

ASSESSMENT OF SOME SELECTED SKILL RELATED PHYSICAL FITNESS  
COMPONENTS OF SPRINTERS; IN THE CASE OF OROMIA ATHLETICS  
CLUBS.

BY

GIRMA BIKILA



A THESIS SUBMITTED TO JIMMA UNIVERSITY COLLEGE OF NATURAL  
SCIENCE DEPARTMENT OF SPORT SCIENCE FOR PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER  
IN ATHLETICS COACHING SPECIALIZATION

JUNE 2019.

JIMMA, ETHIOPIA

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JUNE2019.

JIMMA, ETHIOPIA

JIMMA UNIVERSITY  
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As members of the Examining Board of the Final M Sc. Open Defiance, we certify that we have read and evaluated the thesis prepared by: Girma Bikla entitled: Assessment of sprinters skill related physical fitness components the case of Oromia athletics clubs. We recommend that it could be accepted as fulfilling the thesis requirement for the degree of Master of Science in coaching athletics specialization.

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By my signature below, I declare and affirm that this Thesis is own work. I followed all ethical and technical principles of scholarship in the preparation, data collection, data analysis and compilation of this Thesis. Any scholarly matter that is included in the thesis has been given recognition through citation.

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## **BIOGRAPHICAL SKETCH**

The author was born on May 16, 1994 G.C in Mida kegn Wereda, West Showa Zone Oromia Regional State. He attended his primary and junior school at Goda Arba primary school, and he attended secondary school at Balemi high school and preparatory school. Then he joined Mettu University, natural and computational science faculty in 2006 E.C and graduated with Bachelor sport science (B.Ed.) in 2008 E.C. after him graduate from Mettu university he joined to Wellega university for PDGJ training in 2009. And also he joined Jimma University, Department of Sport Science for perusing his athletics coaching in 2010 E.C.

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## ABSTRACT

*The purpose of the study was to Assessment of some selected skill related physical fitness components of sprinters; in the case of Oromia athletics clubs. The cross-sectional research design was used. Participants of the study were tested at once time to assess some selected skill-related physical fitness components. Populations of this study were 138 athletes short distance runners of Oromia athletic clubs were available. The target populations of the study were six Oromia athletics clubs (Laga tafo athletics clubs, Adama athletics clubs, Bosona Oromia athletics clubs, Sululta athletics clubs, Sebeta athletics clubs, and Holota athletics clubs) of short distance runners were 78 in numbers. Those were selected by using simple random sampling. The subject of the study was 57 athletes from Six Oromia athletics clubs were selected by purposive sampling. The main instruments of data collection were used 35-meter sprint test, vertical jump power test, and Illinois agility run test. Descriptive statistics analysis was used, mean, standard deviation and independent sample t-test. The data was analyzed using computerized statistical package software (SPSS version 20).The results show that the current physical fitness level of sprinters of Oromia athletics clubs was mostly above average on speed and below average on power and agility. The results show that there was significant mean difference has been observed in between Bosona Oromia and Laga tafo Oromia clubs in speed,  $p=0.02$ , between Bosona Oromia and Holota Oromia clubs in speed  $p=0.047$ , between Bosona Oromia and Sebeta Oromia clubs in power  $p=0.003$ , between Sebeta Oromia and Laga tafo Oromia clubs in agility  $p=0.017$ , and between Holota Oromia and Laga tafo Oromia clubs in agility at  $p=0.007$ . The results obtained from skill related physical fitness test of sprinters of Oromia athletics clubs with normative data show that, 43.85% are in scale of above average, 29.8% are in scale of average and 54.3% are in scale of above average of vertical jump, Illinois and 35 meter sprint test respectively.*

**Keywords:** Physical fitness, Assessment, Skill, Athlete

## **ABBRIATION/ACCRONOMY**

CRF = cardio respiratory fitness

IART= Illinois agility run test

SPSS= statistical package software

MRV=measure maximum running velocity

MD=Mean difference

SD=Standard deviation

SR=stride rate

SL=stride length

SRF=skill-related fitness

FITT =Frequency, Intensity, Type, Time

AAHPERD=American Alliance for Health, Physical Education, Recreation & Dance

IAAF=International association Africa Federation

OC =Olympic champion

## **ACKNOWLEDGEMENT**

First of all, I praise the God for giving me health and power to complete my thesis. Then I would like to express my immense gratitude for Jimma University, department sport science for writing letters to whom it concerned in order to help for conducting my thesis. Moreover, I would like to address my special gratitude to my major advisor (Dr) Asim Khan and co-advisor Mr. Amanu Eba for their expert limitless guidance, timely response and encouraged. In addition, I would like to thanks my instructor Asst professor Samson Wandirad for his humble approach and unreserved Support in commenting and providing advice on the whole study from the beginning to the end. And also, I would like to thank my relatives and friends for all their help and encourage whilst I worked on this thesis. Finally, I would especially like to thank my wife Alemi Medeksa and for her endless support, without her this thesis would not exist.

## **CHAPTER ONE**

### **1. INTRODUCTION**

Athletics is the natural pursuits of human beings. Some usual activities like walking, running, jumping, and throwing are the movements which we learnt first as small children(Peter J 2007).

The simplicity of the competition and the lack of a need for expensive equipments make athletics one of the most commonly competed sports worldwide. Designed Athletics is traced back to the Ancient Olympic Games from 776 BC, and most modern events are conducted by the member clubs of the international Association of Athletics Federations (DePauw, K. P., & Gavron, S. J. (2005).

Beginning in 1982; the IAAF passed numerous amendments to its rules to allow athletes to receive compensation for participating in international competitions. The organization was formed in 1949. The ability of East African athletes was announced to the world in the 1960 as barefooted Abebe Bikila took the gold medal in the marathon. Bikila repeated in 1964 and the floodgates were opened. Ethiopia has captured 45 Olympic medals, all in a long distance running 2012; the Oromo nations in Ethiopia must be one of the most athletically blessed on the world. The list of long distance running champions.It has produced includes Haile Gbrselassie, Abebe Bikila, and Sileshi Sihene, Dibaba sisters and Derartu TulluSays Olympic and world records 2012. In the history of humankind, physical fitness has been considered as a vital element of everyday life of an individual (Tsai, M. S. (2015).

Waghmare, & Surdi (2012)the performance of athletes testing has always been a popular Endeavor. There are numerous factors, which are responsible for the performance of an athlete. To complete in any match or sports not only based on physiological, psychological, sociological and scientific training factors but also requires a good physique, body composition, endurance, flexibility, and good reaction time to any given situation. Physical fitness as a single factor is the most important for high performance in athletes. Physical fitness testing provides a good baseline and reference for coaches, sports scientists, physiotherapists In being so, the ancient people were mainly dependent upon their someone strength, energy for physical survival (K. Singh & Malik, 2017) Skill related components of fitness are related many to successful sports and motor skill performance. The skill related components of fitness are essential for not only the progression of



sporting performances; but also in everyday life. Many of these skill factors are found to visibly decrease with ageing or illness. It is extremely common for balance to reduce with age, many elderly people becoming more susceptible to falls and injury. With this in concern, it emphasizes maintaining good levels of health and skill related fitness components, especially with age (Hoeger, 2011)

Evaluating an athlete's performance tests are a very common occurrence for many strength and conditioning professionals. For two decades, researchers and coaches have taken test scores and used them to predict the potential of an athlete. These evaluations may lead to some position changes in some athletes. Testing athletes in physical performance tests is extremely important to the evaluation process of experiment. Testing athletes may provide the coach with information about the physical attributes of the athlete (Broglia et al., 2014). Sprint running needs skill related physical fitness (speed, power, reaction time, coordination and agility) to overcome the challenges within the short period of the time less than 45 minutes. Usain St Leo Bolt is a Jamaican retired sprint. He is a world record holder 100 meter personal best is 9.58seconds, and 200meters personal best is 19.19 and 4 x400 meters relay. His reign as Olympics games champion in all of these events spans three Olympics. Owing to his achievements and dominance in sprint competition, he is widely considered to be the greatest sprinter of all time (Knechtle, & Valeri, 2018).

