Significant increases in overall stage of change (SOC) and physical activity levels were noted in the stage matched intervention group. A higher percentage (77.4 %) of the participants progressed from baseline in the intervention group as opposed to only 4.3% in the control group. Similar increases in SOC and physical activity have been observed in other studies comprising of urban older adults (King, Pruitt et al.,2000) and in younger adults in a worksite setting (Marcus &Simkin, 1994).

2.17. Social Cognitive Theory

The social cognitive theory (SCT) was developed in the 1980_s by Albert Bandura.According to Bandura (2004), the social cognitive theory specifies a core set of determinants, the mechanism through which they work and the optimum ways of translating this knowledge into effective health practices. The core determinants for effective health practices of individuals include knowledge of health risk and benefits of different health practices, perceived self-efficacy, outcome expectations, health goals people set for themselves and perceived social and structural facilitators. Bandura (2004) states that change in health behavior require motivation and self-regulation. People must learn to monitor their health behavior, motivate themselves, set goals and establish social support to sustain their effort. Strategies to increase social support and self-regulatory skills have been highlightedbyNahas, Goldfine, & Collins (2003) in their report on determinants of physical activity inadolescents and young adults. A recent intervention study by Ince (2008) using the social cognitive concepts as explained by Bandura (2004) and Nahas, et al. (2003) on 62undergraduate students resulted in significant improvements in exercise behavior and other benefits like health responsibility, nutrition, social support and stress management.

Self –efficacy, a key construct of social cognitive theory, is defined as people‘s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but withjudgments of what one can do with whatever skills one possesses (Bandura, 1997). Bandura(1986) listed four sources of efficacy information, namely prior success and performance attainment, imitation and modeling, verbal and social persuasion and judgments of physiological states. Schwarzer (1992) stated self-efficacy to be a very powerful behavioral determinant and its inclusion in theories of health behavior therefore is warranted.Hofstetter, et al. (1991) found self-efficacy to predict walking in a large

adult community. Similarly, Sallis, et al. (1992) have shown self-efficacy to predict exercise change over time. McAuley&Blissmer(2000) state that the relationship between self-efficacy and physical activityis complex. Self-efficacy beliefs are likely to be more influential in conditions that are challenging in comparison to situations that are more habitual and require less effort.

2.18. Self Determination Theory

Deci and Ryan (1985) proposed the self-determination theory. It is a macro-theory of human motivation concerned with the development and functioning of personality of social contexts. According to Deci and Ryan (1985), the theory focuses on the degree to whichpeople endorse their action and engage in actions with a full sense of choice. The theory alsosuggests human beings are active organisms, with innate tendencies toward psychological growth and development, who strive to master ongoing challenges and to integrate their experiences into a coherent sense of self. In order to function effectively and overcome challenges, human beings must be able to satisfy the three basic psychological needs of individual competence, autonomy and relatedness. According to Deci and Ryan (1985), tothe extent to which the basic needs are satisfied, people will function effectively and develop in a healthy way, but to the extent that they are thwarted, people will show evidence of ill-being and non-optimal functioning.

Motivation, though often recognized as a single construct, is governed by a myriad offactors and personal experiences. Ryan and Deci (2000) stated that people can be motivated because they value an activity or because there is strong external coercion. They can be urged into action by an abiding interest or by a bribe. They can behave from a sense of personal commitment to excel or from fear of being observed. These situations contrast between casesof having internal motivation versus being externally pressured by an individual or situation.

Extrinsically motivated behaviors are those that are performed to obtain rewards or outcomes that are separate from the behavior itself (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997).

Self-determination theory suggested that people experience more self-determined (or internally controlled) types of motivation when the activities they participate in make them have competence (the ability to effectively perform the behavior), relatedness (authentic social connections with others) and autonomy (the power to make their own choices). More self-

determined types of motivation are desirable because they are associated with positiveexperiences and continued motivations to participate (Deci& Ryan, 1985). In a studycomparing exercise adherence in 40 university students participating in either Tae Kwan Door aerobic exercise, Ryan, et al., (1997) observed better adherence in the Tae Kwan Dogroup. On further analysis, they attributed the better adherence to increased enjoyment andcompetence motives in the Tae Kwan Do participants. In the exercise domain, exercise ismore extrinsically motivated as compared to sport. Most people maintain their exercise activities that are not inherently interesting or enjoyable to them but have something to gainfrom it (Ryan, Williams, Patrick, &Deci, 2009). A lack of intrinsic motivation to exerciseactivity leads to low adherence in a long term perspective. In a recent meta-analysis of the self –determination continuum, Chatzisarantis, Hagger, Biddle, Smith, & Wang (2003) found moderately strong correlations between more self-determined forms of motivation andmeasures of intention and competence.

2.19. Socio-Ecological Theory

Ecological models of health behavior are models proposing that behavior is influenced by interpersonal, socio-cultural, policy, and physical-environmental factors (Sallis& Owen, 2002) The purpose of the ecological model is to primarily focus on theenvironmentalcauses of behavior and to identify environmental interventions to promote health (McLeroy, Bibeau, Steckler, &Glanz, 1988). Ecological theory has been extensively used to determine correlates of physical activity. Seasons are often associated with physical activity and time spent outside is the best correlate of physical activity in young children (Sallis& Owen, 2002). Irrespective of socio-economic status of people, those residing nearthe coast reported higher levels of physical activity (Bauman, Smith, Stoker, Bellew, &Booth, 1999). Proximity to physical activity programs is an important factor for both young individuals (Sallis, Prochaska, & Taylor, 2000) as well as older adults (Booth, OwenBauman, Clavisi, & Leslie, 2000). Convenient exercise facilities not only were strongly associated with physical activity but also strongly predicted vigorous physical activity in men although these findings were not true in for case of women (Sallis, Bauman, & Pratt, 1998).

However, no direct association was present between the presence of recreational facilities and meeting recommendations. These findings suggest that individual-level factors and other

environmental supports must be present before an individual engages in the recommended level of recreational activity.

Increasing participation in regular physical activity has now become a national priority for many industrialized nations. Interventions have the best effect when they alterand modify the underlying correlates that influence physical activity. Exercise, like any other component of health care, is bounded by physical, personal and environmental factors (Arcury et al. 2006). The failure to meet the Healthy People 2000 recommendation are result of the lack of understanding the underlying determinants that govern an individual or society‘s participation in leisure time physical activity. In a recent review of the correlates of adults_ participation in physical activity, Trost, Owen, Bauman, Sallis (2002) have concluded that participation is influenced by a diverse range of personal, social and environmental factors. These factors are referred to as determinants.

Determinants denote a reproducible association or predictive relationship other than cause and effect. Determinants that reside or originate within the individual are included under personal factors. These include demographic correlates, biomedical status, past and present physical activity performance, and psychological states and traits associated with physical activity (Dishman 1988). In studies comparing men and women, physical activity patterns were higher among males when compared to females and were also inversely associated with age (Trost, Owen, Bauman, Sallis 2002). Overweight and obesity also has a strong negative influence on physical activity. Martinez-Gonzalez, Martinez, Hu, Gibney,and Kearney (1999) found that after controlling for age, time spent sitting, sex, education, social class, marital status, smoking, country of origin, individuals in the upper quintile for leisure time physical activity were approximately 50% less likely than those in the lowest quintile to be classified as obese.

