JIMMA UNIVERSITY

COLLEGE OF NATURAL SCIENCE

SCHOOL OF GRADUATE STUDENTS

DEPARTMENT OF SPORT SCIENCE

AN INVESTIGATION ON SELECTED PHYSICAL FITNESS VARIABLES OF YEM SPECIAL WOREDA MALE YOUTH FOOTBALL PROJECT

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By
WOGAYEHU ADDISU

JUNE, 2015

JIMMA, ETHIOPIA

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THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF JIMMA UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN SPORT SCIENCE, (FOOTBALL COACHING SPECIALIZATION)

Advisors:

1. **Dr. Asim Khan (Ph.D)**
2. **Mr. Samson Wondirad (M.sc)**

JUNE, 2015
JIMMA, ETHIOPIA

DEDICATION

I dedicate this thesis manuscript to my families and friends. Without their tolerance, understanding, support and most of all love, the completion of the work would have been impossible.

STATEMENT OF THE AUTHOR

I the undersigned, declare that this is my original work and has never been presented for a degree in any other University and that all the source of materials used for the thesis has been appropriately acknowledged. This thesis has been submitted in partial fulfillment of the requirements for a M.Sc. degree at Jimma University and is deposited at the University Library to be made available to borrowers under rules of the library. I seriously declare that this thesis is not submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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Name: - Wogayehu Addisu
Place: - Jimma University, Ethiopia
Date of Submission: June 2015

Signature: _____

BIOGRAPHICAL SKETCH

The author, Wogayehu Addisu, was born in 30th of November 1983 at Fofa town located in Yem special woreda District of South Nation Nationalities and People Regional State. He attended his primary school education at Fofa Primary School and secondary school education at Fofa Comprehensive High School and completed in 2002. In 2003, he joined Awassa College of Teachers Education and graduated with Diploma in Health and Physical Education in July 2004. In 2007, he joined Addis Ababa University and graduated with Bachelor of Education Degree in Physical Education and Sport in September 2010. After three years of working at junior secondary School, five years at Comprehensive High School and one year at sport office of serving at Yem special woreda, he joined Graduate School of Jimma University to pursue his post graduate studies in the field of sport science (football coaching specialization) in June 2015.

ACKNOWLEDGMENTS

At the first instance I have to pay my obeisance and acceptance to “Almighty God” the great faith in whom helped me to accomplish this work.

Next to almighty God it is indeed my heartfelt gratitude and humble regards to my advisor **Dr. Asim Khan** and co-advisor **Mr. Samson Wondirad** for their ceaseless and untiring guidance. The present work has culminated due to their meticulous guidance, constant inspiration and most of all their enthusiasm for perfection and completion of this work.

I also extended my gratitude and thanks to my family members and my best friends for continuing to guide me and helping me to remove any consternation. They supported me on each and every aspect of my life with their great help, affection and pray.

I shall be failing in my duties if I do not express my gratitude to all individuals who participated in this study directly or indirectly.

Finally, I owe a deep sense of gratitude to the authorities of Jimma University, for providing me adequate research facilities.

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LIST OF ABBREVIATIONS AND ACRONYMS

BMI: Body Mass index.

Kg/m^2: Kilogram per square meter.

MSFT: Multistage fitness test.

SNNPRS: Southern Nations, Nationalities and People's Regional States.

VO2max: Maximum oxygen consumption.

Yo-Yo IR1: Yo-Yo intermittent recovery test.

ABSTRACT

The purpose of the study was to investigate the selected physical fitness variables of Yem special woreda male youth football project trainees. Two samples male youth football projects were selected from Yem special woreda youth football projects using purposive sampling technique, and 50 male players were selected as the subjected for this study. Cross-sectional research design was used in order to collect data from subjects, quantitative research approach was employed in order to bring a quantitative data and the data collected were analyzed and interpreted by using descriptive statistics (mean, standard deviation, percentage.) The results of this study showed that the current physical fitness level of Yem special woreda male youth football project trainees is average and above in the Sergeant jump test and above average and excellent in sit and reach test. However, 300 yard shuttle test, 30 meter acceleration and Illinois agility run test those of male youth football project trainees was below average and poor level to comparing with the average values obtained with the reference values provided by the normative data. On the bases of the findings of this study recommendations were drawn, it is useful to prepare fitness training for male youth football project players for improving their physical fitness and keeping them to maintain their performances. It is advised to coaches to include the physical fitness programs in their schedules during the training session to enhance their fitness level at the standardized level. To make the training program more effective the sport office of Yem special woreda should provide courses for coaches to develop the competency level and to achieve the objectives of the youth football project.

Key Words: Physical fitness, Youth, Football, Coaches, Trainee.

CHAPTER ONE

1.1 BACKGROUND OF THE STUDY

Football is the most popular sports in the world. An estimated 100 million registered players exist worldwide in children's, men's, women's, youth and veteran competitions, with many millions more playing non-organized football (Reilly, 1997 and Kim, 2001). Many of these participants, at even a young age, train and compete at intense levels, striving to improve their performance and become a top, unbeatable player. At high levels of play, the demands of football require a player to be exceptionally fit both aerobically and anaerobic ally (Kim, 2001).

Football is a multi-dimensional sport requiring constant changes in activity. The sport demands continuous changes in movement speed that can vary from being stationary, through walking, as well as low and high intensity running bouts (Withers *et al*,, 1982). The common aspect of the game is the necessity of teamwork to complement individual skills. Since soccer is a physical contact sport and lots of movements and skills are involved. A high level of physical demand is required for match play, which involves kicking, short sprinting, throwing, catching, trapping etc. The activities of the game include short sprinting as well as casual recovery movements. As the players have to cover a big area in the ground during attack and defense therefore, the game demands for aerobic as well as anaerobic fitness (Reilly, 1996; Reilly *et al.*, 2000a).

The challenging energy demands of football emerge from requirements to perform a number of high intensity activities, such as jumping, tackling, accelerating, decelerating and getting off the ground (Bangsbo, & Michalsik, 2002). The other skills of the game such as kicking and dribbling also need to be considered when determining total physical requirements for football (Reilly, 1997). For instance, the oxygen demand for dribbling the ball is greater than the demands imposed by running normally, while the energy demands of running backwards are lower than running with the ball (Kemi, 2003). Therefore, the demands of unpredictable multiple movement patterns in football combine to generate the movement challenge and regularly change the demands on energy production and muscle action. Football requires a number of physiological qualities to be performed at the highest intensity and skill execution with an exceptionally high standard of technical ability, as well as a tactical understanding of the game. Physical qualities include aerobic and anaerobic endurance, agility, sprinting ability, jumping and kicking power (Reilly, 1997).

Physical fitness is a general state of health and well-being or specifically the ability to perform aspects of sports or occupations. Physical fitness is generally achieved through correct nutrition, regular exercise, hygiene and proper rest. It is a set of attributes or characteristics that people have or achieve that relates to the ability to perform physical activity. Physical fitness is a set of attributes that are either health- or skill-related (Pawan, 2014). The importance of physical fitness and exercise customize to the specific requirement of both young and old. Physical fitness has a very serious implication for the health and well-being of all individual. There are many traits of physical fitness measurements which play a great role to improve the importance of an individual in different games and sports, particularly speed, strength, endurance, reaction time, balance, agility and coordination etc (Ishwar Malik, 2014).

Tanaka, 2004 *(*As cited in Monika Saini & Rajni Saini (2014:2) stated that Physical fitness is a state of well-being that comprises skill and health related components. Fitness is a condition in which an individual can work with sufficient energy without fatigue and enjoy life. It is necessary for elderly people to maintain and improve their physical fitness in order live a quality of daily life (Tanaka, 2004).

Physical fitness activities are important for children's, adults and every human being for proper growth and development. Regular fitness activities started in early childhood can enhance bone development and delay osteoporosis, reduce the risk of heart disease, challenge to the developing bodies of all school-aged children. A sound body and good health plays an important role in children daily to practice for the better health in the future. These statuses are gradually developed by practice and through proper guideline. The children came to a different environment and the good status, which are thought in the early stage grow gradually and become part of their daily life (Pawan, 2014).

Every person has a different level of physical fitness which may change with time, place of work, situation. There is also an interaction between the daily activities, and the fitness of an individual, the point if where to put the level of optimum fitness. From the physiological point of view physical fitness may say to be ability at the body to adopt and recover from strenuous exercise (Manmeet, 2010). According to Monika, & Rajni (2014), regular participation in physical exercise and activities enhance the level of physical fitness. Physical fitness varies according to the nature of the work, the size and shape of the body, age and sex of the individuals. Physical fitness is a significant indicator of the health of children and adolescents and also a good predictor of health in later life (Dragan, 2013).

However, the youth football project training program, specifically the technical, tactical and fitness practical trainings, although it has been faced challenges which hinder to achieve the training effectively and efficiently. In line with the goal of national youth football project has been working for the development of Football game in the country. Among tasks one of this youth training projects which have been opened in different area of the country. The training program has a limitation to achieve the intended objectives efficiently.

The less improvement of trainee's fitness has been one of the major problems seen in training areas. Hence, this study focused on the projects, which have been opened at Yem special woreda. And the purpose of the present study was investigate some selected physical fitness variables such as body mass index (BMI), body weight, height, age, flexibility, strength, endurance, speed, and agility of male youth football project of Yem special woreda.

1.2. STATEMENT OF THE PROBLEM

Physical fitness is the most important factor for the progress in the general life as well as, field of sports if the citizens of the country want to improve in any field may be sports or general life. Football is one of the most widely played sports in the world and is a sport characterized by short sprints, rapid acceleration or deceleration, turning, jumping, kicking, and tackling. It is generally assumed that through the years, the game has developed to become faster, with more intensity and aggressive play than seen previously. Elite football is a complex sport, and performance depends on a number of factors, such as physical fitness, psychological factors, player technique, and team tactics. In a 90-minutes football match an elite player covers on the average of 10 - 11 km distance. Although the distance covered by different players in the same position varies, this indicates that there may be a difference in the requirements between different playing positions, but whether this is reflected by differences in fitness (Arnason, 2003).

Physical fitness is essential; therefore it is the responsibility of every country to promote physical fitness of its citizens because physical fitness is the basic requirements for the tasks to be under taken by an individual in his life (Gulshan, 2013).

Testing athletes may provide the coach determine the current level of athlete's physical fitness. The evaluation of these tests could help the coaches to decide the current level of athlete's physical fitness, while it is not clear as to what extent this assessment may influence the current status of the athletes. It is possible that these assessments may become a useful tool to a coach in determining the current status of the athletes. There has been considerable assumption and discussion about the current physical attribute of the athletes (Berg *et al.*, 1990; Fry & Kraemer,

1991). The physical attributes of football players are measured in a variety of ways by a battery of very different tests designed to assess an athlete's ability to perform a certain skill or function (Graham, 1994).