Wtere Galcha is an Ethiopia track sprinter in 100mete personal best is 10.61 30 April 2008 African championships. And wtere Galcha participate in 200 meter 31 may 2007 African championships. Tegegne Bezabeh is an Ethiopian track sprinter in 400 mere personal best is 45.42 18 October 1968 Olympics games host in Mexico City. Ethiopia many achievements in running event specially 5000 meters, 10,000 meter and marathon in both male and female with best record in the world but, no one achievement short distance runners.

The main objective of athletics clubs is to aid athletes improves their athlete's performance by increasing physical fitness such as strength, power, speed, agility and the others. In conformity with this assertion world their countries culture the same is true for Oromia short distance runners if they could class athletes. The ministry of the of youth and sport which is recently named as Ethiopian sport commission has the mission in generally to work on all athletics disciplines in particular focusing on the event which the country has been well- known that is sprint races.

## **1.2 Statement of the problem**

Ethiopia starts participating in international athletics competitions as early as the 1950s. Ethiopia was one of the first Africa countries to take part in Olympic when participating in 1956 Melbourne from this past years up to this day Ethiopia is famous in the world by long distance but until this year Ethiopia is not registered in sprinting running competition.

The recent Ethiopia sport commission has the task in general to work on all athletics disciplines in particular focusing on the events which the country has not been well-known that is sprinting. Improve the performance of the skill related physical fitness of short distance runners will lead them to be world-class athletes that represent the country in any aspect.

Since the time Ethiopia began participating in 5000m and 10,000m competition, the athletics team has done so much. Looking in to previous records, Ethiopia won a total of 53 medals in the Olympics of which 39 medals 74% were won in this 5000m and 10,000m competition. So our country have many achievements in long distance running event but, Short distance athletes are not successful like long distance especially 5000m and 10,000m and marathon. By saying this Skill related physical fitness test has role to enhance the athlete performance as psychologists needed, methodology of training and the others.

Saha, G (2012) Physical fitness is a well-being that comprises skill and health related components. Fitness is a condition in which an individual can work with plenty of energy without fatigue and enjoy life. Every individual has a different level of physical fitness which may change with time, workplace and condition. From the physiological view, physical fitness may state to be ability at the body to adapt and recover from strenuous exercise (Pal & Pradhan, 2018)analysis of AAHPERD youth fitness test components between rural and urban sportsmen of Vidyasagar University in West Bengal India The results of the study indicated that there were significant differences in arms and shoulder's strength, speed, explosive leg's strength, agility and cardiovascular endurance between rural and urban rural sportsmen of Vidyasagar University, where rural sportsmen were found superior to urban sportsmen. With reference to arms and shoulder's strength component rural sportsmen of Vidyasagar University were much stronger than urban sportsmen.

According to (Habtemarime, 2012) although considerable efforts have been made to fulfill facilities by the clubs basic short run athletes facilities such as training cloth and school were found inadequate more over other facilities such as shower, synonyms, and training groups were not satisfactory in most clubs. This impels that athletes are not in opposition to improve their skills and performance.

Mangistu, *et al* (2015) Research conducted on assessment of some selected physical fitness components of Jimma University sport science students as compared with the international norms. The study shows that Male sport science students' are fulfilling the international norms in most physical fitness tests. Female sport science students' were not fulfilling the international norms in the majority physical fitness tests.

Most of the time in our country to enhance or increase the performance of the athlete they give priority for training but after training if the coaches give test (speed, power, agility and the others) athlete can identify his strength and his weakness by comparing with international standards. After identify athlete his/her weakness he/she set plan to improve the weakness side, through the process the athlete becomes fit The researcher is interested to conduct this research on Oromia athletics clubs, are the main sources of talented middle and long distance runners for the country and the world. Most of the time many clubs mainly give due emphasis to middle and long distance to keep previous results of the former races. Short distance running naturally it needs some s technical and tactics skill.

Thus, the researcher hypothesis some selected Oromia athletics clubs of short distance runners may or may not fulfill in the assessment of some selected physical fitness components to compare with the international norms. Therefore, purpose of this study has been to assess some selected physical fitness components of some selected Oromia athletics clubs of short distance athlete runners with such variables, speed, power and agility. This study was attempts to answer the following leading research question;

1. Does the performance of Oromia athletics clubs related to skill related physical fitness are in line with international standard norm?
2. Is there significant difference mean of speed, power and agility among Oromia athletics clubs of sprinters?
3. What is the level of skill related physical fitness components of sprinters Oromia athletics clubs with international norms?

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

#### **1.3.1 General objective**

The purpose of the study was to **assessment of some selected skill related physical fitness components of sprinters; in the case of Oromia athletics clubs.**

#### **1.3.2 Specific objective**

- To measure the current performance of skill related physical fitness components of sprinters in Oromia athletics clubs.
- To compare the significant difference in the mean of speed, power, and agility of Oromia athletics clubs of sprinters.
- To classify the level of skill related physical fitness components of sprinters Oromia athletics clubs with international norms.

### **1.4 Significance of the study**

The finding of this study will an important whether you are a coach or participant at club or international level, in whatever sport, fitness testing can almost certainly help your performance. This study intern leads athlete's practical ability in identifying, which exercise is suited to develop which physical fitness parts. Specifically Oromia athletics clubs as the first place to use this research study. But it does not mean that the outcome of this research will only restricted to Oromia athletics clubs; it also helps other athletes to understand the assessment of power, speed and agility on performance enhancement. The potential uses and benefits of fitness testing are as follows: Evaluation of a performer's strength and weaknesses, these findings may give the coaching staff insight to areas that may need more attention. For example, if an athlete tests

poorly in speed tests then the coaches could alter the program to help the athlete improve in this area. Relative to the demands of their sport. Testing athletes can help a coach determine the potential of an athlete to run at a certain position, example in 4x400m relay if an athlete has high agility so that the athlete run curve. The result of this research will use as a starting point for other interest groups to carry out their research. The findings of the study will be disseminated to relevant and concerned bodies.

### **1.5 Delimitation of the Study**

The study was conducted in Oromia regional state in Ethiopia. The study area limited to six Oromia athletics clubs (Laga Tafo, Adama Sululta, Holota, Sebeta and Bosona Oromia). In order to make the study was more specific and manageable; the study limited to on assessment of some selected skill related physical fitness components (speed, agility, and power of sprinters; in the case of Oromia athletics clubs. This study was conducted from November 2011E. C June 2011 E.C.

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

There were a few limitations to the study that need to be considered The result of the study would be very interesting to conduct the study on participating of Oromia athletics clubs however; the study is limited to selected Oromia athletics clubs because, of a shortage of time, money, scarcity materials, and transportation problems. Another problem that the researcher faced was a shortage of local reference related to the topics while conducting the research, the researcher has been forced to rely mainly on sources that are little related to the topics. Lack of motivation the participants in performing the physical fitness test. Lack of recently published reference materials related to the topic/at the level of athletics clubs.