Psychological determinants of physical activity include enjoyment of physical activity, expected benefits, value of physical activity outcomes, intentions, perceived behavioral control, normative beliefs, knowledge of health and exercise, self-efficacy, self-motivation and stage of change. In a study examining the influence of self-efficacy perceptions in a cohort of healthy adults between the ages of 50 and 64, baseline self-efficacy perceptions significantly predicted exercise adherence after 2 yr of follow up (Oman and King 1998). In a population of elderly men and women, barriers to physical activity such as lack of time, too weak, too tiring, fear of falling, bad

weather and no exercise partners, emerged as the greatest influence on leisure time activity (Lian, Gan, Pin, Wee, Ye 1999).

The physical environment acts as a determinant of physical activity. Accessibility to a facility, the appeal of the surrounding environment, perceived threats and climatic conditions are the strongest predictors of physical activity among environmental factors (Dishman 1988;Trost, Owen, Bauman, Sallis, Brown 2002). Access to a facility is a necessary but not a sufficient facilitator of community sport and exercise participation. Perceived convenience of the exercise setting and actual proximity to home or place of employment are consistent discriminators between those who choose to enter or forgo involvement and between those who adhere or dropout in supervised exercise programs (Dishman 1988). In one supervised exercise program, those most likely to drop out actually lived closer to the chosen activity setting, although they perceived inconvenience as a factor leading to their return to inactivity(Gettman, Pollock, Ward 1983). A study involving Australians aged 60 yr and over, found that having friends who participated regularly in physical activity, safe footpaths for walking, and having access to a park were significantly associated with regular physical activity(Booth, Owen, Bauman, Clavish and Leslie 2000).

2.20. Use of physical fitness

The Governor‘s Council on Physical Fitness and Nutrition believes that regular physical activity is one of the most important things Iowans can do for their health. It can help:

- Control weight
- Reduce the risk of cardiovascular disease
- Improve core strength
- Contribute to productivity in the classroom and worksite
- Reduce the risk for type 2 diabetes
- Reduce the risk for some cancers
- Improve bone and muscle strength
- Contribute to mental health and mood
- For older Iowans it can prevent falls and increase independence

In short we feel there are few choices that can match the impact on the quality and quantity of your life and regular quality activity. This is why one of our first acts was to design a Governor‘s 100 day challenge! It is why we are working on quality core exercises. It is why we will be recognizing worksites, schools, and communities that promote good nutrition and physical activity. The Governor‘s Council views the Governor‘s Fitness Challenge as our starting point, We view our goal as the healthiest state in the Nation(http://www.healthyiowa.gov/fitness.aspx)

Physical exercise: - is any bodily activity that enhances or maintains physical fitness and overall health and wellness. It is performed for various reasons including strengthening muscles and the cardiovascular system, honing athletic skills, weight loss or maintenance, as well as for the purpose of enjoyment. Frequent and regular physical exercise boosts the immune system, and helps prevent the "diseases of affluence" such as heart disease, cardiovascular disease, Type 2 diabetes and obesity. It also improves mental health, helps prevent depression, helps to promote or maintain positive self-esteem, and can even augment an individual's sex appeal or body image, which is also found to be linked with higher levels of self-esteem. Childhood obesity is a growing global concern and physical exercise may help decrease some of the effects of childhood and adult obesity. Health care providers often call exercise the "miracle" or "wonder" drug alluding to the wide variety of proven benefits that it provides.

2.20.1. Types of exercise

Physical exercises are generally grouped into three types, depending on the overall effect they have on the human body:

- Flexibility exercises, such as stretching, improve the range of motion of muscles and joints.
- Aerobic exercises, such as cycling, swimming, walking, skipping rope, rowing, running, hiking or playing tennis, focus on increasing cardiovascular endurance.
- Anaerobic exercises, such as weight training, functional training, eccentric training or sprinting and high-intensity interval training, increase short-term muscle strength.

Categories of physical exercise

- Strength training
- Agility training
- Eccentric training
- Resistance training
- Interval training
- Continuous training

Sometimes the terms 'dynamic' and 'static' are used. 'Dynamic' exercises such as steady running tend to produce a lowering of the diastolic blood pressure during exercise, due to the improved blood flow. Conversely, static exercise (such as weight-lifting) can cause the systolic pressure to rise significantly (during the exercise).

2.22. Sport-related injury

2.22.1. Risk factors

In order for prevention programmed to successfully reduce the incidence of sports-related injuries in children and adolescents, a good understanding of the factors placing young athletes at risk is necessary. Traditionally, these risk factors have been broken down into extrinsic factors (those that are external to the athlete, such as weather) and intrinsic ones (those that are inherent to the athlete, such as gender). Extrinsic risk factors typically include sport played, position within that sport, sport-specific rules, level and duration of play, playing surface, type and quality of protective equipment, coaching quality and experience and environmental factors such as weather and season. Frequently cited intrinsic risk factors include gender, age, physiological maturation level, anatomical alignment, physical fitness level, flexibility , strength, muscle–tendon imbalances, joint stability, coordination, prospective skill level, nutrition status, history of previous injury and psychological and social factors.

Looking more closely at these lists of risk factors for injury, it is clear that some are potentially modifiable. Of the extrinsic factors, for example, sports-related factors such as rules, playing surface and equipment may all be modified to better ensure the safety of the child athlete. However, some extrinsic factors that place young athletes at risk for injury are non-modified.

Indeed, the choice of sport itself may pose a risk. Interestingly, the three sports most frequently associated with injury in boys are hockey, basketball and football. Girls are most at risk participating in gymnastics, basketball and soccer. Intrinsic risk factors, too, may be either modifiable or not. Non-modifiable risk factors include gender (boys are more likely to be injured participating in sport), left-handedness, age and history of previous injury. Importantly, many risk factors inherent to the young athlete are potentially modifiable. Fatigue (a surrogate for inadequate physical fitness) increases the risk of injuries in hockey players and baseball pitchers. Early evidence in support of the relationship between poor physical fitness and activity-related injury came from investigation of army trainees; history of inactivity, higher body mass index (BMI) and low aerobic fitness were all believed to contribute to physical-training-related injuries in this population In fact, there are good data demonstrating that youth with increased BMIs have a significantly higher risk of sustaining a sports-related injury than their normal-weight peers. In a review of the available literature on obesity and injury, McHugh reported that in 11 of the 13 studies included in his analysis, a higher BMI and/or a high percentage of body fat was associated with an increased risk of sports-related injury (specifically ankle sprains, medial collateral ligament tears and dental injuries). The reported increases in injury risk ranged from 1.4 to 3.9 times the risk identified for the normal-weight control groups. Proposed mechanisms for this finding in overweight and obese children include poor postural control (leading to problems with balance and coordination), poor physical fitness (associated with muscle fatigue and subsequent injury) and low pre-participation physical activity levels (associated with impaired neuromuscular and motor learning). Additionally modifiable intrinsic risk factors include strength, muscle–tendon imbalances, joint stability, coordination and pro-prospective skill level. It is these factors that have been targeted with initial success in the prevention of noncontact ACL injuries in young female athletes.

2.22.2. Overtraining and overuse

Participation in organized sports clearly has the potential to promote health as well as to boost self-esteem and allow children to learn about teamwork. Ideally, sports participation is also fun. That said, the pressure to be successful on an individual, a national and an international level is felt at an early age. It is contended that regions or nations will not remain competitive without a systematic program of youth development, and experience in a number of national development program for youth sports seems to bear this out. This pressure to be successful at the highest levels of competition has led to the phenomena of early sport specialization, year-round training and simultaneous participation on multiple teams.