The problem, therefore, lies in the inability of many coaches to determine which tests are important indicators of the players. One important area of investigation is to evaluate strength, endurance, speed, agility and flexibility tests between youth football project trainees and the international norm in order to determine the current physical fitness level of youth football project trainees. The testing needs to be administered in a safe and effective manner to ensure an accurate evaluation (Ebben, 1998).

Now, according to developments of footballers in international arena and its increasing growth among teens and young, it is require to look at this issue profoundly for identifying and removing possible obstacles using the scientific method (Bangsbo, 1992). The importance of this issue as well as the factors for evaluation and selection of players have confirmed by the sport experts (Reeves *et al.,* 1991). On the other hand, because no study has been performed on the physiological factors of teen football players of the study area, and because of football progression toward professional levels, it is essential to study the physiological characteristics of teenage football players for providing valuable information. Using these, views of the physical condition of young players will be more cleared. Such studies can be designed with providing better training programs to help these age groups. It can also prepare athletes to achieve a maximum level of performance and further pursue their goals and taking steps towards the professional levels of football. Furthermore, via this way and accurate planning, it can also make a bright future for our football. Since, the physiological as well as physical characteristics are important considerations in the performance of the players (Bell, and Rhodes, 1998).

The purpose of this study was to investigate the selected physical fitness variables of male youth football project players of Yem special woreda. Coaches should evaluate each player by utilizing the results of a number of tests which help to decide the current level of player's physical fitness and compare with the international norm and also the result of the study will give clear idea about physical fitness level of male youth football project players.

Therefore, the researcher was to attempt to answer the following basic questions:

- What was the current physical fitness level of male youth football project players Yem special woreda?
- Was there any difference between selected physical fitness of players compare with international norms?

1.3. OBJECTIVES OF THE STUDY

1.3.1. GENERAL OBJECTIVE

The present research was designed to investigate the selected physical fitness variables Yem special woreda of male youth football project.

1.3.2. SPECIFIC OBJECTIVES

The specific objectives of the study were to:

- Investigate the current selected physical fitness level of male youth football project players of Yem special woreda.
- Comparison of selected physical fitness of players with international norms.

1.4. SIGNIFICANCES OF THE STUDY

The present study of investigation on selected physical fitness variables would contribute to the society in the following ways:-

1. The study will determine the current physical fitness level of male youth football project players of Yem special woreda.
2. The findings of this study will provide a better understanding about the level of physical fitness of male youth football project players in Yem special woreda.
3. This study will provide a base to the athletes who participate in physical activities.
4. This study will provide a reliable functional manual or guide for athletes, coaches and sport science teachers to assess the level of physical fitness of any athletes and/or draw up a particular training program for an athlete.
5. It will be helpful as a reference for concerned research in the future.

1.5. DELIMITATION OF THE STUDY

- This study was delimited only 50 football players.
- In this study only male players were taken.
- In this study only those players were taken who were 16-17 years old.
- This study was delimited to anthropometric characteristics. (Body mass index (BMI), body weight, body height and age) and selected variables of physical fitness parameters (agility, flexibility, strength, endurance and speed).

1.6. LIMITATIONS OF THE STUDY

Through in taking this study there was inadequacy of relevant research output (literature) that deal on the finding of my study. That's why; the researcher believes that this problem contribute to the inadequacy of the study. In fact, attempts were made to overcome this inadequacy by making use of some unpublished but relevant materials and documents. To one side from this, Constraints of time and money contributed to the inadequacy of the research. However; the researcher tried all his best to maintain the excellence of this research by putting utmost effort.

1.7. OPERATIONAL DEFINITIONS

Physical fitness: can be defined as a general state of health and well-being or more specifically as the ability to perform aspects of sports or occupations (http://www.wikipedia.org/wiki/physical-fitness, 2014).

Health-related Fitness: is the ability to involve in exercise activities that you do in order to try to improve your physical health and stay healthy, particularly in the categories of cardiovascular endurance, muscular strength, flexibility, muscular endurance and body composition (http://www.yourdictionary.com/health-related-fitness, 2014).

Skill related fitness: is the ability to do well in everyday life activities and sports that you do in order to try to improve your performance, particularly in the categories of agility, balance,

coordination, reaction time and power (http://www.yourdictionary.com/skill-related-fitness, 2014).

Physical activity: is the performance of some of the activity in order to develop or maintain physical fitness and overall health while directed toward the skill or performance (Donatelle & Rebecca J, 2005).

Muscular strength: the ability of a muscle group to develop maximal contractile force against a resistance in a single contraction and is either static or isometric, which involves no change in muscle length, and dynamic, which involves either eccentric or concentric action (Heyward, 2010).

Muscular endurance: the ability of a Muscle or muscle group to perform repeated movement with a sub-maximal force for extended periods of time (Sharma, 2010).

Flexibility: The ability to move the joints (for example, elbow, knee) or any group of joints and muscles through an entire normal range of emotions (Sharma, 2010).

Agility: The ability to perform a series of explosive power movements in rapid succession in opposing direction (e.g. Zigzag running or cutting movements) (Sharma, 2010).

Speed: t he capacity of moving a body part on the whole body with the greatest possible speed (Sharma, 2010).

Coach: a person who trains a person or football team in sport (http://www. Oxford Advanced Learner's Dictionary, 8th edition).

Body Mass Index (BMI): BMI is a number that is based on a person's weight and height. It can be used to identify people at risk for some health problems. Higher BMI values indicate greater weight per unit of height (http://www.cdc.gov/nccdphp/dnpa/bmi/ Accessed November 30, 2006).

Anthropometry: is defined as measurement of human body (Tak, 2011).

Variables: a logical set of attributes. Attribute is a characteristic of an object (person, thing, etc.) (http://en.wikipedia.org/wiki/variables/ December, 2014).

Youth football project: a club where young people can meet each other and take part in football training (http://www. Oxford Advanced Learner's Dictionary, 8th edition).

CHAPTER TWO

REVIEW OF RELATED LITRATURE

2.1. COMPARISON OF SELECTED PHYSICAL FITNESS VARIABLES

Wong *et al.,* (2009) studied a relationship between anthropometric and physiological performances among youth soccer players and the positional differences for these variables. Seventy U-14 male soccer players participated in the study. Body mass was significantly correlated with ball shooting speed and 30m sprint time. Body height was significantly correlated with vertical jump height, 10m and 30m sprint times, Yo-Yo intermittent endurance run distance and running time during maximal oxygen uptake. Body mass index was significantly correlated with ball shooting speed, 30 m sprint time, Hoff test dribble distance, Yo-Yo intermittent endurance run distance, sub maximal running cost, VO2max and the corresponding running time. Significant positional differences were observed in anthropometry body mass, height and body mass index but not in physiological performances.

Chaleh *et al.,* (2012): studied the relationship between speed, agility and anaerobic power of 14-16 years elite footballers. Twenty elite soccer players from the adolescent's football league in Tehran to assess the anaerobic power of the subjects, Sergeant vertical Jump, to measure the speed, 10 m sprint test and to assess the agility, 9×4 m tests used. The results showed that there were significant relationships between the speed and anaerobic power, speed and agility and anaerobic power and agility of 14-16 years elite football players.

Sporis, G *et al.,* (2009): studied the evaluation of whether the players in different positional roles have a different physical and physiologic profile. Physiologic measurements were taken of 270 soccer players during the precompetitive period of 2005/06 and the precompetitive period of 2006/07. According to the positional roles, players were categorized as defenders (n = 80), midfielders (n = 80), attackers (n = 80), and goalkeepers (n = 30). Analysis of variance (ANOVA) was use to determinate differences between team positions. Goalkeepers are the tallest and the heaviest players in the team. They are also the slowest players in the team when sprinting ability over 10 and 20 meters is required. Attackers were the quickest players in the team when looking at sprint values over 5, 10, and 20 meters. There were statistically significant differences between attacker and defenders when measuring vertical jump height by squat jump.

Goalkeepers were able to perform better on explosive power tests (squat jump and countermovement jump) than players in the field. Midfielders had statistically significant superior values of relative oxygen consumption, maximal heart rate, maximal running speed, and blood lactate than defenders and attackers. Defenders had more body fat than attackers and midfielders. It is obvious that players in different positions have different physical and physiologic profiles.

Singh Hardayal, (1993): studied the different training methods have been commonly used to improve physical fitness and related standards of performance of athletes. High level of health and fitness are very vital aspect for sports men performance fitness emphasizes on the state in which an individual has sufficient energy to avoid fatigue and give best in his event. Sports training are long, continuous, and systematic Process or Physical and Mental hard work, to attend high level of performance in competitions at various levels by making the best use of the principles derived from the sports sciences.

Renaat Philippaerts & *et al.,* (2006): studied the longitudinal changes in height, weight and physical performance were studied in 33 male youth soccer players from the Ghent Youth Soccer Project. The players' ages at the start of the study ranged from 10.4 to 13.7 years, with a mean age of 12.2 ± 0.7 years. Longitudinal changes were studied over a 5 year period. Balance, speed of limb movement, trunk strength, upper-body muscular endurance, explosive strength, running speed and agility, cardio-respiratory endurance and anaerobic capacity showed peak development at peak height velocity. A plateau in the velocity curves was observed after peak height velocity for upper-body muscular endurance, explosive strength and running speed. Flexibility exhibited peak development during the tear after peak height velocity.

Wong, P, *et al.,* (2009): studied the relationship between anthropometric and physiological performances among youth soccer players and the positional differences for these variables. Seventy Under 14 male soccer players (goalkeeper: 10, defender: 20, midfielder: 25, and forward: 15) participated in this study. Body mass was significantly ($p < 0.05$) correlated with ball shooting speed and 30 m sprint time. Body height was significantly ($p < 0.05$) correlated with vertical jump height, 10 meter and 30 meter sprint times, Body mass index (BMI) was significantly ($p < 0.05$) correlated with ball shooting speed , 30 m sprint time, Significant positional differences were observed in anthropometry (body mass [$p < 0.01$], height [$p < 0.01$], and BMI [$p < 0.01$]) but not in physiological performances. This study provides a scientific

rationale behind the coaches' practice of selecting young soccer players according to their anthropometry for short-term benefits such as heavier players for higher ball shooting speed and 30-meter sprint ability as an example. However, this does not justify such practice in the long-term process of player development.