### **1.7 Definition of key terms**

Agility: Ability to rapidly change the position of the entire body in space with speed and accuracy (Ortega, F et al., 2014)

Combination of speed, balance, power, and coordination( rtega, F.et al (2008)

**Performance:** - an observable behaviour of athletes in training and competition (Thompson: 2000).

Power: is the ability to produce a large amount of force quickly period Robinson, P. E. 2014)

Speed the ability to perform a movement quickly period Birch, K. & McLaren, D. (2004)

## CHAPTER TWO

### 2. REVIEW OF RELATED LITRATURE

#### 2.1The history development of sprints

Athletics events are generally individual sport with athletes challenging each other decide a single victory. The racing events are won by the athlete or height in the contest. The running events are categorized as sprints, middle distance events, and long distance running.

In 1986 describe a new move on the way to commercial produce progress that would increase speed and flexibility, based on case studies from industrialized firms in the automotive, photocopier and printer industries. Approach, as the whole process is performed by one cross-functional team across multiple overlapping phases, where the team tries to go the distance as a unit, transient the ball back and forth in rugby, a scrum refers to the manner of restarting the game after a minor infraction. In the early(Young, D. C. 2008).

A short distances the basic unit of development in Scrum. Sprints last between one week and one month and are a time boxed (limited to a precise period attempt of a constant length). Each sprint is preceded by a preparation meeting, where the tasks for the sprint are recognized and a predictable promise for the sprint objective is made, and followed by a review or retrospective meeting, where the progress is reviewed and lessons for the next sprint are identified (Cohn, M. (2010).

#### 2.1.1Sprinting Speed

Downhill sprinting is a method of increasing sprinting speed subsequent the acceleration phase. A hill with a greatest of a 15° refuse is most appropriate. Use 40 meters to 60 meters to construct up to occupied speed and then continue the speed for a further 30-meters and 35-meters. A session might include of 2 to 3 sets of 3 to 5 repetitions. The complexity with this way is to find a appropriate mount with a protected surface. In excess of speed effort could be approved out when there are current strong winds run with the wind behind you (Pinch, F. C., & Claussen, D. L. (2003)

#### 2.1.2 Training Sprinters

All things being equal, speed usually wins the race.

The sprint events included the 100 meters, 200 meters, 400 meters, and the 4x100 and 4x400 Relays and also 100 meters and 110 meters hurdle for women and men respectively. Sprint speed is also a central component of for hurdles, horizontal jumps, pole vault, and middle distances running. To have success, coaches must be able to coach and train their anaerobic preparation (Thomas et al 2008)

### **2.1.3 Sprinting At Maximum or Near Maximum**

Effort in excess of a range of distances is significant for a lot of sports. For that reason, power and training professional have agreed extensive concentration to the use of gap training and resistance training exercises in order to increase sprint performance. Track coaches have supposed and research has supported the perception that the performance in short sprints example 20 meters and longer sprints allowing the achievement of utmost or close to maximum speed example (35/50) are part and explicit character. This means an athlete may outclass in short sprints other than not in maximum speed sprints, or inverse. Consequently, it is significant to be familiar with the relative value of various Sprint qualities in sports to decide the training importance that should be given to every Alexander, M.J.L. (1989)

### **2.1.4 Biomechanical Differences between Short and Maximum Speed Sprints**

Maximum speed can be enhanced by increasing either stride length or the number of strides performed in a second (pace regularity), and both of these factors increase as running speed increases. Even though peak speed running technicalities have been well researched, relatively little investigation has been conducted on short sprints. However some common biomechanical characteristics of the two sprint phases. These differences have implications for the muscle groups and power qualities that are important for performance in all phase Little, T., & Williams, A. (2003).

## **2.2 Theoretical concept of physical fitness**

The term physical fitness is frequently used in scientific fields and in everyday life. However, the everyday use caused that physical fitness became an umbrella term. The question arises how much this event is negligible (especially in everyday-life themes) and/or whether a clear understanding of what physical fitness represents is of value. As early as in the late said that an overabundance of labels (e.g., motor performance, motor fitness, health fitness) in the context of

the meaning of physical fitness highly impeded the attempt to achieve a consensus concerning a definition of physical fitness. These involved performances of some skills like strength, speed, power, agility for running, jumping, throwing and climbing for the persistence of hunting, gathering food and building shelter for their living(Sanjeevi & Gopinath, 2011)

Regular contribution in different exercises increases physical fitness. Thus, high level of physical fitness is attractive for a full productive life. However, sedentary living habits and poor physical fitness have negative impacts on both health and daily living. Every individual has a different level of physical fitness which may change with time, workplace and situation. There is also an interaction between the daily activities and the fitness of an individual, the point of where to put the level of optimum fitness(Habtemarime, 2012)the physiological belief, physical fitness may be the ability of the body to adapt and recover from strenuous exercise (Gill, Deol, & Kaur, 2010)

A physical fitness test is a test designed to a certain physical speed, strength, agility, and endurance(Marcone, 2017).Testing as using a set of problems to assess abilities. Therefore, performance testing means using a set or tool of tests to determine performance abilities or functional limitations. A useful constraint is the incapability to perform a particular activity at a normal intensity. In addition, defined testing as a statement about the quality or value of what has been measured and thus involves the tester making a decision, so interpreting a score for each athlete. This mean, it is first necessary to define the intent of base line testing and then develop a practical model for application, the power produced by the athlete is the combined product or strength and speed. The hours training muscular strength are what are incorporated into the power which is produced by the sprinter. The faster and stronger the athlete, the more power is produced. Illinois agility test can help the sprinter improve their agility levels or using an agility ladder is also an effective mechanism(Nilsson & Nilsson, 2014).

During sport, competitive, athletes are involved in defensive and offensive jumping activities where power, strength, agility, and speed are necessary (González-Ravé, Arija, Clemente-Suarez, 2011). In order to arrive at the maximal height fast, large amounts of upright force must be shaped as quickly as possible(Barnes et al. 2007 found that optimal production of maximal lower body power was obtained by changed substantial amounts of horizontal force into vertical force.



Repeated force productions as well as repeated maximal jump height are important in running performance(Hedrick, 2007)

Fitness in soccer specific context refers to a range of individual characteristics that is a merged of many attributes and competences. Such competence by definition includes, physical, physiological, and psychomotor factors,( Reilly & Williams, 2003)

Physical fitness is a condition of well-being that comprises ability and health-related components. Fitness is a condition in which an individual has adequate energy to keep away from tiredness and enjoy life. It is necessary for elderly people to maintain and improve their physical fitness in order to make happy well, high superiority of daily life (Tanaka et al., 2004). Skill-related physical fitness means to an individual's athletic talent in sports such as tennis and encompasses skill-related attribute like, power, speed and agility(Hopkins & Walker, 1988). Physical fitness is calculated by practical tests that are exact and usually normative-based, rather than criterion-based. There are many factors which are accountable for the performance of sportsmen. The body type and body work including the size, shape and form are known to play a major role in this regard (HSodhi & Sidhu, 1984).

The performance of a sportsman in any sport or event also depends on physical fitness. Physical fitness or condition is the sum total of five motor ability namely muscular strength, agility, power, speed and cardiovascular stamina. Therefore, the sports performance in all sports based to great level on this ability. Enhancement and preservation of physical fitness is the most important mean of sports training(Uppal, 1980). Strong power, often referred to as explosive power, is a mixture of speed and strength which is important in energetic performance since it determines how hard a person can hit, jump and.