Fundamental training concepts including per iodization, the _10% rule‘ and mandatory breaks between seasons are often dismissed, with resultant declines in the athletes‘ physical and mental function. Just as adult athletes may suffer from overtraining syndrome, burnout and overuse injuries, children who perform excessive amounts of high-intensity, repetitive physical activity without adequate rest may be susceptible to the perils of overtraining. Overtraining syndrome and burnout are routinely associated with changes in a young athlete‘s cognitive and mood profile, with symptoms including fatigue, sleep disturbance, chronic muscle and/or joint pain, elevated resting heart rate, performance decline, mood disturbances and impaired academic performance. Specifically, _burnt-out‘ athletes demonstrate decreased vigor while the less adaptive mood states of fatigue, confusion, depression, anger and tension are all increased—m the precise opposite mood profile of a healthy, high-functioning athlete. The athlete‘s physiological response to the perceived stress of continued athletic participation may then result in increased muscle tension, narrowing of the visual field and distractibility, which predispose _burnt-out‘ athletes to sports-related injury at significantly higher rates than their appropriately trained peers.In addition to the acute sports-related injuries that overtraining athletes may sustain, overuse injuries are frequently associated with overtraining and burnout. The major concern with overtraining in the skeletally immature athlete is damage to the growth cartilage.49 finally; frank failure of bone as a result of repetitive loading may also be seen in the overtraining athlete. Ensuring the safety of the child athlete therefore requires an awareness of weather conditions and modifying training sessions to accommodate them appropriately (i.e., increasing the frequency of water breaks, shortening practice time and training during cooler hours). Also noteworthy is the fact that children may be

susceptible to sustaining a sports-related injury during the time of their peak growth velocity.49 This is likely related to a combination of muscle imbalances resulting from asymmetric growth, relatively tightened muscles as the soft tissues lag behind the osseous structures in longitudinal growth and decrements in pro-prospection and balance resulting from adjustment to rapid bony growth. It is important to recognize that because of the extreme variability in physical and place him or her at risk for both acute and chronic injuries as well as decrements in overall health and function.

While it is ultimately difficult to formulate universally applicable recommendations for training the child athlete, there are several common-sense guidelines that should be followed. In general, fitness training program for children must be:

(1) individual-specific, taking into account factors such as a child‘s gender, age, BMI, injury history, developmental level and skill set;

(2) sport-specific and

(3) context-specific, with awareness of the level of play, relevant weather conditions and season length informing all training recommendations. Modifiable risk factors, including poor physical fitness, should be identified and addressed to ensure that children may participate in sporting activities as safely as possible. Perhaps most important is to remember that it is the ultimate responsibility of involved adults—coaches, parents, trainers and teachers—to ensure the health and safety of each child.al and psychological maturation among children of the same chronologic age, the frequency, duration or intensity of physical activity that is appropriate for one child may be frankly overwhelming, both physically and emotionally, for a same-age peer. This makes rigid prescriptive guidelines for physical activity in the child and adolescent athlete untenable; rather, each athlete must be evaluated individually and the onus lies on the athlete‘s coaches and parents to be aware of the signs of overtraining and burnout and to intervene in a timely fashion.

CHAPTER THREE

METHODOLOGY

The methodology section has been organized into the following categories: research design, data source, sampling technique (area sampling, data source sampling, and respondent sampling), data gathering instrument and procedure, and method of data analysis.

3.1 Research Design

In linking the data to be collected with conclusion to be drawn to the initial question of the study the research design is important part that consist at least four problems, what questions to be study, what data are relevant, what data to be collected and how to analyze the report therefore, a research design is a plan, structure and strategy of investigation conceived as to obtain answer to research questions or problems (Kumar, 1996). It is a plan of research practice that indicates what the researcher will do from problem formulation to suggest operational recommendations.

In order to obtain the required information a descriptive survey design was employed in the study. Survey research is probably the best method available to the social scientist interested in school original data for describing a population too large to observe directly (Babbie, 1998). The use of a survey/questionnaire method has some definite advantageous over other methods of collecting data; the questionnaire requires less time, is less expensive, and permits collection of data from a much larger sample. Moreover, this method is appropriate because it helps in obtaining large variety of data related to the problem under the study. In this study both quantitative and qualitative research approach was employed to analyze the data, because it allows using more than one research techniques or source of data within study which makes data triangulation possible. According to Hagan (2003) triangulation assumes use of multiple methods to measure the same phenomenon. The purpose of triangulation –using different method and/or techniques" (questionnaires, interviews, experiment, observation, fitness test) is to ascertain the validity of data findings.

3.2 Sampling techniques

There are 10 woreda and one sub city with 24 secondary school in Hadiya zone. Hence the sites of the study areas are two among those schools of Hadiya zone administration. The target populations of the study are 80 students (40 urban and 40 rural) secondary school female students and 4 sport science teacher those purposely selectedfromHadiya zone secondary schools.

The sampling secondary school of Hadiyazone isHomecho and Yekatite 25/67 secondary schools are selected randomly for its case to obtain information.

3.3Data Sources

Both primary and secondary source are used to secure sufficient data/information. Primary data will collected from subjects through questionnaires interviews and fitness test.

Accordingly, firsthand information will collected from rural and urban female students,sport science teachersand the like. Furthermore, the information will gathered from secondary sources, i.e. reviewing relevant books, journals, documents, minutes, internet, newspaper and the like. These reinforce the study and it increases its relevant.

3.4 Procedures of Data Collection

First, the questionnaire, interview and focus group discussion (FGD) guided questions, was prepared in Amharic then translated in to English. The researcher was contact with Hadiya zone urban and rural secondary school sport science teacher to get permission on to distribute the questioners to students.

3.5Tools to be used

The physical fitness battery includes a combination of Physical fitness and health related tasks. Two of the test was used to measure grip strength, dash and standing broad jump. The other three, of the fitness test was selected for their suitability in field conditions, specifically for ease of administration without extensive equipment. All tests were administered during the school day. Detailed descriptions of each fitness test are described given below:

1. Explosive Strength Standing Broad Jump
2. Speed 50 Meter Dash
3. Endurance Hardware Step Test
4. Agility Shuttle Run
5. Flexibility Sit and Reach Test

Source: -Adopted from journal of exercise science and physiotherapy, 3(2): pp 157-159, 2007.

3.6 Statistical Procedure Used

The values of mean, standard deviations, SEM and ‗t' test was applied to find out significance of differences between the scores of the selected variables and groups.

CHAPTER FOUR

4. DATA ANALYSIS AND INTERPRETATION

This section presents the result of the analysis on the self- administered questionnaires, interview and fitness test. The respondents to the study include rural and urban female students and sport science teachers in same selected high school in Hadiya zone.

4.1. Table of students profile

	Item	No	%
	Urban female student	40	100%
	Rural female student	40	100%
Age	15 years	-	-
	16-17 years	68	85%
	18years and above	12	15%
Kilogram	45-55kg	46	57.5%
	56-65kg	26	32.5%
	66kg and above	8	10%
Height	1.40m-1.50m	62	77.5%
	1.51m-1.70m	14	17.5%
	1.71m and above	6	7.5%

According to this student profile 40(100%) of the respondents are urban female student, and the remaining 40(100%) of the students response is rural students. Regarding to the age of the respondents there is no respondents response 15 years, 68(85%) of the respondents are b/n 16-17 years, and 12(15%) of the student response are 18 years and above.