Castagna *et al.,* (2010): studied the relationship between popular endurance field tests and physical match performance in elite male youth soccer players. Eighteen young male soccer players were randomly chosen among a population of elite-level soccer players. Players were observed during international championship games of the corresponding age categories and randomly submitted to the level of the Yo-Yo intermittent recovery test (Yo-Yo IR1), the Multistage Fitness Test (MSFT), and the Hoff test on separate occasions. Players covered 6,087 ± 582 m of which 15% (930 ± 362 m) were performed as a high-intensity activity. During the first and second halves, players attained 86.8 ± 6.5 and 85.8 ± 5.8% of maximum heart rate with peak HRs of 100 ± 2 and 99.4 ± 3.2% of HRmax, respectively. Players' Yo-Yo IR1 and MSFT performance were significantly related to a number of match physical activities. However, the Hoff test was only significantly related with sprint distance. The Yo-Yo IR1 showed a very large association with MSFT performance. The results of this study showed that the Yo-Yo IR1 and MSFT may be regarded as valuable tests to assess match fitness and subsequently guide training prescription in youth soccer players. The very strong relationship between Yo-Yo IR1 and MSFT suggests their use according to the period of the season and the aerobic fitness level of the players. Because of the association of the Yo-Yo IR1 and MSFT with match physical performances, these tests should be considered in talent selection and development of players.

2.2 CONCEPT OF FOOTBALL

Football is the most popular sport in the world. Attendances at provincial and national competitions can range from 30,000 to 80,000. It is played between two teams on a grass field. Teams are comprised of 11 players, a goalkeeper, defenders, midfielders and forwards. The exact positioning of each player may vary depending on the tactics employed by team management. Matches are comprised of two 45 minute periods, and are officiated by a referee, assisted by two sideline officials and one fourth umpires. Each team is permitted 3 up to 6 substitutions during the course of a game. The players can use any part of their bodies to hit (play) the ball, except their hands or arms. Players generally use their feet and heads as they kick, dribble, and pass the

ball toward the goal. The objective of the game is to score goal more than the opposition and concede as few scores as possible. A team is awarded a goal when the ball crosses the goal end-line between the goal posts and under the crossbar (Stephens, 2004).

The physiological demands of any sport are determined in large part by the activity patterns of the game. Football is characterized by irregular changes of pace and anaerobic efforts superimposed on a backdrop of light to moderate aerobic activity. Players must be able to execute a number of skills within an environment of explosive speed and intense physical contact. In addition, they must possess high levels of upper and lower body strength in order to compete for and maintain possession of the ball. Optimal performance requires that players develop specific fitness attributes that will enable them to cope with the physiological demands and maintain their technical standard throughout the course of a game (Stephens, 2004).

The fitness requirements of most team sports vary according to player position and the overall tactical plan. The distance covered during the game may also vary according to a player's position on the team. Elite players in many team sports tend to have a higher level of fitness and greater technical ability than sub-elite players (Stephens, 2004).

2.3 PHYSICAL DEMANDS IN FOOTBALL

According to M. Iaia *et al.*, (2009), Football is an intermittent sport characterized by ~1200 cyclical and unpredictable changes in activity (each every 3 to 5 s) involving, among others, 30 to 40 sprints, 1 more than 700 turns, and 30 to 40 tackles and jumps. In addition, the game requires other intense actions such as decelerations, kicking, dribbling, and tackling. All these efforts exacerbate the physical strain imposed on the players and contribute to making football highly physiologically demanding. Computerized time motion and semiautomatic video-based system analyses have revealed that top-class football players perform 2 to 3 km of high-intensity running (>15 km/h) and ~0.6 km of sprinting (>20 km/h). Furthermore, these distances of running and sprinting are, respectively, 28% and 58% greater than those of moderate-level professional players. In addition, the less successful teams exhibit greater decrements in the total sprint distance covered during the match, suggesting that the ability to perform high-intensity activities throughout a game is very important.

Each playing position is characterized by its own activity profile and different tactical requirements in relation to the movement of the ball. Central defenders cover less total distance

and high-intensity running, while attackers complete more sprints and a greater portion of high-intensity activity when their own team is in possession of the ball than midfielders and defenders Mohr M, *et al.*, (2003): Rampinini E, *et al.*, (2007)

Professional football is a difficult sport in which various activities such as fast sprints, shooting, hitting and tackles are done in soccer (Kargarfard, and Keshavarz, 2005). Based on various research results, physical and physiological characteristics of soccer players are required to such a high level of anaerobic power, aerobic capacity, speed, muscular strength, agility and flexibility (Chaleh Chaleh, 2007; Minasian, 1997; Arnason *et al.*, 2004; Bangsbo *et al.*, 1991). The assessment and determination of the anthropometric and physiological characteristics are essential to a successful achievement of a soccer team not only during a game, but also along the whole sportive season, and such information can and must be used by the coach to change the player's function or even the tactical formation of the whole team with the purpose to maximize the performance, once each positioning presents specific features (Shephard, 1999).

2.4 ELEMENTS OF TRAINING AND FITNESS

According to *Human Kinetics* (2002) a fitness training program encompasses five basic bio motor abilities, Strength, endurance, speed, flexibility and coordination. Other elements that must be considered in a holistic program include: specific skills acquisition, psychological training, and competition preparation. A complete training program must encompass all of the above elements. However, not all elements can receive equal emphasis throughout the training cycle. Many factors determine the type of training program, and the stress placed upon each element. These include the age and sports maturity level of the athlete, his or her prior state of fitness, and the event(s) for which the athlete is preparing. Although these bio-motor elements are thought of as discrete entities, they are actually closely interrelated. The application of a training program will impinge on a number of systems, and the coach must understand these relationships when devising a training program.

2.5. PHYSICAL FITNESS FOR YOUTH FOOTBALL PLAYERS

The development of young football players has taken on increasing importance. To produce first team players, in addition to working on technical and tactical abilities, the developmental process

must also work on a number of other attributes. These include habits and pass-times, mental skills and physical fitness (Reilly *et al.*, 2001).

Physical fitness in particular has received much attention in recent years. Physical fitness is composed of several aspects. These aspects are illustrated in Figure 1. Good levels in each of these aspects will allow a player to complete the activities and game skills needed throughout a match. This makes fitness training an important part of every player's training schedule. Although the various aspects of fitness can be improved through appropriate training, research has suggested that there may be optimal periods within a player's growth and development when it is best to build upon them. It is possible that if these attributes are not put under sufficient stress during these 'windows of opportunity' a player may not realize his or her full performance potential (Reilly *et al.*, 2001).

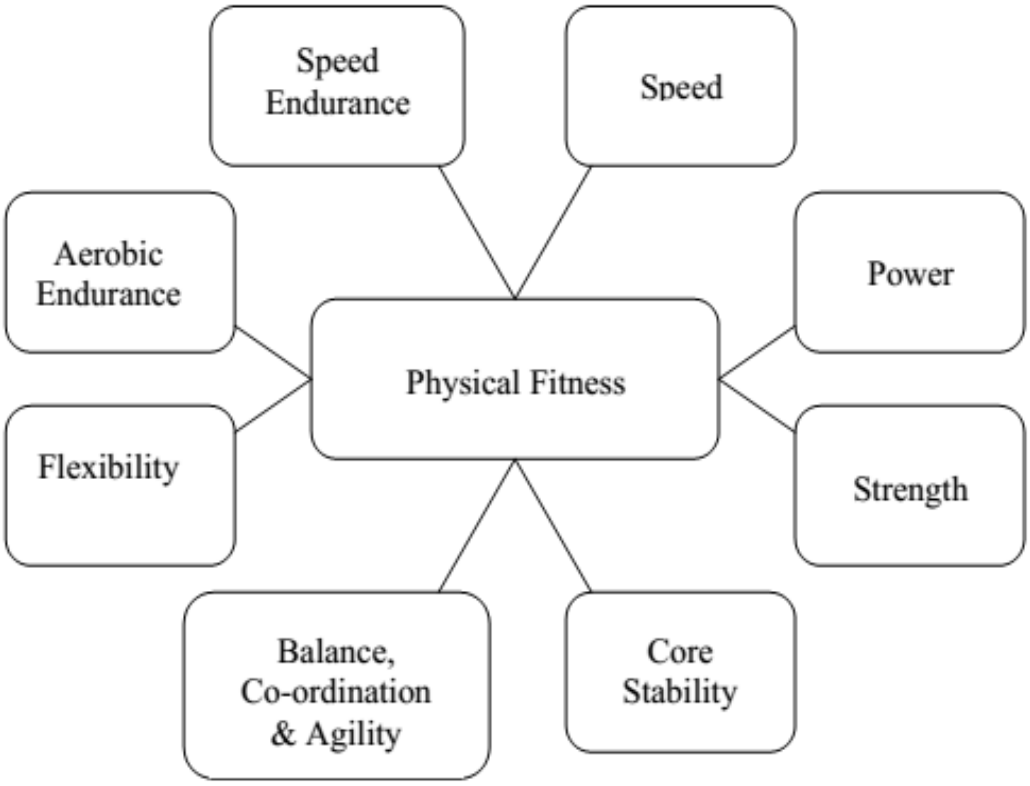


Figure 1:- Range of fitness parameters for football.

Anthropometric Characteristics

Anthropometric characteristics of players may vary with positional and/or tactical role assigned by the coach Knowledge of a player physical characteristics are commonly used in team selection and tactical roles. The tallest players on the squad are usually positioned in midfield In contrast; smaller more agile players are assigned wide positions where acceleration and agility are important for optimal performance. Body mass and body composition may influence a number of performance parameters Excessive body fat impedes mobility and agility and adds to energy costs of exercise. Excess fat also impedes the efficiency of heat dissipation during exercise (Patrick Stephens, 2004).

Energy Systems

Football is characterized by irregular changes of pace and anaerobic efforts superimposed on a backdrop of light to moderate aerobic activity. The movement patterns during a game are complex and involve activities such as walking, jogging, running sideways, jogging backwards, walking backwards, low speed running, and high speed running and moving at speed while in possession of the ball. The percent of total match time devoted to these movement patterns varies considerably (Stephens, 2004).