### **2.2.1. Definition of fitness testing**

A physical fitness test is a test designed to a certain physical speed, strength, agility, and endurance(Marcone, 2017).Testing as using a set of problems to assess abilities. Therefore, performance testing means using a set or tool of tests to determine performance abilities or functional limitations. A useful constraint is the incapability to perform a particular activity normally. Even, have defined testing as a statement about the quality or value of what has been measured and thus involves the tester making a decision, so interpreting a score for each player.

This event mean, it is the first vital to define the intent of baseline testing and then develop a practical model for application.

### **2.2.2. Physical fitness testing**

Physical fitness testing for field individual and team sports players are a very important part of research and development within a particular sport. It allows investigators to establish norms and thus make objective comparisons between players in different ages, genders, and level of leagues from other countries. Such information about fitness demands can be obtained by using fitness tests that evaluate physical performance capacity. Performance is an measurement of how well a assignment is executed and the achievement of a training program is largely dependent upon satisfying the performance aims of it(Peffers, et al.2003).

### **2.2.3. Benefits of fitness testing**

It is important to optimize and develop player performance and this process to assess a player performance requires a determination of requirements, and the continuous determination of physical performance using appropriate methods and procedures. The aim is to assess the performance achieved as quickly as the players. Performance tests for sport players can be designed to cover the physical fitness components, technical and tactical of the game. Fitness testing is used throughout players to document, assess and predict sports performance) It is important that the players and coaches obtain objective information about the player's physical fitness characteristics to clarify the objectives of training. A successful training program for these players will maximize all the required skill and fitness components of the game. An essential part to any training program is fitness performance testing, which can help identify weaknesses, monitor progress, provide feedback, educate coaches and players, and predict performance potential (Carling & Reilly, 2009).

Fitness tests are the only effective and objective way to evaluate a training program. The use of post testing data permits an accurate evaluation of many qualities. A coach will be able to see progress since the athlete previous tests or compare data with a previous group of players of the same age, position, or experience. The particular test mode and outcome measures chosen must therefore be selected carefully to meet the objective of monitoring the effectiveness of player's physical preparation (Vescovi, J. D., & McGuigan, M. R. 2008).

Physical fitness characteristics of player in top sports depends on the players technical, tactical and physiological characteristics. These components are closely linked to each other. In sports such as soccer and rugby union, players perform different types of exercise ranging from standing still to maximal running with varying intensity. Therefore, Competitive naturally provides the best test for Athlete, but it is difficult to isolate the various components within the sport and get objective measures of sport performance without performance testing for all players. Fitness testing can provide relevant information about specific parts of a sport(Carling & Reilly, 2009).

Physical characteristics demanded of a given sport, to identify a relationship between individual performance capacities and demands of competition, to monitor progress during rehabilitation or determine whether an athlete is ready to compete and monitor his health status, to examine the development of performance from year to year, to enable future performance to be predicted, and to provide data for scientific research on the limitations of performance. Fitness tests results provide baseline scores on various measures of athlete ability, so that realistic goals can be set and degree of improvement quantified.

The following points should be considered when establishing aims for the athlete. The coach must be aware of the basic physical abilities required for performance at the competition (Marcone, 2017) level of the team and how can make training for this, the coach must have enough knowledge about exercise science to have a good idea of what a training program can achieve for each individual on the team and also designed for every time in season, the coach should encourage players to internalize the goals to promote the physical, mental, and emotional commitment necessary to work toward the goals, players should keep one or more copies of the goals in places where they will be seen daily, and players should make their goals known to their training partners, so they can work together and motivate each other to achieve their goals Overall, physical fitness in children increases with increasing age. age-related improvement in physical fitness is mainly influenced by growth and maturation that refer to the biological context of human development(Kelly, 2015)

#### **2.2.4. Criteria of fitness testing**

There is a need for a review of quality criteria, and the feasibility of physical fitness characteristic's tests in field team sports(Behm, D 2018) Demonstrated that the fitness testing

procedure must be objective (consistency of results), reliable (consistency of reproduction) and valid (testing what it purports to test). These three characteristics are the key factors in evaluating test quality and must be present for the test to be beneficial(Kaufman A 2015)

### **2.3. Speed**

Running speed is not only an athletic event itself, but it is an important factor in almost all court and field games it can result the difference in whether a performer is able to gain a benefit of athlete. Man's existence and success based upon his physical fitness. Still, now, physical fitness really imply more than the ability to do a work with many efforts. Physical fitness affect one's life's actions not only the physical well-being and mental success but also the personal and social change.(Singh 1986)reported that sport is spirited in nature and every sportsman strives to better the earlier records and records are broken faster nowadays. The very character of sport requires positive amount of skill and physical fitness. It has been unpaid to the growing change in the competitive attitude of sports that a close connection has developed among sports scientist, team physician, athletic trainers, coaches and athletes to investigate modern systematic method in terms of choice of athletes. The performance of a sportsman in any sport or event also based on muscular strength, agility, power, speed and cardiovascular endurance. Beside with these physical variables, physiological and psychological components also play a significant role in the implementation of the performance. The Best suitable activity and new training methods achieve excellence.

An effort, to improve high accomplishment in every sport that occupied by an athlete, is important. One of the element or issue which is imperative to reach an achievement in sport is the physical condition. In some studies also said that to achieve is determined by four factors of the exercise of physical, technical, tactics preparation and mental preparation. The main purpose of physical preparation in training is to improve the useful potential of athletes and expand the bio sudden ability to the maximum standards.

Sprint performance is an important factor for many athletic activities and often can define sporting success (McGuigan M 2008). However, sprint performance is not solely important for track and field event outcomes (Sims, 2017)

The movement can also be explained as a ballistic movement that entails a sequence of running strides which propel the body forward with the greatest possible level of velocity or acceleration over certain distance (Sanjeevi & Gopinath, 2011).

The speed or velocity of an athlete is determined by vertical forces which are produced by the stride frequency and the stride length. Stride length is determined by the athlete's physique and is influenced by the mobility, strength, and power of the athlete. Stride frequency is determined by the athlete's running technique, mechanics, and coordination which can be influenced more by training than the stride length. Both these two attributes alongside the athlete's muscle fiber type and an efficient bioenergetics system makes up the athlete's ability to be a successful sprinter (Gill et al., 2010)

Speed is the rate of motion, or the rate of a change of position. It is expressed as a distance moved ( $d$ ) per unit of time ( $t$ ). Thus,  $s=d/t$ . This definition is not enough to describe the complex concept of speed. In the context of competition (Bompa, T., & Claro, F. 2015) defined speed as the capacity to move quickly as fast as possible in the field according to the game conditions and placement of the opposing players, and described that the term of speed includes three element components: reaction time, stride frequency per second and the speed to cover a given distance. Thus, the ability to be quick and react is important elements of speed that are needed for every player in the game (Radwan, S. G. (2014).

There are many references that defined the concept of speed from different view/points. In many cases, the term of speed in references has been defined as the ability to sprint. In context of athletics. Defined speed as the rate of performance of an activity, which can refer to any movement or action and especially for sprinter. cyclic and cyclic could be described as forms of speed, which are characteristic of many of field team sports such as soccer and rugby union, but this description isn't enough as a clear definition of both States that speed is basically how fast the participants can move partial their body or the whole of their 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 (Sheppard, J. M., & Young, W. B. 2006).