Regarding to the marital status 80(100%) of the respondents it have no married it is single, finally, the educational level of the respondents are 80 (100%) of the respondents high school, that means grade 10 female students.

Table .4.1.2The response of the respondents regarding to the interest of the subject, the time taken to develop physical fitness and are you physical fit all these are include in t he following table.

No	Item	RFSR				UFSR			
		Yes	%	No	%	Yes	%	No	%
1	Do you have interest to develop physical fitness?	40	100%	-	-	40	100%	-	-
2	For how long do the exercises to perform physical fitness in per week.								
	40 minutes	10	25%	-	-	-	-	-	-
	60 minutes	8	20%	-	-	4	10%	-	-
	80 minutes	22	55%	-	-	36	90%	-	-
3	Are you physical fit?								
	Agree	26	65%	-	-	31	77.5%	-	-
	Strongly agree	--	-	-	-	-	-	-	-
	Disagree	14	35%	-	-	9	22.5%	-	-

RFSR=rural female student response.

UFSR=urban female student response.

According to table 2 item No 1 the response of the respondents regarding to the inters to develop physical fitness 40(100%) of the rural female students and40 (100%) of urban female students response yes they have interest to develop physical fitness.

Regarding to table 2 item No 2 the response of students for how long do the exercises to perform physical fitness in per week 10(25%) of the rural female students response say _yes‘ to develop physical fitness the time taken is only 40, minutes in per week, 8(20%) of the respondents replay _yes‘ to perform physical fitness the time taken is only 60minutes,but the remaining 22(55%) of the respondents replay _yes‘ to perform physical fitness the time taken is only 80minutesBut on the same question the response of the urban female students is no response_yes‘ the time taken to develop physical fitness in 40 minutes in per week. 4(10%) of the respondents of the students on how long to the exercise to perform physical fitness in per week is say 60, minutes is sufficient to perform physical fitness and the remaining 36(90) of the respondents regarding to the above question to perform physical fitness in peer week 80 minutes is enough.

On the same table 2, item No 3 the response of the respondents regarding too are you physical fit then from the given alternatives 26(65%) of the rural female students response is replay agree that they fit in physical fitness and the reaming 14(35%) of the respondents of students is disagree. But on this question the response of urban female students from the given alternatives 31(77.5%) of the respondents replay strongly agree, and the remaining 9(22.5) of the respondents reply disagree.

Table 4.1.3.The response of the respondents regarding to the case that can reduce their physical performance, about the problems that affect the physical fitness of students and knowledge about the physical fitness all are it include in the following table below.

No	Item	RFSR				UFSR			
		Yes	%	No	%	Yes	%	No	%
4	For what case the students can reduce their physical performance								
	Smoking	1	2.5%	-	-	2	5%	-	-
	Drinking alcohol	5	12.5%	-	-	7	17.5%	-	-
	Chewing chat	3	7.5%	-	-	4	10%	-	-
	All	31	77.5%	-	-	27	67.5%	-	-
5	What types of problems that affect the physical fitness of the students								
	Environment	4	10%	-	-	-	-	-	-
	Nutrition	17	42.5%	-	-	11	27.55	-	-
	Facility	6	15%	-	-	11	27.5%	-	-
	All	13	32.5%	-	-	18	45%	-	-
6	Have you knowledge concerning the benefit of physical fitness	28	70%	12	30%	40	100%	-	-

According to table 3 item No 4 the response of respondent regarding to what case the rural students can reduce their physical performance, from the given alternative 1(2.5%) of the

students response is smoking is the case for reducing physical fitness of the students, 5(12.5%) of the students are say drinking is the case factors to reduce the performance of the student physical fitness, 3 (7.5%) of the respondents say that the cause factors to reduce performance of the students are chewing chat, finally from the given alternative 31(77.5%) of the respondents agree with all the alternative is the enormous case to reduce the performance of students physical fitness. But on this question the response of urban female students from the given alternatives2(5%) of the rural female students response is smoking is the case for reducing physical fitness of the students, 7(17.5%) of the students are say drinking is the case factors to reduce the performance of the student physical fitness, 4 (10%) of the respondents say that the cause factors to reduce performance of the students are chewing chat, finally from the given alternative 27(67.5%) of the respondents agree with all the alternative is the enormous case to reduce the performance of students physical fitness.

On the same table 3 item No 5 the response of the respondents regarding to what types of problems that affect the physical fitness of the students from the give alternative 4(10%) of the respondents say environment is the factors that affect the problems of physical fitness of the students ,13(32.5%) of the student response is nutrition, 6(42.5%) of the student response is facilityand the remaining 17(42.5%) of the respondents say that the problems that affect the physical fitness of the students are all stated in the alternative that means, environment, nutrition , and facility are the huge problem that affect the physical fitness of the students.But on this question the response of urban female students from the given alternatives there is no response that affect the physical fitness in the environment, 9(22.5%) of the student response is nutrition, 13(27.5%) of the student response is facilityand the remaining 18(45%) of the respondents say that the problems that affect the physical fitness of the students are all stated in the alternative that means, environment, nutrition , and facility are the huge problem that affect the physical fitness of the students.

Regarding to table 3 item No 6 the response of the respondents about the knowledge towards the benefit of physical fitness from the given alternative 28(70%) of rural students respondents is reply –Yes" that they have knowledge towards the benefit of physical fitness and the remaining students response for the above question from the given alternative 12(30%) of the respondents say –no" that they have knowledge concerning the benefit of physical fitness.But on this question

the response of urban female students from the given alternatives 40 (100%)is reply –Yes" that they have knowledge towards the benefit of physical fitness.

Table 4.1.4 The response of the respondents regarding to the time when doing the exercises, is perform regular exercise to develop physical fitness, and what types of exercise to develop physical fitness are included in the following table.

No	Item	UFSR				UFSR			
		Yes	%	No	%	Yes	%	No	%
7	If your answer is –yes" for question No. 1 in table 1 , when								
	In the morning	16	40%	-	-	12	30%	-	-
	In the afternoon	24	60%	-	-	28	70%	-	-
	In evening								
8	Is the students perform regular exercises to develop their physical fitness	40	100 %	-	-	40	100 %	-	-
9	If your answer is –yes" for item No. 8 what types of exercises to develop their physical fitness								
	Stretching exercises	-	-	-	-	-	-	-	-
	Strength exercises	-	-	-	-	-	-	-	-
	Cardio vascular exercises	-	-	-	-	-	-	-	-
	All	40	100 %	-	-	40	100 %	-	-

According to table 4 item No. 7 the rural students response of the respondent regarding to question 1 in table 1 if your question is ‗yes' when to do the regular exercise to develop physical fitness from the given option 16(40%%) the response of the students are reply ―yes" in the morning, 24(60%) of the respondent say ―yes" that they perform regular exercise in the afternoon. But on this question the response of urban female students from the given alternatives12 (40 %%) the response of the students are reply ―yes" in the morning, 28(60%) of the respondent say ―yes" that they perform regular exercise in the afternoon.

On the same table item No. 8 the rural students response of the respondent regarding to is the student perform regular exercise to develop physical fitness from the given alternative 40(100%) of the student response is reply ―yes" and urban students on this question from the remaining 16(26.7) of the respondent is say ―No" that they cannot interested to perform regular exercise to develop physical fitness.