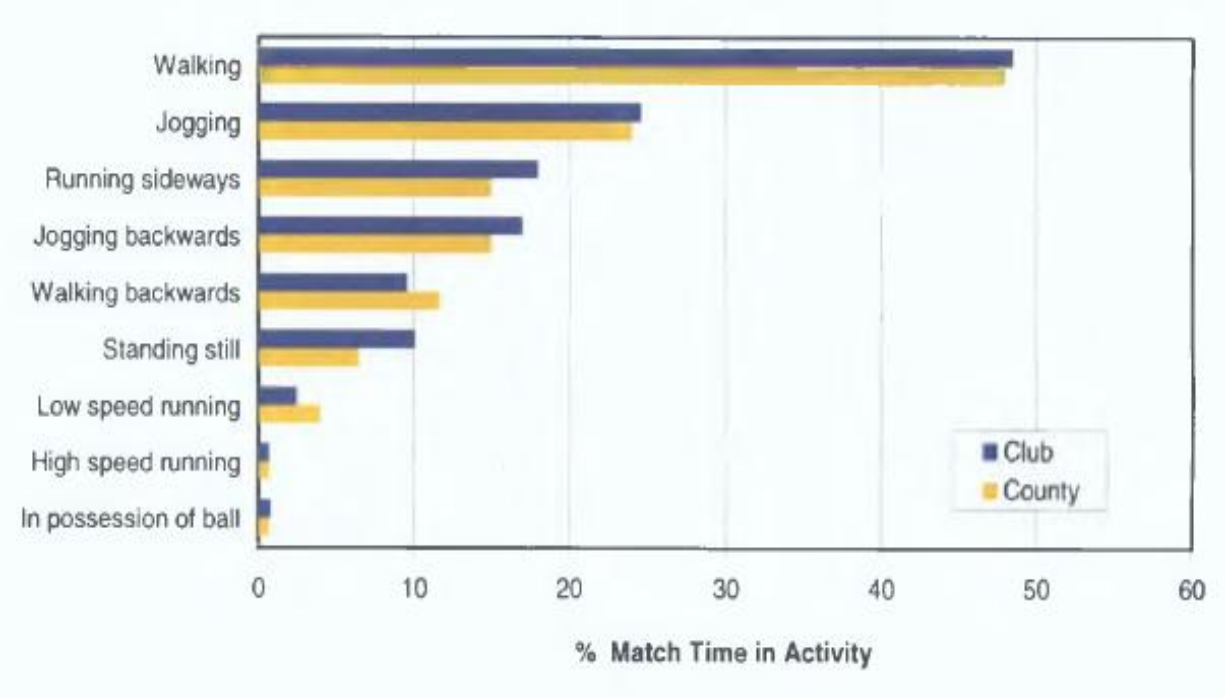


Figure 2: **The percent of movement patterns and energy systems during football game.**

Speed

Only 1.7% of active playing time involves sprinting. This accounts for 3.7% of the total distance covered during a match. The average sprint distance is 10.5-16.5 meters, and only 20% of sprints performed in football are greater than 20m (Stephens, 2004). Sprinting constitutes a multidimensional and complex motor skill, being probably the most significant physical element of performance in modern soccer (Williams, 2009).

Flexibility

Flexibility is the ability to move without restriction during a normal range of movement: it is the quality of being bent without breaking. It is measured by the range of motion present through the connective tissues of ligaments and tendons that surround the joints between the bones and other parts of the body. Natural flexibility decreases with age. A child's body is flexible because the skeleton contains more cartilage, the bones are soft, and the muscles, ligaments, and tendons are more elastic. The loss of flexibility from childhood through adulthood cannot be avoided. However, it can be delayed by regularly performed exercises that stretch and improve the range of muscle and joint movement. Adults who maintain their flexibility through stretching exercises feel better, have more energy for everyday activities, and are less susceptible to injuries during sports participation (Patrick Stephens, 2004). Flexibility of the joints is an important component of fitness that contributes to functional health.

Muscular Strength

Physical strength is achieved through muscle development. Muscular strength is defined as the force or tension of a muscle group which can be exerted against a resistance in one maximal effort. Muscle strength and increase in muscle size are acquired by muscles working against a resistant force which is gradually increased as the muscles become stronger.

A strength conditioning program usually consists of progressively resistive weight exercises. The exercises can concentrate on specific goals such as building muscle bulk, power weightlifting, muscle definition, muscle tone, endurance for a specific sport, or skills . The muscle groups of the body can be isolated and trained. Nutrition, amount of rest, and genetics also play a part in achieving these goals (Stephens, 2004). In a systematic review of muscular strength development in children and adolescents, the association of inadequate strength with increased injury risk, muscular imbalance, decreased self-esteem and body image was also highlighted (Manno, 2008).

Many activities in soccer are forceful and explosive (e. g. tackling, jumping, kicking, turning and changing pace). The power output during such activities is related to the strength of the muscles involved in the movements. Thus, it might be beneficial for a soccer player to have a high muscular strength, which also diminishes the risk of injury (Fleck and Falkel, 1986).

Muscular Endurance

Endurance is acquired by repetitive exercise against a constant level of resistance. Light resistance exercises repeated many times produces endurance. However, muscle exercise for endurance affects muscle bulk only slightly and does not increase muscle strength. For that reason, it is necessary to combine endurance and strength exercises in a coordinated program. Increases in strength and endurance are accompanied by physiological changes, that is, increased muscle size (hypertrophy), biochemical alterations, and adaptations in the nervous system. A muscle shortens while lifting, and lengthens while lowering, a constant load. The tension developed over the range of motion depends upon the length of the muscle, the angle of the pull of the muscle on the skeleton, and the speed of the shortening (Stephens, 2004).

Muscular strength and endurance are developed by practicing the overload principle. Strength, endurance, and hypertrophy of a muscle will increase head to his knee. Only when that muscle performs for given periods of time at its maximal capacity to work against resistance and loads that are above those normally encountered (Stephens, 2004). Due to the extensive amount of tackling and upper body grappling that occurs in tackles, it has long been thought that training and measuring upper body strength-endurance would be of benefit to football league players (Meir, 1993).

Agility

Players must be able to move backwards, sideways and forwards while constantly changing direction. Agility refers to the ability to change body direction and position rapidly and can involve whole body change of direction in the horizontal plane, whole body change of direction in the vertical plane (jumping) and, rapid movement of body parts. Stationary and dynamic agility refer to the ability to rapidly change direction from a stationary or moving position respectively (Stephens, 2004). The ability to rapidly change the velocity and direction of whole body center of mass is a fundamental locomotors skill in most sports (Reilly et al., 2000).

2.6. PHYSICAL PREPARATION FOR FOOTBALL

According to John, Michael and Helen (2000:33) physical fitness is defined as the ability to cope effectively with the stress of everyday life.

Dewitt J. (2001:79) describes that many people associated fitness with the ability to run for a long time (aerobic fitness); football players actually have a few more requirements.

However, when we are thinking about fitness a player to perform the techniques and tactics of football for long duration, it is important to have good fitness. Furthermore, U.S. football Coaching Manual (2010:12) recognizes that; football is a physically demanding sport characterized by explosive activities such as tackling, turning and jumping in addition to high intensity running and sprints over relatively short distances. According to statistics, top-class football players make approximately 1100 changes in exercise intensity and cover a distance of roughly 6.5 miles during a match. Fitness training can help a player endure the physical demands of football and maintain high technical ability and decision-making quality throughout a match. Every football player, regardless of standard of play, can benefit from a fitness training program based on football/soccer-specific exercises. For this reason, it is important for youth coaches to understand basic fitness principles and their appropriate applications. It is even more important for coaches of players under the age of 14 to realize that match fitness can be achieved in regular training sessions and games, provided training is structured in an economical manner.

As indicated in U.S. Soccer Coaching Manual (2010:12), Bangsbo J. provides the following insight on fitness training for youth:

There is evidence to suggest that training of youth players does not need to be focused on improving physical performance. Often young players get sufficient physical training by regular drills and games. In a Danish study, 132 young players from football clubs, in which fitness training was not performed with players under 15 years of age, were tested using a football specific endurance test. For boys younger than 15 years there was a pronounced increase in performance with age despite the fact that they did not perform any specific fitness training. Furthermore, results of 18 year old players were as high as those of the senior league players. It appears that a player can reach a top-class level as senior player without performing specific fitness training during the younger years. The time saved by excluding fitness training should be spent on training to improve technical skills, as the players greatly benefit from this type of training when they become seniors. When training young players one should be aware that there

is a large difference in individual maturation within a given age group. The adolescent growth spurt may start as early as the age of ten or may not start until the age of sixteen. On average, girls mature about two years earlier than boys. As maturation status can have a profound effect on physical performance, care should be taken not to underestimate genuine football talents due to physical immaturity in comparison to other players in the same age group. Another important aspect of youth training is the amount and intensity of training. The coach should carefully observe how the individual players respond to the training, as young players can easily "over trained."

Training for young players, prior to and during early puberty, should not be focused on the physical aspect, but should mainly emphasize technical training. Children are very sensitive to the physical and psychological stresses imposed by a demanding training and competition schedule. They are especially susceptible to injury or burn-out during growth spurts and puberty.

Youth coaches must take into consideration the positive effects of adequate rest periods during training, alternating hard and light practices through the season and allowing days off and time away from football/soccer to recuperate and rekindle passion for the game.

Psychological Preparation: when the coach plans the training session for psychological preparation he/she considers the development of both the mental and cognitive skill.

Moreover, FIFA Coaching Manual (2004:1) explains that mental training is aimed at improving mental attitudes, but also at aiding the improvement of performance related elements through techniques that utilize the qualities and resources of our brain. The development and improvement of mental attitudes can start as early as the pre-training/development stage with youngsters. By giving the players specific rules and instructions during training sessions, it is possible to stimulate the development of their mental approach. However, cognitive skill knows how to read the game, having good all-round vision, being able to see more quickly and make the right choice of move more rapidly are all signs of a good tactical awareness that sets the great players apart from the rest. Furthermore, in the same manual cognitive skills are defined as the instructive tendencies that allow a motivated and committed player to assess situation through a process of knowledge acquisition (attention/ concentration/ perception/ anticipation).

It therefore encompasses everything that the player's intelligence allows him/her to understand so that he/she can exploit a given situation or action in the best possible manner.

2.7. AEROBIC FITNESS FOR FOOTBALL PLAYERS

According to Special Olympics Football Coaching Guide (2004:19), Football requires running for extended periods of time; therefore, your players must be able to produce energy aerobically. Aerobic fitness is important for three primary reasons. Although football players need to be aerobically fit, they do not need to be distance runners. Be balanced in your approach to fitness. Set standards, yet do not place fitness ahead of the ultimate goal of developing good football players and a good football team. A fit, skilled team is much more powerful than a fit, unskilled team. Following are benefits of aerobic fitness.

1. Creates good cardiovascular capacity and strengthens muscles and tendons.
2. Allows players to run at a steady pace without incurring oxygen debt, getting really tired and unable to recover.
3. Allows your players to recover quickly from short sprints, making them more effective in the game.