To measure the speed capacity of the student through the distances of 50 meters run two stop watches, two instructors with score card and pen should be needed. This test was administered by two subjects at a time both subjects took position behind the starting line. The starter used the commands ready go each runner was assigned to a separate time keeper. The time keeper recorded time at the finishing line. The scores were recorded time taken by the subjects to cross finishing line from the starting line time was recorded nearest to the one 10th of a (Sanjay Kumar 2014)

Speed and agility are necessary abilities, which can affect performance in a variety of sports. These abilities are related and depend on the athlete muscular strength. Integrating speed and agility training into the training plan and changing specific training variables can optimize sport performance capacity. Therefore, understanding factors and variables, which affect speed and agility enables the coaches to develop sport specific training plans and programs that maximize sport performance (Bompa, T. O., & Buzzichelli, C. (2018)

There is a need for a review of quality criteria, and the feasibility of physical fitness characteristic's tests in field team sports (Behm, D 2008). Demonstrated that the fitness testing procedure must be objective (consistency of results), reliable (consistency of reproduction) and valid (testing what it purports to test). These three characteristics are the key factors in evaluating test quality and must be present for the test to be beneficial (Kaufman A, 2015).

Little & Williams, (2005), for this propose, several studies have investigated the relationship between muscle power and sprinting abilities and agility for both skills.

According to (McFarland et al. 2016) the 30 m was strongly related to vertical jump performance in female athletes. However, a slightly stronger correlation was found between CMJ and both the 10 and 30 m in male soccer players. The correlation magnitude between S10m-S20m ( $r=0.83$ ), SJ-CMJ ( $r=0.86$ ), and ZZT-Acyclic Sprint ( $r=0.79$ ) were found to be very large. It was reported in another study that the correlation magnitudes between the change of direction ability, sprint speed, and jumping performance in nonprofessional soccer players were between .09 and .69. According to a many of studies, jumping and sprint ability in two large groups of male soccer players continued to improve until around 16–17 years of age. (Vescovi et al. 2009) reported that the 18–21-year-old set did better than the 14–17-year-old group in sprint speed on the

second and fourth 9.1m splits and 36.6m sprint speed as well as performance on the Illinois agility test.

### **2.3.1 How do we develop Speed?**

The method of sprinting must be rehearsed by the side of slow speeds and then transferred to runs next to maximum speed. The motivation, excitation and accurate firing order of the motor units, collected of a motor nerve (Neuron) and the group of muscles that it provisions, makes it likely for high regularity actions to occur. The total process is not very clear although the complex coordination and timing of the speed units and muscles most surely must be rehearsed at high speeds to insert the correct patterns. Elasticity/flexibility and a correct warm up were influence stride length and rate/frequency. Pace length can be improved by on the increase muscular strength, power, strength endurance and running technique. The development of speed is extremely specific and to accomplish it we should ensure that:

Flexibility is developed and maintained

Strength and/speed rapidity are developed in corresponding

Skillfulness development (method) is pre-learned, rehearsed and perfected prior to it is done at high speed levels

Speed preparation is performed by means of high rate for short intervals. These were in the end carry into play the correct neuromuscular pathways and energy sources useMackenzie, B. (1997).

### **2.3.2 When should speed work be conducted?**

It is important to keep in mind that the improvement of running speed is a multipart process that is controlled by the intelligence and nervous system. In sort for a runner to go more rapidly, the leg muscles of course have to agreement more speedily, nevertheless the brain and nervous systems have to be trained to have power over these faster activities competently. If you preserve some form of speed exercise the whole time in the year, your muscles and nervous system do not lose the feel of moving fast and the brain were not have to re-learn the appropriate control patterns at a in a while date. In the training week, speed work should be carrying out after a period of rest or simple training. In a training time, speed exertion should be conducted after the warm up and any other training should be of a low intensity Van Tulder,. (2006).

### **2.3.3 Reaction Speed Drill**

The athletes begin in a multiplicity of diverse positions lying face down, lying on their backs, in a push up position or sit up position, kneeling or seated. The coach standing some 30 meters or 35 meters from the group then gives a gesture for everyone to jump up and run towards him/her at to some extent faster than race pace. Go over using different starting positions and with the coach standing position in different spaces so that the athletes have to transform directions quickly once they start on to run. Speed reaction drills can also be conducted at the same time as controlling an item with an apply Podsakoff, N. P. (2003).

### **2.3.4 Acceleration Training**

Training and their consequence on sprint speeding up and they concluded that training with a weighted sledge were facilitate improve the athlete's acceleration segment. The session used in the investigate was 4 x 20m and 4 x 50m maximal effort runs (Petraikos, G. 2016)

Lockie et al. (2003) examine the effects of different loadings and concluded that when using a sledge a light Weight of approx. 10-15% of body weight should be used so that the dynamics of the acceleration method are not negatively exaggerated. Starts above 10-20 meters performed on a slight bring round of approximately five degrees have an vital breaking in effect on the calf, thigh and hip muscles (they have to employment harder for the reason that of the dispose to make progress) that was improve sprint acceleration (Spinks, C 2007)

### **2.3.5 Principles of speed improvement**

Mackenzie, B. (1997) general principles for improved speed are as follows:

Decide a rational goal for your event, and then effort on running at velocities which are in fact more rapidly than your goal over short work intervals

Train at goal pace in order to improve your neuromuscular skill, self-belief and resistance at your wanted speed

At primary, make use of long recovery, although as you obtain fitter and more rapidly shorten the recovery

Periods between work intervals to construct your preparation more specific and practical to racing.

Also move on to longer work intervals, as you are talented effort on your aerobic ability and lactate threshold, perform some simple pace runs to burn calories and permit recovery from the



speed sessions Work on your mobility to build up a scope of progress (range of movement at your hips were result speed) and aid in the avoidance of damage (Mackenzie, B.(1997)

## **2.4 Agility**

Agility is the skill to change the direction of body or its parts quickly which is dependent on power, response time, speed of movement and powerfully built coordination. Rapid start and stops and quick changes in direction are basic for good performance in athletics. Agility is an important quality in a lot of sports that are played on the field. In badminton, agility demonstrated the ability to move with quick footwork and precise. Linear action such as acceleration and velocity can be influenced by changing the movement mechanism of the arms or legs. Illinois Agility test is a commonly used test of agility in sports.

Agility is the ability to move and change direction and position of the body quickly and effectively while under control. The field and court sports mostly engage some directly sprint, but these sports more often involve frequent short sprinting with changes of way. In field an athlete's ability to sprint frequently and change direction even as sprinting has a major effect on sport performance (Sheppard & Young, 2006). According to Sheppard & Young (2006) describe agility as 'a fast whole body movement with change of speed or way in response to a stimulus'. As agility involves reacting to a stimulus, agility is a skill that utilizes the information-processing model. Previous to athletes can perform a movement, they need to find relevant environmental in order and process it in relation to earlier knowledge. After the athlete has processed the information, they can implement the correct movement In their study, (Gabbett & Abernathy 2013.) Showed that higher-level athletes were better at anticipating interest group than lower-level athletes. Higher-level athlete also prepared a greater numeral of correct decisions than lower-level athlete do. They argued that this diversity was due the skill of higher-level rugby players to acknowledged rugby specific cues better compared to lower-level rugby players. This finding demonstrates the importance of developing sport-specific experiences, in order to improve sport specific information processing (Gabbett & Abernathy 2013.)

Illinois Agility Test (IAT) and the agility T-test are 2 of the most effective tests to measure agility, in that order. It is suggested that winning CODS is influenced by various physical and technical attributes, including straight sprinting speed/acceleration, eccentric and concentric strength and power and reactive strength (Young et al., 2002)

### **2.4.1 Principles of agility training**

The aim of any training program is to improve the performance of agility, it is important that the training program involves some feature of methodological, physical, and cognitive factors of agility (Young & Farrow 2006). According to the current research has focused on the assessment of skill related physical fitness components and also agility is one of the assessment.