As table 4 item No. 9 the response of the respondent is depending on question No. 8 that means if your answer is ―yes" what type exercise use to develop their physical fitness, then from the alternative 14(23.3%) of the response of the student is state ―yes" the exercise use to develop physical fitness is stretching exercise, 15(25%) of the respondent is also ―yes" to develop their physical fitness is strength exercise is the most important and the remaining 15(25%) of the student response is cardiovascular exercise is the most important to developing their physical fitness.

Table 4.1.5 The response of the respondents regarding to do have get advisor concerning their physical fitness, what type of advice to be get from teacher, and what mechanisms the student avoid the feel pain during perform physical activity, then all the above question is in table below.

No	Item	UFSR				UFSR			
		Yes	%	No	%	Yes	%	No	%
10	Is there advisor concerning their physical fitness?	40	100%	-	-	40	100%	-	-
11	what type of advisor to be get from a teacher								
	Mechanisms to develop physical fitness	14	35%	-	-	3	7.5%	-	-
	use of physical fitness	5	12.5 %	-	-	9	22.5 %	-	-
	All	21	52.5 %			28	70%		
12	what Mechanisms of the students keep away from feel pain at their chest when they perform physical activity								
	By performing different physical activity								
	By taking rest during physical activity								
	By asking physical education teacher								
	All	40	100%			40	100%		

As table 5 item No. 10, the response of the rural student regarding to get advisor concerning their physical fitness, from the given option 40(100%) of the student answer is say –yes" that they get advisor concerning their physical fitness and the response of the urban student regarding to get advisor concerning their physical fitness, from the given option 40(100%) of the student answer is say –yes" that they get advisor concerning their physical fitness.

Regarding to table 5, item No. 11 is depending on the question No. 10 if rural students answer is –yes" what type of advisor to be get from a teacher, then from given alternative 14(35%) of the respondent is reply –yes" that they get advisor from a teacher about the Mechanisms to develop physical fitness, 5(12.5%) of the respondents also answer back –yes" that they get advisor from a teacher about their use of physical fitness, Finally the left behind 21(52.5%) of the students response is say _yes' all of the alternative are clarify for student or happen to the students are get from a teachers advisor andif urban students answer is –yes" what type of advisor to be get from a teacher, then from given alternative 3(7.5%) of the respondent is reply –yes" that they get advisor from a teacher about the Mechanisms to develop physical fitness, 9(22.5%) of the respondents also answer back –yes" that they get advisor from a teacher about their use of physical fitness, Finally the left behind 28(70%) of the students response is say _yes' all of the alternative are clarify for student or happen to the students are get from a teachers advisor .

On the same table 5 item No. 12 the response of the rural student regarding to what Mechanisms of the students keep away from feel pain at their chest when they perform physical activity, from the given option 7(22.5%) of the respondent reply –yes" to avoid feel pain at their chest when they perform physical activity by performing different physical activity, 11(27.5%) of the student response is also say –yes" to avoid feel pain at their chest students perform physical activity by taking rest during physical activity, and the remaining 22(55%) of the students are agree with –yes" to avoid the feel pain at their chest the students perform by asking physical education teacher and response of the urban student regarding to what Mechanisms of the students keep away from feel pain at their chest when they perform physical activity, from the given option 40(100%) all alternatives are mechanisms of the students keep away from feel pain at their chest when they perform physical activity .

Table 4.1.6.The response of the respondents regarding to the benefit of physical fitness, the participation of students in physical fitness and what type of exercise do you want to fit your physical fitness is explain in the following table

No	Item	UFSR				UFSR			
		Yes	%	No	%	Yes	%	No	%
13	If your answer is —ys” for question No. 9 under table 2, what is the benefit of it?								
	It prevents the accumulation of fat					4	10%		
	It prevents the disease	18	45%			13	32.5%		
	It keeps good posture	7	17.5%			9	22.5%		
	All of the above	15	37.5%			14	35%		
14	What type of exercise do you want to fit your physical fitness?								
	Push-up exercises	7	17.5%			2	5%		
	Pull-up exercises								
	Flexibility exercises	3	7.5			11	27.5%		
	Weight lifting exercise	-	-	-	-	-	-	-	-
	All of the above	30	75%			27	67.5%		
15	To increase the participation of students in physical fitness what to be done the experts								
	Explain the benefit of physical fitness to the students	15	37.5%			12	30%		
	To provide the sport center in the school	19	47.5%			7	17.5%		
	To make students psychologically ready	6	15%			21	52.5%		

According to table 6 item no 13, the rural students response of respondent regarding to what is the benefit of physical fitness, when your answer is yes for item no 6 under table two, from the

given alternative 18(45%) of the respondents agree with –Yes" the benefit of physical fitness is it prevents the disease, 7(17.5%) of the response of the students also agree with –yes" the benefit of physical fitness if it keep good posture or it make good physical appearance and finally 15(37.5%) of the student response is the benefit of physical fitness is all of the alternative is the benefit of physical fitness those are, it prevent the accumulation of fat, it prevent disease, it keep good posture then as the respondents says all the above is the benefit of the physical fitness.

But on this question the response of urban female students from the given alternatives4(10%) of the respondents agree with –Yes" the benefit of physical fitness is it prevents the accumulation of fat,13(32.5%) of the respondents agree with –Yes" the benefit of physical fitness is it prevents the disease,9(22.5%) of the response of the students also agree with –yes" the benefit of physical fitness if it keep good posture or it make good physical appearance and finally 14(35%) of the student response is the benefit of physical fitness is all of the alternative is the benefit of physical fitness.

As table 6 item no 14, the rural students response of the respondents regarding to fit your physical fitness from the given option 7 (15%) of the students response reply –yes" to fit physical fitness the most important exercise is push up, 3(7.5%) of the respondents also reply –yesto fit physical fitness is the most important exercise is flexibility, the remaining 30(75%) of the student response is the benefit of physical fitness is all of the alternative is the benefit of physical fitness.But on this question the response of urban students from the given alternatives2 (5%) of the student response reply –yes" to fit physical fitness the most important exercise is push up, 11(27.5%) of the respondents also reply –yes to fit physical fitness is the most important exercise is flexibility, the remaining 27(67.5%) of the student response is the benefit of physical fitness is all of the alternative is the benefit of physical fitness.

On the same table 6 item no 14, the rural students response of the respondent regarding it increase the participation of the students in physical fitness what to be done the experts, from the given alternative 15(37.5%) of the students response is reply –yes" the exports to be done to increase the participation of the students, explain the benefit of physical fitness for the students 19(47.5%) of the respondent also say –yes" to provides sport center in the school and the reaming 6(15%) of the

student response is –yes" the only means of increasing the participation of the students in physical fitness the experts to make students psychologically readiness.

But on this question the response of urban students from the given alternative 12(30%) of the students response is reply –yes" the exports to be done to increase the participation of the students, explain the benefit of physical fitness for the students 7(17.5%) of the respondent also say –yes" to provides sport center in the school and the reaming 21(52.5%) of the student response is –yes" the only means of increasing the participation of the students in physical fitness the experts to make students psychologically readiness.