Aerobic fitness is best developed during preseason training. However, if your schedule cannot be extended to include fitness in the preseason, you can integrate fitness exercises and activities into your weekly training sessions.

This can be achieved through steady pace runs, ball skill drills or fitness circuits.

2.8. ANAEROBIC FITNESS FOR FOOTBALL PLAYERS

According to Special Olympics Football Coaching Guide (2004:20), Football demands both aerobic and anaerobic capacity. During games, football players must be able to sprint hard, recover quickly and then sprint hard again. Anaerobic training starts once your athletes have developed basic aerobic fitness, because recovery capacity is developed by increasing aerobic fitness. In football, the demand for anaerobic speed is relatively short. The important point here is the ability of the player to recover quickly from multiple speed bursts.

2.9. STRENGTH TRAINING IN FOOTBALL

According to Special Olympics Football Coaching Guide (2004:21), Strength training is important for football players. The basic elements of speed, mobility and endurance are all functions of muscular strength. According to the President's Council on Physical Fitness and Sports, improvements in absolute muscular endurance, motor ability and athletic abilities are directly associated with an individual's muscular strength.

Strength training for football usually has two purposes.

1. Improving overall strength
2. Developing muscle balance and preventing athlete injury.

Football running requires significant anaerobic energy which is directly related to muscle strength. Therefore, a muscle with greater strength can respond better to race challenges without incurring extreme fatigue and requiring a longer recovery period. Basically, strength training improves an athlete's ability to run fast and produce anaerobic energy. Football players need to be able to run fast, sometimes very fast.

2.10. YOUTH INVOLVEMENT IN SPORT TRAINING

Youth participate in youth sports training for a variety of reasons and have multiple reasons for involvement. For example, the largest study of its type conducted to date identified the reasons children report for participating in sport training (Seefeldt, Ewing, and Walk 1992). These reasons included: To have fun, to do something they are good at, to learn new skills or improve their skills and to play as part of a team. Children who feel competent about their technical, tactical and physical abilities have been found to move often participate and persist in sport training whereas children who do not have that sense of competence are more likely to not become involved or to discontinue involvement (Weiss and Ferrer Caja 2002). In another study children cited dislike of their coach and not enough fun as significant motives for discontinuing. These studies, then, certainly emphasize the important role coaching leadership provides in the sport training attrition process. The football coaches should plan and use time properly, provides appropriate and sufficient training materials and organizes practical training based on the level of tasks to assure the active participation of youth trainees during practical trainings.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 THE RESEARCH DESIGN

This study was design to investigate the current physical fitness variables of Yem special woreda male youth football project players. The total population of the study was 50 players, thus, all the players was taken as a sample size. A purposive sampling technique was employed to compare the current physical fitness variables of the player's with normative data. Thus to attain the goal, cross-sectional research design was used in order to collect data from subjects at once, because of this, the research aimed at comparing the current physical fitness variables of Yem special woreda male youth football project trainees with international norm data and to approach with some recommendations that would be help to promote in the future.

3.2 RESEARCH APPROACH

In order to attain objectives of the study, valuable information will gather from the youth football project trainees. Besides, quantitative research approach was employed in order to bring a quantitative data and analyze the finding. Intensive review of related literatures was made to support the study with empirical knowledge in the area.

3.3 STUDY AREA

Yem special woreda is one of the woreda among eight woredas found in Southern Nations, Nationalities and People's Regional States (SNNPRS). It is located at 243 kilometers south west from Addis Ababa. Yem Special Woreda is situated in the north western apex of the region and is located between 7^{o} 57´ N to 8^{o}02´ N latitude and 37^{o} 40´ E to 37^{o}61´ E longitude. It is bordered by Hadiya and Gurage Administrative Zones of SNNPR to the east and south, and by Jimma zone (in Oromiya Region) to the north and west. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia, The total population of the woreda are 94,272 thousand which is 0.62 % of the region. With an area of 647.90 square kilometers, Yem has a population density of 124.54, The area is divided into three agro ecological zones, namely, "Dega" (highlands with altitude of 2300-2500 meter above sea level) which is central parts, "Woyina Dega" (moist warm land with an altitude of 1500-2300 meter above sea level) covers

the central apex and western part, and "Kolla" (with altitude less than 1500 meter above sea level) and found in eastern zone of the woreda. The area coverage in terms of agro ecological zone shows that the dega covers 49.3 % while the woyina dega and kolla part shares 26.9 and 23.8 percent, respectively. Temperature is inversely related with altitude, with mean annual temperature between 20-30 ºC in the lowlands (kolla), 16ºC-20ºC in the temprate (woyina dega) and 12 ºC - 16 ºC in the highlands (dega) areas of the woreda. The landscape varies considerably from one part of the woreda to another, but is mostly hilly. The topography of the Special Woreda is characterized by rolling mountains. (http://en.wikipedia.org/ the free encyclopedia / August 2014)

3.4 SAMPLE SIZE AND SAMPLING TECHNIQUES

As Kothari, (2004:58) stated that, the size of population must be kept in view for this also limits the sample size. Sampling error decreases with the increase in the size of the sample, and it happens to be of a smaller magnitude in case of homogeneous population**.** Kuzel, (1999) add that a purposive sampling technique helps to pick cases likely to achieve in depth understanding. Accordingly 25 male players were selected from each youth (Under 17) football project by using non probability (purposive) sampling technique and they were participate to collect the necessary data. The age limited of the subjects was 16 - 17 years.

3.5 DATA COLLECTING INSTRUMENT

The data collection includes anthropometric and physical fitness parameters:- Anthropometric measurement has parameters of age, height, weight and Body mass Index (BMI). The measurement of height and weight has some importance indicator in selecting sports personal (Beunen and Malina, 1988; Beunen *et al.*, 1997). Physical fitness is a significant indicator of the health of children and adolescents and also a good predictor of sports performances (Dragan *et al.,* 2013). These physical fitness tests have five test batteries (Sergeant Jump Test, 300 yard Shuttle run, 30 Meter Acceleration run, Illinois agility run and Sit and reach). The researcher collected all the data from the male youth football project through those test batteries and the data was obtained through physical fitness test and it was analyze quantitatively. Flexibility (Sit and reach test), Strength (Sergeant jump test), Endurance (300 yard shuttle test), speed (30 meter acceleration test), and agility (Illinois agility run test)

3.5.1 ANTHROPOMETRIC AND SELECTED PHYSICAL FITNESS VARIABLES & PARAMETERS

Table 1:- Anthropometric variables and their parameters

No.	Variables	Parameters
1	Age	in year
2	Height	in meter
3	Weight	in kilogram
4	Body mass index (BMI)	in kilogram per square meter (kg/m^2)

Table 2:- Selected physical fitness variables, test and their parameters

No.	Variables	Test	Parameters
1	**Strength**	Sergeant Jump Test	in centimeter
2	**Endurance**	300 yard Shuttle Test	in second
3	**Speed**	30 Meter Acceleration Test	in second
4	**Agility**	Illinois agility run test	in second
5	**Flexibility**	Sit and Reach test	in centimeter

3.6 PROCEDURES OF DATA COLLECTION

Before the test was administered the necessary information were given to the subject including material, test types, measuring instrument and administration of test. The necessary work was completed before starting the test, beside training session; times of test were administered with the help of the teachers and explain to the subjects by the researcher firmly. Any doubts of the subjects raised were clarified before taking the test, but no special training was given to the subjects. According to Brian Mackenzie (2005), each test have purpose, equipment require, procedure and scoring technique.

3.7 METHODS OF DATA ANALYSIS

The collected data were checked at the end of each data collection day for their completeness and consistency. As a result, the collected data were analyzed by using statistical instruments, such as:-

- Descriptive statistics (mean, standard deviation, percentage), Descriptive analysis is the method used for describing the characteristics of the sample and major study variables are displayed in the form of mean, standard deviation, percentage and diagrammatic representation such as table and column chart.

3.8 ETHICAL CONSIDERATION

The conducting of research requires the rules and research ethics of Jimma University. The researcher was explaining the purpose of the study to the participants in order to get permission. The researcher was informing to the participants that the information they provide was only use for the study purpose. Accordingly, the researcher was used the data that collect from his participants only for the study purpose. In addition, the researcher was ensured confidentiality (privacy) by making the participants anonymous.

CHAPTER FOUR

ANALYSIS AND INTERPRETATION OF THE DATA

First, before the main analysis results the anthropometric data of the players in order to provide a description of the sample from which data was collected; descriptive information on age, weight, height and body mass index (BMI) as well as the means, and standard deviations are described. Second, investigate the current selected physical fitness variables of Yem special woreda male youth football players compare with international norms in the form of mean, standard deviation and percentage.

4.1. DESCRIPTIVE STATISTICS

4.1.1. CHARACTERISTICS OF THE SAMPLE

Table 3:- **Mean and standard deviation of age, height, weight and BMI of the players (N=50)**

Statistical instrument	Age	Height	Weight	BMI
Mean	16.66	1.58	52.9	21.12
Std. Deviation	0.47	0.07	3.71	0.83

Table 3, describes some characteristics of the sample information to the reader of this research. So, out of the 50 participant of male youth football project players of Yem special woreda who participated in this study, Mean ± standard deviation of age, height, weight and BMI of the players were 16.66 ± 0.47 years, 1.58 ± 0.07 meter, 52.9 ± 3.71016kilogram and 21.12 ± 0.83 kg/m^2 respectively. Thus, the current level of the players BMI is 100% on average level when comparing the values of male football project players obtained with the reference values provided by the normative data.