There have been four major interventions used to improve agility. These include

a), Speed, agility, and rapidity training; b) strength training; c) plyometric training; and d) small sided games (SSG) and evasion drills. Commonly speed, agility and quickness training is used to improve the technical aspect of agility, whereas plyometric and strength training is aimed at the physical aspect (Milanović et al. 2014)

## **2.5 Power**

Power is essential for allowing the sprinter to produce as much force as possible to accelerate forward. Required specifically in the arms and legs to act as the driving strength in the race. The more power the athlete has, the more driving force is produced during the race to win. Many sprinters have extremely good levels of muscular strength to compliment levels of power. The vertical jump test can be done with a piece of chalk and a wall or the Vertical Jump System the vertical jump test is considered a measure of explosive anaerobic power. When athlete start, stands with equal weight on both limbs while reaching as high as achievable with a single arm. In addition, athletic performance coaches are responsible for the improvement of these movements. Speed, agility, and power are significant components of sport performance (Bompa, 1999)

### **2.5.1 Main training methods to improve vertical jump performance**

Vertical jump can be developed plyometric training, weight training can be improved (Gehri DJ, 1998) The foundation for the use of these methods to improve vertical jump test is determined by the close connection experimental between the highest dynamic force of the lesser extremity and the utmost elevation achieve during vertical jumping (Blackburn J 1998) Subjects with superior isometric force and/or improved rate of force progress jump the time accessible to produce nervousness is rather short (in wide-ranging less than 0.4 s), (Bobbert MF 1986) considerably less than necessary to reach the maximal isometric force. The strike the maximum top force achieves all through the stretch shortening cycle may be enhanced by

increasing the time accessible for muscle reduction.(Svantesson *et al.*1994) showed that the height of force developed through a concentric muscle contraction is improved by a previous eccentric contraction, which allows for storage space of stretch energy other than also by an earlier isometric short form which does not allow for a momentous buildup of elastic energy. But, the extent of potentiating was larger with eccentric than with isometric earlier act, despite of movement speed. The study showed that the major cause for better concentric torque values after a preceding muscle achievement is that time is adequate for maximal muscle tension development.

## **2.6 Empirical review of the study**

Pal & Pradhan, (2018)Analysis of AAHPERD youth fitness test components between rural and urban sportsmen of Vidyasagar University in West Bengal in India The outcome of the study indicated that there were significant differences in arms and shoulders strength, speed, explosive legs strength, agility and cardiovascular endurance between rural and urban rural sportsmen of Vidyasagar University, where rural sportsmen were found superior to urban sportsmen. With reference to arms and shoulders strength component rural sportsmen of Vidyasagar University were much stronger than urban sportsmen.

Khan *et al.*, (2015)an investigation of physical fitness level of yem special woreda male youth football project in Ethiopia. The study shows that current physical fitness levels of male youth football project players are mostly at average and above on strength and flexibility, and those 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.

Gezachew,*etal.*(2016)Research conducted on assessment of some selected physical fitness components of Jimma University sport science students as compared with the international norms. The study shows that Male sport science students' are fulfilling the international norms in most physical fitness tests. Female sport science students' were not agreeable the international norms in most physical fitness tests.

Spasic,*et al.*2015)Research conducted in India on Comparison of selected physical fitness variables of school national level baseball and softball players Results revealed that there was significant difference in speed, power, agility and strength of boys and girls. The general

tendency is superiority of boys in speed, agility, leg explosive strength, abdominal muscular strength endurance, and basic endurance.

Young et al., (2008a) the Use of Sprint Tests for Assessment of Speed Qualities of Elite Australian. Data were analyzed from two Australian Football Leagues (AFL) clubs. The first club (n = 35) conducted a 40-m sprint test and record split times at 10m and 20 m. The second club (n = 30) conducted on the 30-m sprint test and recorded break at 10 m and 20 m. The correlations between 10-m time and times to 30 m and 40 m decrease, however, still shaped common variances of 79% and 66% respectively. However when the “flying” times (20–40 m and 20–30 m) were linked to 10-m time, the common variances decreased significantly to 25% and 42% in that order, indicating uniqueness (Talpey, Young, Twomey, & Doyle, 2014) It was concluded that 10-m time is a good reflection of acceleration capabilities and either 20 to 40 m in a 40-m sprint test or 20 to 30 m in a 30-m sprint test can be used to estimate maximum speed capabilities. It was suggested that sprint tests over 30 m or 40 m can be conducted indoors to provide useful information about independent speed qualities in athletes.

(Young et al., 2008b) Research conducted in Turkey a Modified T-Test for Football Referees to Test Agility, Quickness and Sprint Performances. 74 male football referees in Ankara (Turkey) contribute in this study (Muniroglu & Subak, 2018). All of participating referees are active, regularly participating in trainings and regularly refereeing in matches. All referees have signed the approval forms. Mean age of the participant referees is  $25, 84 \pm 3, 06$ .

All referees participated in all of 3 tests (10 meters, 30 meters and T-Test). Our results showed that 10 meters, 30 meters and T-Test results have a significant relation between each other. Correlation analyzes revealed that the referees who have greater scores in 10 meters test have also greater scores in 30 meters and in T-Test. Similarly, the referees who have greater scores in 30 meters test have also greater scores in T-Test. These results showed that, T-Test scores will be useable to determine 10 meters and 30 meters sprint level of the referees and additionally, T-Test can give information about levels of other skills as agility, quickness and changing direction abilities (Muniroglu & Subak, 2018)

Singh, (2018) in India Evaluation of speed and power among school level male cricket players. Forty five (N=45) male cricketers representing their district, state and national at school level in

a competition from the year 2014 to 2017. The age group of 16-18 years was selected as subjects, who were included in playing eleven of their teams. The subjects were purposively assigned into three groups: Group-A: District (N1=15); Group-B: State (N2=15) and Group-C: National (N3=15). All the subjects were informed about the objective and protocol of the study as he compares and found significance differences in respect to speed, agility and strength endurance.

They found significant differences among district, state and national level cricket players on the sub variables; muscular strength, muscular power. Study also gets support from study as they found that volleyball players have greater leg explosive power than handball players(C. Singh, 2018)Due to the fact that physical fitness of athlete/student in early childhood and in adulthood is important, a large numbers of studies about physical fitness of athlete/students around the world have been done. A look at the research done, has shown that there were limited information in assess the skill related physical fitness in Africa, Ethiopia, Oromia, and in Oromia athletics clubs. Also in the accomplished researcher inconsistency in the results of physical fitness of athletes/students of different age groups and different geographic region were observed. Hence, the researchers was going to assess the skill related physical fitness of in case of some selected Oromia athletics clubs are aligned with international standard or not.

The goal in training to improve the vertical jump is to maximize the whole body's vertical velocity at the instant of takeoff. To achieve this goal, the coaches must go into training more and more in agility, velocity, and acceleration for volleyball players who need to produce greater force on the ground per unit of time or spend less time on the ground producing force before the takeoff. Vertical jump and agility, acceleration, sprint-development program can be designed with minimal cost and equipment. The results of this investigation show that coaches can utilize agility, acceleration and sprint training for vertical jump development(Sahin, H. M. 2014)

## **2.7 Conceptual framework Study Variables of the study**

Variables need to be understood clearly in order to measure any concept. Dependent and Independent variables If one variable depends upon other variable or it in consequence of other variable it is termed as the dependent variable that is antecedent to the dependent variable is termed as independent variable. In this study athlete performance is the dependent variable. The

dependent variable can be measured with the help of independent variable. The independent variables in this study are speed, agility and power of the athlete within international standard norms. “The independent variables that are not related to the purpose of the study, but may affect the dependent variable are termed as extraneous variable(Meijers, J. 2006). Such variables may not cause any change directly to the dependent variable but if measured can give some effect on the dependent variable.