4.2. Table of teachers profile

		No	%
Sex	M	2	50%
	F	2	50%
Age	22-25 years	2	50%
	25-27 years	1	25%
	27 years and above	1	25%
Total years of experience in teaching	4-6 years	2	50%
	6-9 years	1	25%
	10 years and above	1	25%
Marital Status	Single	2	50%
	Married	2	50%
	Divorced/separated/	-	
Education status	College level		
	10+2		
	10+3	-	-
	University level	-	-
	First Degree	3	75%
	Second Degree	1	25%

According to this teachers profile 2(50%) of the respondents are male and2 (50%) of the respondents are female regarding to the age of the respondents,2(50%) of the teachers are 22-25

years.1(25%) of the teacher is 25-27years and the remaining 1(25%) of the teacher is 27 and above. while regarding to total years of experience in teaching 2(50%) of the respondents 4-6years experience in teaching,1(25%) of the respondents 6-9 years‘ experience and the remaining 1,(25%) of the respondents 10 years and above experiences on teaching.

Regarding to the marital status 2(50%) of the respondents it have no married it is single then, 1, (33.3%) of the respondents married and remaining 2(50%) of the respondents are married. Finally, the educational level of the respondents 3 (75%) of the respondents are educated person that means graduated from university level 1stDegreeandthe remaining 1(25%) graduated from university level 2st Degree.

Table4.2.1The response of the respondents regarding to the interest of the subject, the time taken to develop physical fitness and are you physical fit all these are include in the following table.

No	Item	Teacher response			
		Yes	%	No	%
1	Do you have interest to develop physical fitness?	4	100 %	-	-
2	For how long do the exercises to perform physical fitness in per day.				
	40 minutes	1	25%	-	-
	60 minutes	1	25%		
	80 minutes	2	50%		
3	Are you physical fit?				
	Strongly Agree				
	Agree	3	75%		
	Disagree	1	25%		

According to table one item No 1 the response of the respondents regarding to the inters to develop physical fitness 4(100%) of the response yes‘ they have interest to develop physical fitness.

Regarding to table 1 item No 2 the response of teachers for how long do the exercises to perform physical fitness in per day,1(25%) of the response say yes‘ to develop physical fitness the time taken is only 40, minutes in per day, 1(25%) of the response replay yes‘ to perform physical fitness the time taken is only 60minutes,but the remaining 2(50%) of the respondents replay yes‘ to perform physical fitness the time taken is only 80minutes

On the same table 1, item No 3 the response of the respondents regarding too are you physical fit then from the given alternatives 3(75%) of the teacher response is replay agree that they fit in physical fitness and the reaming 1(25%) of the respondents of teacher is disagree.

Table.4. 2.2 The response of the respondents regarding to the case that can reduce their physical performance, about the problems that affect the physical fitness of students and knowledge about the physical fitness all are it include in the following table below.

No	Item	Teacher response			
		Yes	%	No	%
4	For what case the students can reduce their physical performance				
	Smoking				
	Drinking alcohol				
	Chewing chat				
	All	4	100 %		
5	What types of problems that affect the physical fitness of the students				
	Environment				
	Nutrition				
	Facility				
	All	4	100 %		
6	Have you knowledge concerning the benefit of physical fitness	4	100 %		

According to table 2 item No 4 the response of respondent regarding to what case the rural students can reduce their physical performance, from the given alternative 4(100%) of the teachers response is agree with all the alternative is the enormous case to reduce the performance of students physical fitness.

On the same table 2 item No 5 the response of the respondents regarding to what types of problems that affect the physical fitness of the students from the give alternative 4(100%) of the

respondents say that problems that affect the physical fitness of the students are all stated in the alternative that means, environment, nutrition, and facility are the huge problem that affect the physical fitness of the students.

Regarding to table 2 item No 6 the response of the respondents about the knowledge towards the benefit of physical fitness from the given alternative 4(100%) is reply –Yes" that they have knowledge towards the benefit of physical fitness.

Table4.2.3. The response of the respondent regarding to encouraging students, advise students regarding to develop physical fitness and what type of advice to give for students then all this items are it including in the following below.

No	Item	TR alternative			
		Yes	%	No	%
7	Are you encouraging your students towards developing physical fitness	4	100%		
8	Are you advise students regarding to developing physical fitness	4	100%		
9	If your answer is –yes" for item No. 8 what types of advice to gives for students				
	About their health status of the student				
	About their benefit of physical fitness				
	About their mechanisms of developing physical fitness				
	All of the above	4	100%		

According to table 3 item No. 7 the response of the respondent regarding are you encouraging students towards developing physical fitness, from the given alternative 4(100%) of the teachers response are reply –yes" that they encouraging the students towards developing physical fitness.

Regarding to table 3 item No 8 the response of the respondent regarding to the advice of students to developing physical fitness from the given alternative 4(100%) of the teacher response is reply –yes" that they have advise students regarding to developing physical fitness .

On the same table 3 item No. 9 is depending on the Question No. 8 that income if your answer is ―yes" what types of advice to be given for students, from the given alternative 4(100%) of the teachers respondents all the alternative which is state in table is the advice that give for students from the teacher. Then the teacher gives for student about their health status of student, about their benefit of physical fitness and about their mechanisms of developing physical fitness.

Table 4.2.4The response of respondents regarding to the important of exercise to develop physical fitness about the methods of physical education sub sects and finally the table included about the sufficient materials during practical class.

No	Item	TR alternative			
		Yes	%	No	%
10	What type of exercise is the most important to develop physical fitness of cardiovascular endurance				
	Aerobic exercise	3	75%		
	An aerobic exercise	1	25%		
	All 0f the above				
11	Is your methods of teaching physical education in the school depending on the following way, 60% practical 40% theoretical	4	100%		
12	If your answer is ―ys" for item no. 11 is sufficient materials during practical class, what are there				
	Field/court	3	75%		
	gym/in door				
	Ball /sport wear	1	25%		

According to table 4 item No. 10 the response of the respondent regarding to the most important exercise to develop physical fitness of cardiovascular endurance from the given alternative 3(75%) of the teachers response reply –yes" Aerobic exercise is the most important type of exercise to develop physical fitness of students, but the remaining 1(25%) of the respondent is the most important exercise to develop physical fitness is Anaerobic exercise.

As table 4 item No. 11 the response of the respondent regarding to the methods of teaching physical education in school from the given alternative , 4(100%) of the respondent react –yes" the methods of teaching physical education in school is given through 60% practical and 40% is given through the theoretical ways.

On the same table 4 item No.12 is depending on the question No. 11 that means if your answer is _yes' is sufficient materials during practical class, from the given alternative 3(75%) of the response of the teacher reply –yes" one of the sufficient way is court and the remaining, 1(25%) of the respondents also say –yes" the sufficient ways of materials in school is ball and sport wear, but no gym center in the school.

Table4.2.5 This table it including about the proper way to teach physical education, are you evaluated physical fitness of the student, and by what Mechanisms to evaluate the physical fitness of the students.

No	Item	TR alternative			
		Yes	%	No	%
13	Is your school proper way to teach physical education?	4	100%		
14	Are you describing the goals of the physical education to the student in the school?	4	100%		
15	Are you discuss on the selected factors that influencing the nature and conducts of physical education in the school.	1	25%	3	75 %

As table 5 item No. 13 the response of the respondent regarding to the proper way to teach physical education in the school from the given alternative 4(100%) of the teacher responses reply –yes" the school environment is proper way to teach physical education.

According to table 5 item no, 14, the response of the respondents regarding to the goals of the physical education to the student, from the given alternative 4(100%) of the teachers response reply –yes" that they describe the goals of the physical education to the students in the school.

On the same table 4 item No. 15 the response of the teachers regarding to discuss on the selected factors that influencing the nature and conducts of physical education in the school, from the given option 1(25%) of the respondent is react –yes" there are so many factors that affect the physical education subject matter in the school and the remaining 3(75%) of the respondent is say –No" that can't discuss on the selected factors that influencing the nature and the conducts of the physical education in the school.