4.1.2. THE NORMATIVE STANDARD DATA PHYSICAL FITNESS VARIABLE

Table 4: **-Normative/ standard data for male the age from 16 - 19**

No.	Physical Fitness Components test	Excellent	Above Average	Average	Below Average	Poor
1.	Sergeant jump test(cm)	> 65cm	50-65cm	40-49cm	30-39cm	<30cm
2.	300 yard shuttle test (secs)	< 50 secs	50 - 56 secs	57 – 63 secs	64 - 70 secs	> 70 secs
3.	30 meter Acceleration test(secs)	<4.0 secs	4.2- 4.0secs	4.4 -4.3secs	4.6-4.5 secs	>4.6 secs
4.	Illinois agility test(secs)	<15.2 secs	15.2-16.1 secs	16.2-18.1secs	18.2-18.3secs	>18.3secs
5.	Sit and reach (cm)	>14 cm	11-14cm	7-10cm	4-6 cm	<2 cm

Table Reference: Davis B. et al; Physical Education and the Study of Sport; 2000

4.1.3. COMPARISON OF SELECTED PHYSICAL FITNESS VARIABLE OF PLAYERS WITH NORMATIVE DATA

Table 5: - **Comparison of sergeant jump test values with players normative data**

Activity	Description			
Sergeant jump test		Number	Percentage	Mean ± SD
	Excellent	-	-	48.40 ± 11.72
	Above Average	13	26%	
	Average	22	44%	
	Below Average	10	20%	
	Poor	5	10%	
Total		50	100%	

The perusal of table 5 indicates that the mean ± standard deviation values for strength variable for Sergeant Jump test of male football project players were recorded as 48.40 ± 11.72. And establishing a comparison between the results obtained from Sergeant jump test of male football project players with normative data using the percentage, it was observed that 13(26%) of male players are in the scale of above average, 22(44%) are in scale of average, 10(20%) are in scale of below average, 5(10%) are in scale of poor. This discovered that when comparing the values of male football project players obtained with the reference values provided by the normative data, the current level of the players on Sergeant Jump test are average and above comparable with normative data.

Figure 3: - **Graphical representation of Sergeant jump test values**

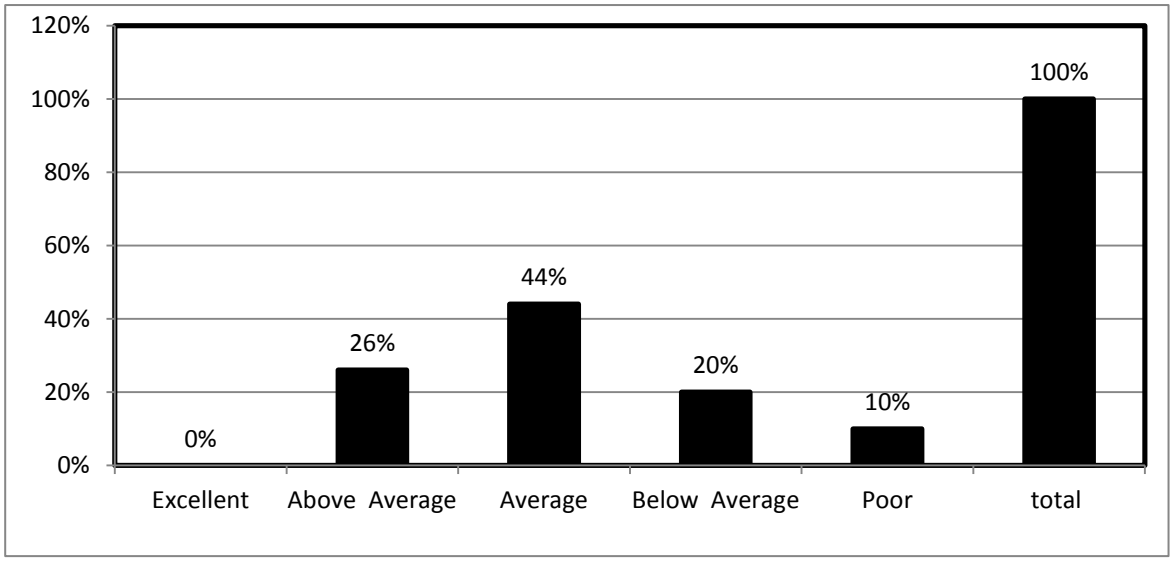


Table 6: - **Comparison of 300 yard shuttle run test values with players normative data**

Activity	Description			
		Number	Percentage	Mean ± SD
300 yard shuttle run test	Excellent	-	-	63.89 ± 4.99
	Above Average	4	8%	
	Average	12	24%	
	Below Average	28	56%	
	Poor	6	12%	
Total		50	100%	

The perusal of table 6 indicates that the mean ± standard deviation values for endurance variable for 300 yard shuttle run test of male football project players were recorded as 63.89 ± 4.99. And establishing a comparison between the results obtained from 300 yard shuttle run test of male football project players with normative data using the percentage, it was observed that 4(8%) of male players are in the scale of above average, 12(24%) are in scale of average, 28(56%) are in scale of below average, 6(12%) are in scale of poor. This discovered that when comparing the values of male football project players obtained with the reference values provided by the normative data, the current level of the players on 300 yard shuttle run test are average and above comparable with normative data.

Figure 4: - **Graphical representation of 300 yard shuttle runs test values**

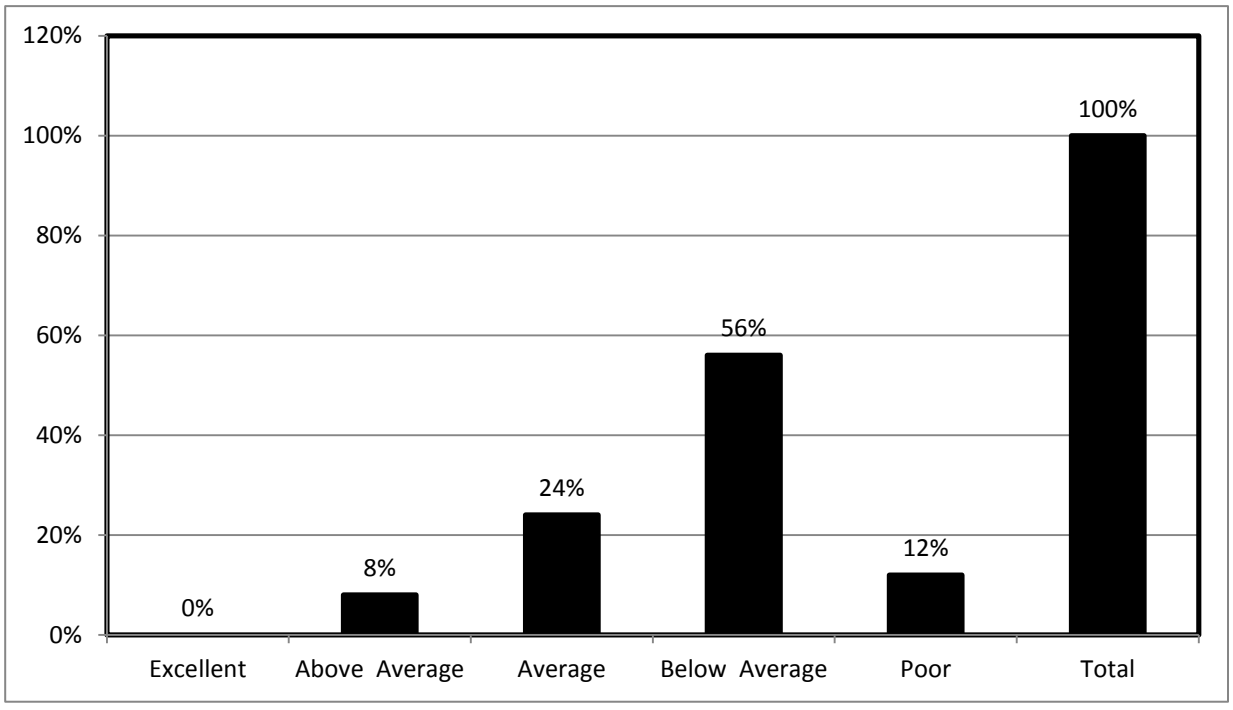


Table 7: - **Comparison of 30 meter acceleration test values with players normative data**

Activity	Description			
		Number	Percentage	Mean ± SD
30 meter acceleration test	Excellent	-	-	4.61 ± 0.31
	Above Average	4	8%	
	Average	12	24%	
	Below Average	17	34%	
	Poor	17	34%	
Total		50	100%	

The perusal of table 7 indicates that the mean ± standard deviation values for speed variable for 30 meter acceleration test of male football project players were recorded as 4.61 ± 0.31. And establishing a comparison between the results obtained from 30 meter acceleration test of male football project players with normative data using the percentage, it was observed that 4(8%) of male players are in the scale of above average, 12(24%) are in scale of average, 17(34%) are in scale of below average, 17(34%) are in scale of poor. This discovered that when comparing the values of male football project players obtained with the reference values provided by the normative data, the current level of the players on 30 meter acceleration test are average and above comparable with normative data.

Figure 5: - **Graphical representation of 30 meter acceleration test values**

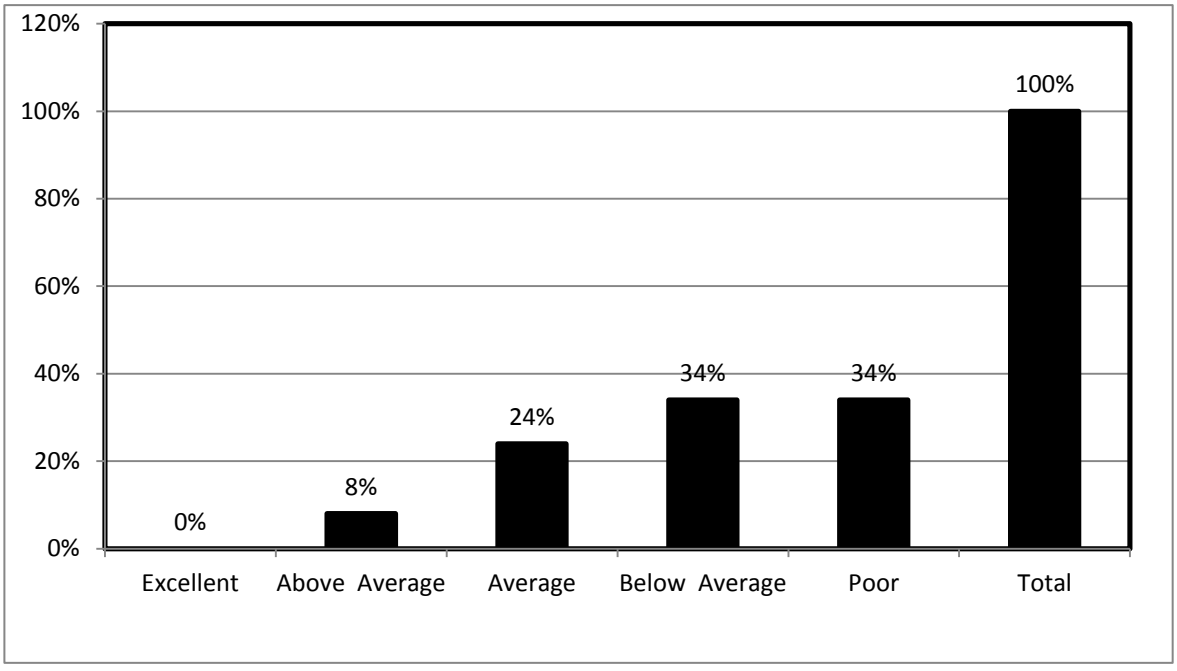


Table 8: - **Comparison of Illinois agility run test values with players normative data**

Activity	Description			
		Number	Percentage	Mean ± SD
Illinois agility run test	Excellent	-	-	17.75 ± 0.93
	Above Average	6	12%	
	Average	16	32%	
	Below Average	20	40%	
	Poor	8	16%	
Total		50	100%	

The perusal of table 8 indicates that the mean ± standard deviation values for agility variable for Illinois agility run test of male football project players were recorded as 17.75 ± 0.93. And establishing a comparison between the results obtained from Illinois agility run test of male football project players with normative data using the percentage, it was observed that 6(12%) of male players are in the scale of above average, 16(32%) are in scale of average, 20(40%) are in scale of below average, 8(16%) are in scale of poor. This discovered that when comparing the values of male football project players obtained with the reference values provided by the normative data, the current level of the players on Illinois agility run test are average and above comparable with normative data.