**Table 1.** Conceptual frameworks Study

Dependent Variables				
Athlete performance				
Independent variables				
No	Variables	Methods/Tests	Equipment	Unit of Measurement
1	Speed	35 meter sprint run	Measuring tape, Stopwatch ,Cones and Assistant	In second
2	Power	Vertical jump	Wall, Measuring tape,chalk,and assistant	In cm
3	Agility	Illinois agility run test	8 cones, Stopwatch and Assistant	In second

(Chavan, P. B., & Trainer, S. 2011) in fitness comparisons of Indian students concluded that the rural students had more speed, endurance, cardio- respiratory and explosive power than urban students. (Kaufman, *et.a.*201)found that the rural students in cardio- respiratory fitness and body composition wore better than urban students.Saha,*et al.* (2012) concluded that speed and body fat percentage of urban rural students but in sit-up, traction and flexibility rural school students were better than urban students. (Gontarev, *et al.* 2014) concluded that females in urban schools get better results in the sit-up and the flexibility. School male students get better results on tests of agility, speed, and strength.In the fitness and level of activities in rural and urban students came to the conclusion that rural students in flexibility and cardio-respiratory endurance were better than urban students. Hang change *et al* 2013) concluded that males have the best physical fitness in comparison to females except for flexibility. Rural students achieved the best performance in the vertical jump, sit-up and traction that their urban counterparts.

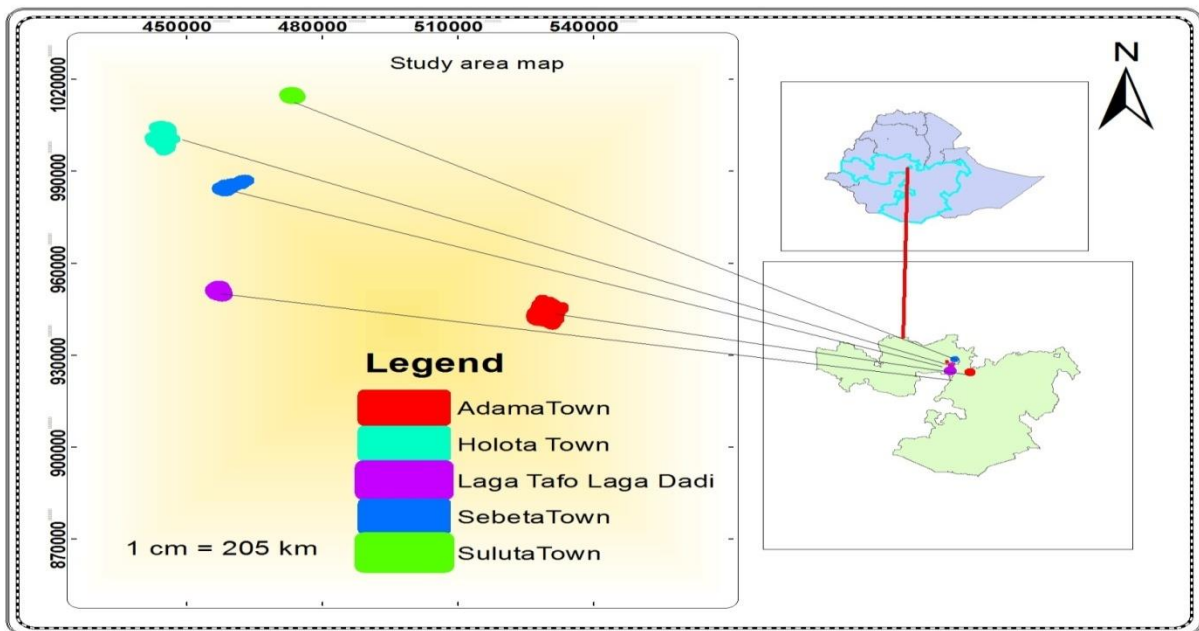
## CHAPTER THREE

### 3. RESEARCH METHODOLOGY

#### 3.1 Research Design

The researcher was used cross-sectional design. Participant of the study was test at once time to assess the some selected skill related physical fitness components. The research method which also best suited for the investigation was quantitative and qualitative research methods. Quantitative research approaches was used gathering facts which can be captured in a numerical format (Williams, 1968)

#### 3.2 Study Area



Source; Ethio Gis

The study was conducted in Oromia regional state of Ethiopia. The research conducted in different areas such as Adam Oromia athletics clubs, Sululta, Holota, Sebeta, Bosona Oromia and Laga tafo Oromia athletics clubs. Adama forms a Special Zone of Oromia and is surrounded by East shewa zone. It is located at  $8^{\circ} 54' N$   $39^{\circ}.27' E$  at an elevation of 1712 meters, 99 km southeast of Addis Ababa. Holota one of the towns located in the Oromia special zone surrounding finfinne of the region it has a latitude and longitude of  $9^{\circ} 3' N$   $38^{\circ} 30' E$  and an

altitude of 2391 meters above sea level. Sebeta is one of the towns located in the Oromia special zone surrounding finfinne of the region. This town has altitude and longitude of 8° 54' 40" N38° 37' 17" E and an elevation of 2,356 meters (7,730 feet) above sea level. This study was conducted from November 2011 E.C June 2011 E.C.

### 3.3 Population of the study

The populations of the study were all Oromia short distance runners found in Oromia athletics clubs. The populations of the study were 138 athletes' short distance runners of Oromia athletic clubs.

### 3.4 Target Population

**Table 2. Target population**

Total population	No	Target population	No	Total	Sampling technique
138 athletes and coaches	1	Laga tafo athletics clubs	16	78	Simple Random Sampling
	2	Adama, athletics clubs	17		
	3	Sebeta athletics clubs	15		
	4	Bosona Oromia athletics clubs	14		
	5	Sululta athletics clubs	8		
	6	Holota athletics clubs	8		

The target populations of the study were six Oromia athletics clubs short distance runners and coaches. According to these 78 athletes from different six Oromia athletics clubs (Laga tafo, Adama, Bosona Oromia Sululta, Sebeta and Holota) was selected.

### 3.5 Subject of the study

**Table 3. Subject of the study**

No	Target population	No	Subject of the study	Sampling technique
1	Laga tafo athletics clubs	16	13	Purposive Sampling
2	Adama, athletics clubs	17	10	
3	Sebeta athletics clubs	15	12	
4	Bosona Oromia athletics clubs	14	10	
5	Sululta athletics clubs	8	7	
6	Holota athletics clubs	8	5	

The participants of the study were some selected Oromia Athletics clubs. Subject of the study were 57 athletes from six Oromia athletics clubs. Since the study was estimated to examine the



above mentioned topics, it assumed that it was quite suitable to get relevant data directly from 57(41.3%) athletes was participating in testing. The researcher was used cross-sectional design.

### 3.6 Sample and sampling technique

In this study both probability and non probability was used. In this study six athletics clubs are selected by using simple random sampling techniques because it gives equal and independent chance for all athletics clubs. 57 athlete were selected by using purposive sampling technique from 78 athletes who fulfill the criteria of the study

**Table 4. Summary of sampling design**

Sample	Population	Sample size		Sampling technique
		No	%	
Athletes	138	57	41.3	Purposive sampling

#### **Inclusion criteria and exclusion criteria**

Inclusion criteria the study was included all athlete aged between 16-19 years of both sex from selected Oromia athletics of short distance runners. Exclusion criteria of this study were not the subjects who have any recent physical injury and medical condition not participated in this study.