4.3 Table of fitness test

This section presents the result of the analysis on the self-administered fitness test. The respondents to the study include rural and urban female students and sport science teachers same selected high school in Hadiya zone.

Mean and standard deviation of the selected dimensions of rural female students and urban female students were computed. Its results have been depicted in table 2 and table 3.

Table4.3.1. Selected variables and their criterion measures

No.	Variable	Criterion measures
1	Strength	Standing Broad Jump
2	Endurance	Harvard Step Test
3	Speed	50 Meter Dash
4	Agility	Shuttle Run
5	Flexibility	Sit and Reach Test

Table4.3. 2: Mean and standard deviation of rural female students

No.	Variable	Units	Mean	S.D
1	Strength	Centimeter	124.51	7.29
2	Endurance	Pulse Rate	66.35	5.65
3	Speed	Seconds	17.44	1.46
4	Agility	Seconds	17.44	1.46
5	Flexibility	Centimeters	2.45	1.46

Source- survey field 2013
S.D=standard division

Table 2 depicts that the mean and standard deviation values of physical fitness of rural female students. These values were recorded as variable wise, Strength 124.51 and 7.29, Endurance 66.35 and 5.65 respectively, Speed 17.44 and1.46, Agility 17.44 and1.46, Flexibility 2.45 and 1.46, respectively.

Table4.3. 3: Mean and Standard Deviation of selected qualities of urban female students

No	Variable	Units	Mean	S.D.
1	Strength	Centimeter	113.02	12.38
2	Endurance	Pulse Rate	73.36	7.14
3	Speed	Seconds	10.12	1.01
4	Agility	Seconds	18.39	1.41
5	Flexibility	Centimeters	2.45	1.46

Source –survey field 2013
S.D=standard division

Table 3 depicts that the mean and standard deviation values of physical fitness of urban female students. These values were recorded as variable wise, Strength 113.02 and 12.38, Endurance 73.36 and 7.14 respectively, Speed 10.12and1.01, Agility 18.39 and1.41, Flexibility 2.45 and 1.46, respectively.

Table4.3. 4: Comparative analysis of strength (explosive) between rural and urban female students

No	Group	Number	Mean	S.D	SEM	*'t' Value*
1	Rural Female Students	40	124.51	7.29	1.29	2.41
2	Urban Female Students	40	113.02	12.38	2.19	

T 0.05 (98) =1.98 *Significant at 0.05 level
Source –survey field 2013
S.D=standard division.

SEM=standard error of mean.

The perusal of table 4 indicates that the 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 counterparts.

Table4.3. 5: Comparative analysis of endurance between rural and urban female students

No	Group	Number	Mean	S.D	SEM	*'t' Value*
1	Rural Female Students	40	66.35	5.65	0.99	4.30
2	Urban Female Students	40	73.36	7.14	1.26	

Source –survey field 2013

T 0.05 (98) =1.98 *Significant at 0.05 level

The analysis of table 5 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 counterparts.

Table 4.4.6: Comparative analysis of speed between rural and urban female students

No	Group	Number	Mean	S.D	SEM	*'t' Value*
1	Rural Female Students	40	17.44	1.46	0.18	0.001
2	Urban Female Students	40	18.39	1.41	0.20	

Source –survey field 2013

No significant difference: t at 0.05 (98) =1.98

Perusal of the table 6 shows that the mean and standard deviation values on the speed variable for rural and urban female students were recorded as 17.44, 1.46 and 18.39, 1.41, respectively. Therefore, the rural students have performed significantly better than their urban counterparts.

Table4.3. 7: Comparative analysis of agility between rural and urban female students

No	Group	Number	Mean	S.D	SEM	*'t' Value*
1	Rural Female Students	40	17.44	1.46	0.25	0.22
2	Urban Female Students	40	18.39	1.41	0.20	

No Significant Difference: t at 0.05 (98) =1.98

Source –survey field 2013

Analysis of the table 7 shows that the mean and standard deviation values on the agility variable for rural and urban female students were recorded as 17.44, 1.46 and 18.39, 1.41, respectively. Therefore, the rural students have performed slightly better than their urban counterparts.

Table4.3. 8: Comparative analysis of flexibility between rural and urban female students

No	Group	Number	Mean	S.D	SEM	*'t' Value*
1	Rural Female Students	40	2.45	1.46	0.25	0.22
2	Urban Female Students	40	2.76	1.14	0.20	

No significant difference: t at 0.05 (98) =1.98

Source –survey field 2013

Perusal of the table 8 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 counterparts.

CHAPTER FIVE

Summary, Conclusions, and Recommendations

This chapter is devoted to the presentation of summary, conclusions and recommendations forwarded on the basis of the finding presented in the previous chapter.

5.1Summary

The general purpose of the study was to identify comparison of physical fitness components of rural and urban secondary school female students in Hadiya zone.

More specifically the study intends to attain the following objectives:

- To measure the physical fitness quality in rural vs. urban secondary school female students.
- To find out the methods of developing physical fitness quality.
- To examine the quality of physical fitness components in rural and urban secondary school students.
- To identify factors that affects the quality of physical fitness in rural and urban secondary school students.
- To find out the significant different between in rural and urban student fitness component.
- To find out the static strength, speed, flexibility, endurance and agility between urban and rural female student.

In general the study attempt to give answers for the following research questions:

- Is there a difference among the static strength, endurance, speed, agility and flexibility in rural and urban female students?
- What factor mostly affects physical fitness?
- Is there significant difference between the comparison of Physical fitness components of rural and urban secondary school female students?
- Is there similarity between the comparison of Physical fitness components of rural and urban secondary school female students?

The data collected through questionnaire and fitness test, from 80 rural and urban female students who were selected through probability sampling techniques.

Which analyzed by descriptive statistics such as means, standard deviation, SEM and t'Value. Consequently, through interpretation and discussion of the result were made in the previous chapter, the following major finding were obtained:-

- The finding of the present study indicates that the mean and standard deviation values of physical fitness of rural female students are recorded as variable wise, Strength 124.51 and 7.29, Endurance 66.35 and 5.65 respectively, Speed 17.44 and1.46, Agility 17.44 and1.46, Flexibility 2.45 and 1.46, respectively and the mean and standard deviation values of physical fitness of urban female students are recorded as variable wise, Strength 113.02 and 12.38, Endurance 73.36 and 7.14 respectively, Speed 10.12and1.01, Agility 18.39 and1.41, Flexibility 2.45 and 1.46, respectively.
- The result of the study indicated that the 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 counterparts.
- The study clearly 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 counterparts.
- The study confirmed that the mean and standard deviation values on the speed variable for rural and urban female students were recorded as 17.44, 1.46 and 18.39, 1.41, respectively. Therefore, the rural students have performed significantly better than their urban counterparts.
- The result of the study shows that the mean and standard deviation values on the agility variable for rural and urban female students were recorded as 17.44, 1.46 and 18.39, 1.41, respectively. Therefore, the rural students have performed slightly better than their urban counterparts.
- The result of the study 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 counterparts.

- The result of the study shows that most students have knowledge and concepts about the contribution of physical fitness in daily life activity.
- 100% of the teachers‘ response is proper way to teach physical education in the school.
- Lastly the problems that affect the physical fitness of the students are environment, nutrition and facility.