Figure 6: - **Graphical representation of Illinois agility runs test values**

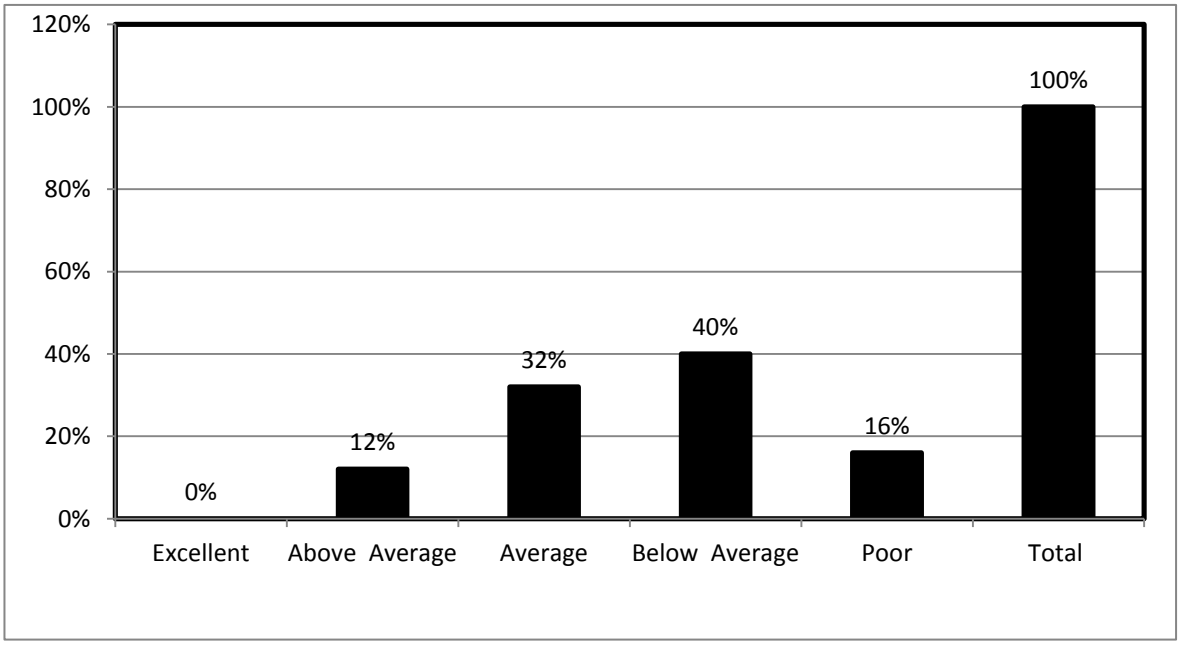
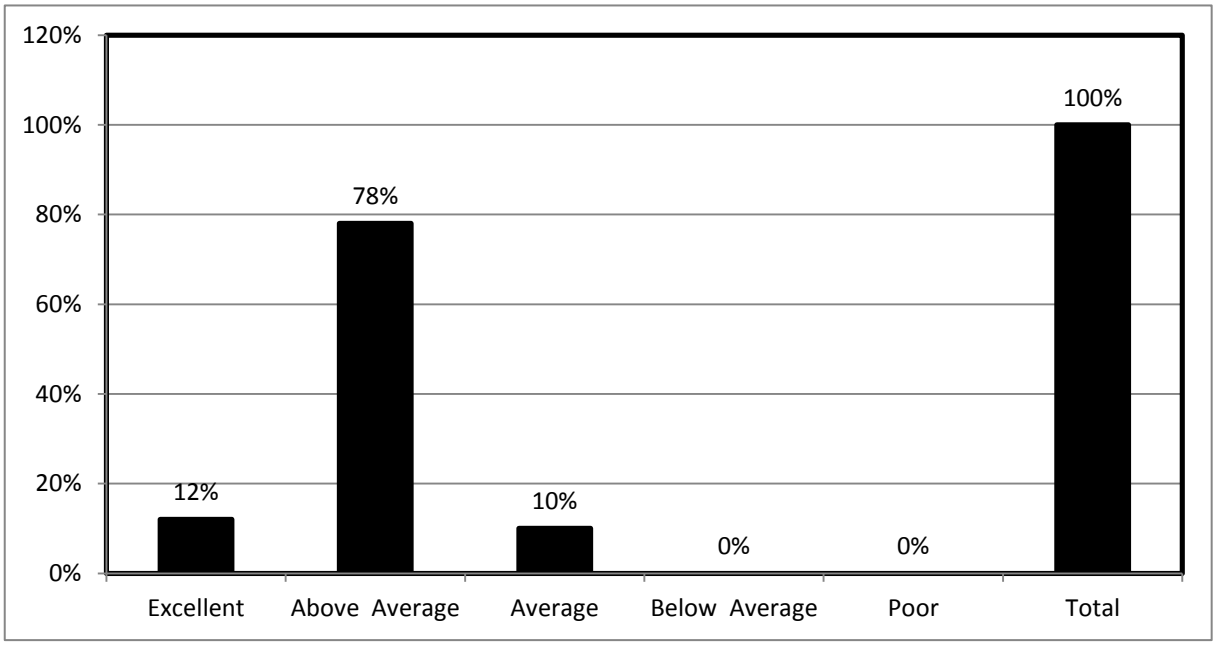


Table 9: - **Comparison of Sit and reach test values with players normative data**

Activity	Description			
Sit and reach test		Number	Percentage	Mean ± SD
	Excellent	6	12%	12.88 ± 1.56
	Above Average	39	78%	
	Average	5	10%	
	Below Average	-	-	
	Poor	-	-	
Total		50	100%	

The perusal of table 8 indicates that the mean and standard deviation values for flexibility variable for Sit and reach test of male football project players were recorded as 12.88 ± 1.56. And establishing a comparison between the results obtained from Sit and reach test of male football project players with normative data using the percentage, it was observed that 6(12%) of male players are in the scale of excellent, 39(78%) are in scale of above average, 5(10%) are in scale of average. This discovered that when comparing the values of male football project players obtained with the reference values provided by the normative data, the current level of the players on Sit and reach test are average and above comparable with normative data.

Figure 7: - Graphical representation of Sit and reach test values



4.2 DISCUSSION ON FINDINGS

The aim of present study was to investigation the selected physical fitness variables of male youth football project players of Yem special woreda. For administrating the physical fitness test administered to 50 male youth football project players from two projects were selected.

The results of this study showed that the current physical fitness level of male youth Football project players of Yem special woreda was average and above average level in the Sergeant Jump test and above average and excellent level in sit and reach test. However, 300 yard shuttle test, 30 meter acceleration and Illinois agility run test those of male youth football project players was below average and poor level to comparing with the values obtained with the reference values provided by the normative data.

The finding of this investigation suggested that the current level of male youth football project players is strong when comparing with the values obtained with the reference values provided by the normative data. In particular, the present results are consistent with other study. It may be due to the reason; football players of high altitude are living in high altitude they might have increased their strength abilities (Ioannis, 2006). Regarding to strength similar studies revealed that, studies that covered a wider range of adolescence were carried out with respect to dynamic muscular strength, muscular strength increased by 20.59% in soccer players aged 11 to 18 (Le Gall, Beillot & Rochcongar, 2002), while it increased by 46.77% in adolescents aged 11 to 18 (Hertogh, Micallef & Mercier, 1992).

The finding of the present study suggested that the current level of male youth football project players were strong and highly flexible when comparing with the values obtained with the reference values provided by the normative data. The findings of this study are in agreement with other studies Pratt (1989). Flexibility tends to improves toward early adulthood. According to Canhadas *et al.*, (2010) the studies have shown youth football players were slightly stronger and flexible during the years before puberty.

The finding of this investigation suggested the current agility level of male youth football project players were mostly below the average level to comparing with the values obtained with the reference values provided by the normative data. The findings of this study are in agreement with other study. Djevalikian, 1993, Webb and Lander, 1983 and Young *et al.*, 2002 (As cited in Sheppard, & Young, 2005) stated that the results of concentric strength measures appear to be poor predictors of agility.

The finding of this investigation suggested the current speed level of male youth football project players were mostly below the average level to comparing with the values obtained with the reference values provided by the normative data. The findings of this study are in agreement with other study, Guner *et al.,* (2005) comparison analysis showed that the Under 21 age group has higher running velocities (speed) than members of the Under 17 age group. The finding showed that running velocities (speed) were increased and heart rates were decreased over this period. Nikolaïdis, (2011) the increase of speed across adolescence (from Under 13 to Under 19) in football players was lower. Negrete and Brophy (2000) *(*As cited in Sheppard & Young, 2005) stated that the variability of running speed and technique in the sprint tasks could account for the weaker relationship with strength qualities.

The findings of this research indicate that the speed and agility level of the players were below the average level of normative data. Though, Sporis, *et al., 2010,* conclude that speed and agility were two relatively independent qualities, the agility can affect sprinting performance which could lead us to the conclusion that these abilities are linked together, and dependable on one another. Young, *et al.,* (1996) agility is often represented in the same context with speed. Parnou, *et al.,* (2005) studied national footsal team players and concluded that there is a positive relationship between agility with 10 m speed running.

Buttifant *et al.,* (1999) research was conducted on Australian football players. However, it should be considered that the nature of agility movements is very close to the speed. In fact, agility is one of components of the velocity which is done based on tension-shortening cycle for rapid increase in power and the power-time curve transfer to the left and up sides (Gaeini and Rajabi, 2004). So a relation between these two factors can be expecting. Because the nature of the agility and anaerobic power (speed) is based on the fast and explosive movements and the agility and anaerobic capacity can increase over the age of 25 years, and the study subjects were in this age duration, so the relationship between agility and anaerobic power (speed) could be expected.