5.2 Conclusion

- In preceding section, the main findings of the study have been summarized in line with its objectives, based on the result, the following conclusions were made:

- The results of the present study confirm that rural female students are comparatively better than urban female students in Hadiya zone. Rural female students are superior to urban female students in Strength, Endurance and Speed whereas urban female students are superior to rural female students in Agility and Flexibility. This shows that regular energetic activity produces physical fitness improvements. Village life style is more active in nature than the life in urban areas which produced high level of physical and physiological functioning in rural residents.

5.2.Recommendations

- The following suggestions and recommendations are made on the basis of the research finding and conclusions.
- The finding of this study revealed the previous findings of physical fitness components in rural and urban students. Urban life style which revealed in activity and rural life style where students are forced to travel in every day activity. If can be recommended that the physical activity of urban students should be a concern for school in particular and the policy makers in general.

- There are many cases that they can reduce their fitness components those are smoking; drinking and chewing chat are the factors that affect the physical performance of the students. This impels that to develop physical fitness you must stop those factors.
- The great problems that affect physical fitness teachers and students are Environment, Nutrition, and Facility.
- While my recommendation to perform physical fitness you must do exercise for a long period of time in per day.
- As much as possible to develop your physical fitness do daily activity because when you develop your physical fitness you are free from any kinds of diseases, such as blood pressure, hypertension, heart diseases; and etc.

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Appendix A

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLAGE OF NATURAL SCIENCE

DEPARTMENT OF SPORT SCIENCE

This questionnaire is filed by Students. Dear respondent: the objective of this questionnaire is to gather information on the comparison of physical fitness components of Rural and Urban secondary school female students in Hadiya zone.

Thus, it is initiated to obtain necessary data from you as a vital source of information and to point out the quality of physical fitness components of rural and urban secondary school female students with possible solution and recommendations. You are kindly requested to be honest and frank in your response as this will have direct bearing on the success of the research.

Directions

- Please, indicate your response by circling ‗ o‘‘ according to the instruction provided there. For open ended question(s) write your short response;
- Dear respondent upon completing thisquestionnaire, you are kindly requested to return it to the researcher.
- Writing your name is not necessary;

Thank you in advance for your cooperation!

Personal detail

1. Age A/ 15 years---- B/ 15-17years ------C/18 years and above.

2. Weight----------

3. Height----------

Circling your correct choice respond by‗ o‘‘ mark

1. Do you have interest to develop their physical fitness?

   A. Yes B. No

2. If your answer is ―yes‖ for item No. 1 when?

   A. In the Morning

   B. In the Afternoon

   C. In the Evening

3. For how long do the exercises to perform the physical fitness?

   A. 40 Minutes

   B. 40 Minutes

   C. 80 Minutes

4. Are you physical fit?

   A. Strongly agree B. Agree C. Disagree

5. For what case the students can reduce their physical performance?

   A. Smoking C. Chewing chat

   B. Drinking alcohol D. All of the above

6. What type of problems that affect the physical fitness of the students?

   A. Environment C. Facility
   A. Nutrition D. All

7. Have you knowledge concerning the benefit of physical fitness?

   A. Yes B. No

8. If your answer is ―yes‖ for item No. 7 what is benefit of it?

   A. It prevents the accumulation of fat

   B. If prevents the diseases

   C. It keeps good posture

   D. All of them are the benefit of physical fitness

9. Are the students performing regular exercise to develop their physical fitness?

   A. Yes B. No

10. If your answer is ―yes‖ for item No. 9 what type of exercise to develop their physical fitness?

    A. Strength exercises C. Cardiovascular exercises

    B. Stretching exercise D. All

11. Have you get advisor concerning their physical fitness?

    A. Yes B. No

12. If your answer is –yes" for item No. 11 what kind of advise to be get from a teacher?

    A. About their health status

    B. About their Mechanisms to develop physical fitness

    C. About their use of physical fitness

    D. All of the above

13. By what Mechanisms the students avoid the feel pain at their chest when they perform physical activity?

    A. By performing different physical activities

    B. By taking rest

    C. By asking a physical education Teachers

    D. All

14. What type of exercise do you want to fit your physical fitness?

    A. Push-up

    B. Pull-up

    C. Flexibility exercise

    D. Weight lifting

15. To increase the participation of students in physical fitness what to be done the experts

    A. Explain the benefit of physical fitness to the students

    B. To provide the sport center in the school

    C. To make students psychologically ready

Appendix B

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLAGE OF NATURAL SCIENCE

DEPARTMENT OF SPORT SCIENCE

This questionnaire is filed by Teachers. Dear respondent: the objective of this questionnaire is to gather information on the comparison of physical fitness components of Rural and Urban secondary school female students in Hadiya zone.

Thus, it is initiated to obtain necessary data from you as a vital source of information and to point out the quality of physical fitness in rural and urban secondary school female students with possible solution and recommendations. You are kindly requested to be honest and frank in your response as this will have direct bearing on the success of the research.

Directions

- Please, indicate your response bycircling ‗ o‘‘ according to the instruction provided there. For open ended question(s) write your short response;
- Dear respondent upon completing this questionnaire, you are kindly requested to return it to the researcher.
- Writing your name is not necessary;

Thank you in advance for your cooperation!

Personal detail

1. Sex A/ male-------- B/ Female----------

2. Age A/ below 22 ---- B/ 22-25------ C/25-27 ---- D/ 27-and above

3. Marital status A/ single----- B/married ----- C/ divorced-----

4. Education status A/ college level 10+2 ----10+3-----B/ university level 1st degree--- 2nd degree---

5. Teachers experience in teaching A/ 4-9years-------B/6-9years-------C/10 years and above---

Circling your correct choice respond by‗ o‘‘ mark.

1. Do you have interest to develop your physical fitness?

A. Yes B. No

2. For how long do the exercises to perform the physical fitness?

A. 30 Minutes B. 40 Minutes C. 60 Minutes

3. Are you physical fit?

A. strongly agree B. Agree C. disagree

4. For what case the students can reduce their physical performance?

A. Smoking C. chewing chat

B. Drinking alcohol D. All of the above

5. What types of problems that affect the physical fitness of the students?
   A. Environment C. Facility

   B. Nutrition D. All

6. Are you evaluated physical fitness of the students?
   A. Yes B. No

7. Are you encouraging your students towards developing physical fitness?

   A. Yes B. No

8. Are you advice students regarding to develop physical fitness?

   A .Yes B. No

9. If your answer is ―yes" for item No. 8 what type of advice to give for students?

   A. About their health status of the students

   B. About their benefits of physical fitness

   C. About their Mechanisms of developing physical fitness

   D. All of the above

10. What type of exercise is the most important to develop physical fitness?

    A. Aerobic exercises

    B. Anaerobic exercises

11. Is your method of teaching physical education in the school depending on the following way? 60% practical, 40% theoretical

A. Yes B. No

12. If your answer is –yes" for item No. 11 is sufficient materials during practical class? What are there?

A. Filed B. gym/indoor C. Ball D. Other

13. Is your school proper way to teach physical education?

A. Yes B. No

14. Are you describing the goals of the physical education to the students?

A. Yes B. No

15. Are you discuss on the selected factors that influencing the nature and conducts of physical education in your school?

A .Yes B. No

Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university and that all sources of materials used for the thesis have been duly acknowledged.

Name: Abate Tesfaye

Signature: _____

Date: _____

This thesis has been submitted for examination with my approval as a university advisor.

Name:- BezabihWolde

Signature: _____

Date: _____