Chaleh *et al.,* (2012) the relationship between speed and agility in 14 to 16 years old football players, it can be expected to low level.

The finding of the current study suggested that 68% of Yem woreda male youth football project player's endurance were below average and poor level currently when compared with the values obtained with the reference values provided by the normative data. This study is in agreement with other study, Malina *et al.,* (2007) players in the lowest skill perform poorest in the sprint and endurance shuttle run. The present result is in agreement with other study. According to (Nikolaidis, 2010b) the studies have shown that muscular endurance in adolescent soccer players compared to adult soccer players, adolescent players had lower values of muscular endurance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

The main objective of this study was to investigate the selected physical fitness variables of male youth football project players of Yem special woreda. In order to achieve the objective of the study; the following research questions were raised.

- What was the current physical fitness level of male youth football project players of Yem special woreda?
- Was there any difference between selected physical fitness of players compare with international norms?

In order to answer these questions, a comparative study method was employed. The required data were collected from 50 youth football players. The available sampling technique (purposive) was used to select the samples. The relevant data to the study was gathered through different test batteries were employed as data gathering tool in the study.

With respect to this the specific objective of the current study was investigated the current physical fitness level of male youth football project players and compare the difference between the players physical fitness with international norms. Descriptive statistics were used to compare the strength, endurance, speed, agility and flexibility of youth football trainees in order to provide information to the coaches to develop the standard of the player's fitness level for the future.

The data were organized, analyzed and interpreted by qualitative methods by using descriptive statistics (mean. standard deviations, percentage) to compare the player's physical fitness variables with normative data.

Based on the analysis and interpretation of data, the major findings obtained are summarized as follows:

1. The study has showed that, the current endurance, speed and agility level of Yem special woreda male youth football project players was below average and poor level and the current strength and flexibility level of the players was average and above to comparing with the values obtained with the reference values provided by the normative data.
2. The study revealed that, there is difference between Yem special woreda male youth football project players and standardized norm on endurance, speed, and agility test to comparing with the average values obtained with the reference values provided by the normative data. However, there is no difference between Yem special woreda male youth football project players with the average values obtained with the reference values provided by the normative data on strength and flexibility test.

5.2 CONCLUSION

Based on the findings of this study, the following conclusions were made;

- The results of the assessed data from the concerned respondents indicate that; based on comparisons with normative data, the current physical fitness level of male youth football project players are mostly at average and above on strength and flexibility, and those of the players are below and poor on endurance, speed and agility tests when comparing with the values obtained with the reference values provided by the normative data. However, the overall selected physical fitness variables level of Yem special woreda male youth football project players is not in a good condition in endurance, speed and agility.
- The results of the assessed data from the concerned respondents indicate that; based on comparisons with normative data, The result of the study reveals that there is difference between Yem special woreda male youth football project players and standardized norm on endurance, speed, and agility test to comparing with the average values obtained with the reference values provided by the normative data. However, there is no difference between Yem special woreda male youth football project players with the average values obtained with the reference values provided by the normative data on strength and flexibility test.

5.3 RECOMMENDATIONS

Based on the conclusions derived from the findings of the analyzed data, the following recommendations are forwarded.

- It is useful to prepare fitness training for male youth football project players in the different age level of football players for improving their physical fitness and keeping them to maintain their performances.
- It is advised to coaches to include the physical fitness programs in their schedules during the training session to enhance their fitness level at the standardized level.
- The coaches should consider individual differences and level of trainees while they provide tasks for training sessions.
- To make the training program more effective the sport office of Yem special woreda should provide courses for coaches to develop the competency level and to achieve the objectives of the youth football project.
- Yem special woreda sport office and sport experts should supervise the progress of trainees continuously and give attention for giving immediate feedback for coaches and trainee.
- If the talent look for is done among the players from the very beginning, good sports people from this category can be found out who can make their name in the national and international level.
- Future research should needs to examine methods for increasing physical fitness levels among this population group, identify such factors influenced physical fitness levels of the youth football players and solve the problems which are faced by trainees related with physical fitness.

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APPENDEX I

1. Body Mass index (BMI)

Purpose: The test is to monitor the student's weight.

Required resources: Tape measure to determine your height, Set of scales to measure your weight & Assistant.

Procedures: Assistant to Measure the student's height in meters and Measure the student's weight in kilograms. To determine BMI divide the weight by the height squared:

BMI = weight / (height x height)

Normative data

BMI	**Assessment**
20 to 25	Normal
25 to 30	Pre Obese
30 to 35	Obese
> 35	Grossly Obese

Table Reference: Davis B. et al; Physical Education and the Study of Sport; 2000

APPENDEX II

2. Sergeant Jump Test

Purpose: The test is to monitor the development of the player's elastic leg strength.

Required resources: this test you will require:

- Wall
-1 meter Tape Measure
- Chalk
- Assistant.

Procedures: The athlete:

- chalks the end of his finger tips
- stands side onto the wall, keeping both feet remaining on the ground, reaches up as high as possible with one hand and marks the wall with the tips of the fingers (M1)
- From a static position jumps as high as possible and marks the wall with the chalk on his finger tips (M2).

The coach:

- Measures the distance from M1 to M2. The test can be performed as many times as the athlete wishes.

Scoring: Analysis of the result is by comparing it with the results of previous tests. It is expected that, with appropriate training between each test, the analysis would indicate an improvement.

Normative data for the Sergeant jump test

The following are national norms for 16 to 19 year olds.

Gender	Excellent	Above Average	Average	Below Average	Poor
Male	> 65cm	50-65cm	40-49cm	30-39cm	<30cm
Female	> 58cm	47-58cm	36-46cm	26-35cm	<26cm

Table Reference: Davis B. et al; Physical Education and the Study of Sport; 2000

APPENDEX III

3. 300 yard Shuttle Test

Purpose: The test is to monitor the student's intermediate anaerobic endurance.

Required resources: Stopwatch, measuring tape, two marker cones placed 25yds (22.8m) apart, a flat grass surface and Assistant.

Procedures: Marker cones and lines are placed 25 yards apart to indicate the sprint distance. Start with a foot on one line. When instructed by the timer, the player runs to the opposite 25-yard line, touches it with their foot, turns and run back to the start. This is repeated six times without stopping (covering 300 yards total). After a rest of five minutes, the test is repeated.

Scoring: Record the average of the two 300-yard shuttles.

Normative data for the 300 yard shuttle test

The following are national norms for 16 to 19 year olds.

Gender	Excellent	Above Average	Average	Below Average	Poor
Male	< 50 secs	50 - 56 secs	57 – 63 secs	64 - 70 secs	> 70 secs
Female	< 55 secs	55 - 61 secs	62 – 68 secs	69 - 75 secs	> 75 secs

Table Reference: Davis B. et al; Physical Education and the Study of Sport; 2000

APPENDEX IV

4. 30 Meter Acceleration Test

Purpose: The test is to monitor the development of the student's ability to effectively and efficiently accelerate from a standing start or from starting blocks to maximum speed.

Required resources: 400m track – with a 30m marked section on the straight, stop watch and assistant.

Procedures: The test comprises of 3 x 30m runs from a standing start or from starting blocks and with a full recovery between each run. The assistant should record the time for the student to complete the 30m.

Scoring: Analysis of the result is by comparing it with the results of previous tests. It is expected that, with appropriate training between each test, the analysis would indicate an improvement.

Normative data for the 30 meter Acceleration test

The following are national norms for 16 to 19 year olds.

Gender	**Excellent**	**Above Average**	**Average**	**Below Average**	**Poor**
Male	<4.0 secs	4.2- 4.0 secs	4.4 -4.3 secs	4.6-4.5 secs	>4.6 secs
Female	<4.5 secs	4.6-4.5 secs	4.8-4.7 secs	5.0-4.9 secs	>5.0 secs

Table Reference: Davis B. et al; Physical Education and the Study of Sport; 2000

APPENDEX V

5. Illinois agility run test

Purpose: The Illinois Agility Run Test is to monitor the development of the student's speed and agility.

Required resources: Flat surface – 400 meter track, 8 cones and Stop watch

Procedures: - The Illinois Agility Run Test is conducted as follows:

The length of the course was 10 meters and the width (distance between the start and finish points) is 5 meters. Four cones are used to mark the start, finish and the two turning points. Another four cones are placed down the center an equal distance apart. Each cone in the center is spaced 3.3 meters apart. Subjects lied on their front (head to the start line) and hands by their shoulders. On the 'Go' command the stopwatch was started, and the athlete gets up as quickly as possible and runs around the course in the direction indicated, without knocking the cones over, to the finish line, at which the timing is stopped.

Scoring: Analysis of the result is by comparing it with the results of previous tests. It is expected that, with appropriate training between each test, the analysis would indicate an improvement.

Normative data for the Illinois agility run test

The following are national norms for 16 to 19 year olds.

Gender	**Excellent**	**Above Average**	**Average**	**Below Average**	**Poor**
Male	<15.2 secs	15.2-16.1 secs	16.2-18.1 secs	18.2-18.3 secs	>18.3 secs
Female	<17.0 secs	17.0-17.9 secs	18.0-21.7 secs	21.8-23.0 secs	>23.0 secs

Table Reference: Davis B. et al; Physical Education and the Study of Sport; 2000

APPENDEX VI

6. Sit and reach Test

Purpose: The test is to monitor the development of the student's lower back and hamstring flexibility.

Required resources: Sit & reach table or a bench with a ruler and Assistant.

Procedures: The sit and reach test is conducted as follows:

- The starting position is sitting on the floor with shoes removed, feet flat against the table, and legs straight
- Reach forward and push the fingers along the table as far as possible
- The distance from the finger tips to the edge of the table represents the score for that person
- As the 'sit and reach' table has an overhang of 15 cm, a person who reaches 10 cm past their toes scores 25 cm
- It is important to have several warm-up attempts first, and to record the best score.

Scoring: Analysis of the result is by comparing it with the results of previous tests. It is expected that, with appropriate training between each test, the analysis would indicate an improvement.

Normative data for the Sit and reach test

The following are national norms for 16 to 19 year olds.

Gender	Excellent	Above Average	Average	Below Average	Poor
Male	>14 cm	11-14cm	7-10cm	4-6 cm	<2 cm
Female	>15cm	12-15 cm	7-11 cm	4-6 cm	<4 cm

Table Reference: Davis B. et al; Physical Education and the Study of Sport; 2000