The researcher was assessed using two questions in the consent form to be completed by the coach which are as follows:

1. Does your athlete have a diagnosed medical condition that prevents them from participating in intense exercise?
2. Has a doctor ever told you that it would be unsafe for your athlete to do intense exercise?

### 3.7 Source of data

The study was using both primary and second primary data based on the nature of problem. The primary data was from skill related physical fitness test of athlete's performance. Data implies a set of numerical information usually obtained by measurement or counting(Evidence, n.d.) And the secondary data was collect from different secondary sources such as different documents, like the international norms of physical fitness tests.

### **3.8 Data Collecting Instruments**

Based on the nature of the study, different data collecting instruments was been used to conduct the research. The main instruments of data collection in due investigation of the study was valid predetermined fitness tests. The main instruments of data collection were used 35-meter sprint test, vertical jump power test, the Illinois agility test. The test score sheet was prepared to record test score during administering the tests.

### **3.9 Procedures of Data Collection**

Data collection procedures were preceded through the following steps. After taking ethical clearance approval from Jimma University the researcher was been progressed to the target area of the study. So that here it also talks into coaches, and athletes of each club through detail and brief description of the objective of the study. These make strong agreement and to enhance their cooperativeness. Earlier to the test was administration the essential information was given to the subject including material, test types, measuring instrument and administration of test. Then after the researcher was directly skip to select sample participant considering injury and other health problem, therefore, by selecting test groups, the test was be employed one by one. The necessary work was complete before starting the test.

### **3.10 Methods of Data Analysis**

Descriptive statistical analysis was used to analyze the data of this study. In this descriptive statistical analysis percentage, mean and standard deviation was used to analyze the demographic information of participant and to measure the current performance of skill related physical fitness components of sprinters of Oromia athletics clubs and Independent sample t-test was used to analyze compare the significant difference in the mean of speed, power and agility of Oromia athletics clubs of sprinters. And Percentage to analyze classifies the level of skill related physical fitness components of sprinters Oromia athletics clubs with international norms. The data was analyzed using computerized statistical package software (SPSS version 20).

### **3.11 Ethical consideration**

Ethical clearance and permission obtained from ethical committee of Jimma university before commencing data collection legal permission with better support from Jimma

university and handed over to Jimma university college of natural science with a copy of this proposal objective of the study has clarified to Oromia athletics clubs then to the respondents and permission obtained from each format by asking permission and privacy. Study participant was consulted about the significance of the study and written on paper approval was obtained.

## CHAPTER FOUR

### 4. RESULT AND DOISCUSSION

This chapter has two parts; the first part deals with the characteristics of the respondents; and the second part present the analysis and interpretation of the main data. The purpose of the study was to assessing sprinters skill related physical fitness components the case of Oromia athletics of some selected Oromia athletics clubs of short distance runners. Quantitative data was gathered by using skill related physical fitness test.

#### 4.1. Demographic Characteristics of Respondents

**Table 5. Sex of the respondents**

Sex	Mean	Standard deviation
Male	4.87	2.685
Female	4.64	2.899

**Figure.1** indicates that mean and standard deviation ( $4.87 \pm 2.685$ ) values for male of sprinters of Oromia athletics clubs and  $4.77 \pm 2.899$  values for female of sprinters of Oromia athletics. As shown in the above table, the selected respondents 56.1% were male and were 43.9% were female. This implies that there were athlete's male-female ratio gaps were relatively small.

**Table 6. Age of the respondents**

	16 years old	17 years old	18 years old	19years old
Mean	6.25	4.62	4.95	4.43
Std	2.5	2.987	2.571	2.908

From the above illustrated table mean  $\pm$  standard deviation values ( $6.25 \pm 2.500$ ) values for age of respondents 16,  $4.62 \pm 2.987$  values for age of respondents 17, and  $4.95 \pm 2.571$  values for age of respondents 18, and  $4.43 \pm 2.908$  values for age of respondent's 19 years. This implies that there were most of the athletes were 19 years and some sprinters were 16 years old.

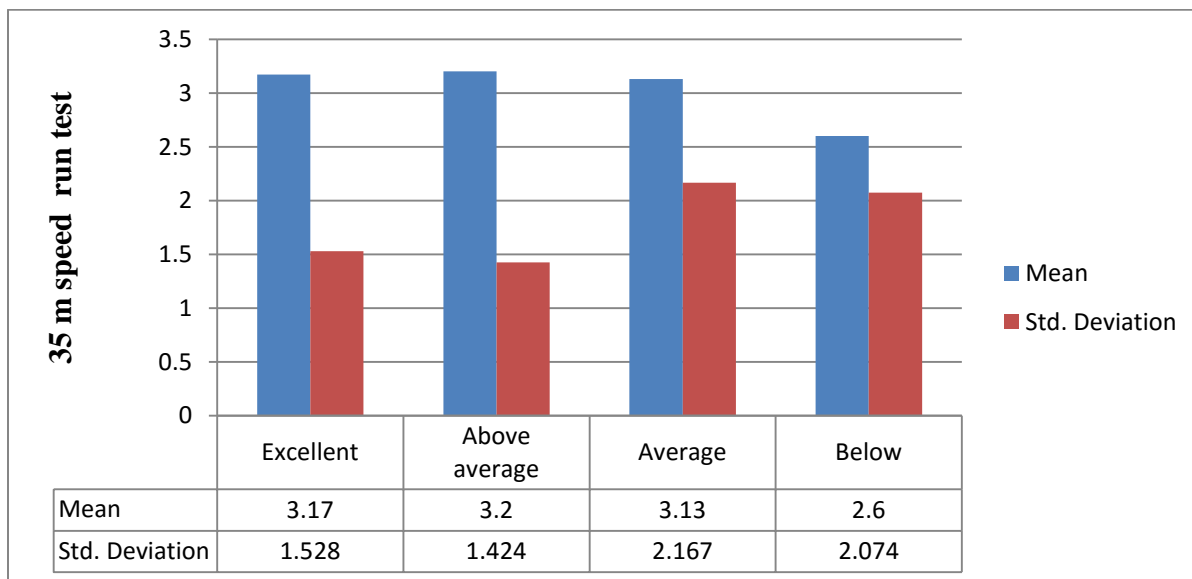
**Table 7. Normative data for 35 meter speed sprint test for both male and female the age of (16-19)**

Rating	Male	Female
Excellent	< 4.80	< 5.30
Good	4.80 - 5.09	5.30 - 5.59
Average	5.10 - 5.29	5.60 - 5.89
Fair	5.30 - 5.60	5.90 - 6.20
Poor	> 5.60	> 6.20

**SOURCE ; ARKINSTALL, M et al. (2010)**

4.2 Does the performance of Oromia athletics clubs related to skill related physical fitness are in line with international standard norm?

**Figure 2.Compression of 35 meter sprint run test with athlete normative data.**



From the above illustrated graph mean  $\pm$  standard deviation values for speed variable for 35 meter sprint test of sprinters Oromia athletics clubs were recorded as  $3.05 \pm 1.608$ . And establishing a comparison between the results obtained from 35 meter sprint test of sprinters of Oromia athletics clubs with normative data using the mean and standard deviation, the results shows that (M=3.17, SD=1.528) are in scale of excellent (M=3.20, SD=1.424) are in scale of

above average, (M=3.13SD=2.167) are in scale of average and (M=2.60, SD=2.074) are in scale of below average.

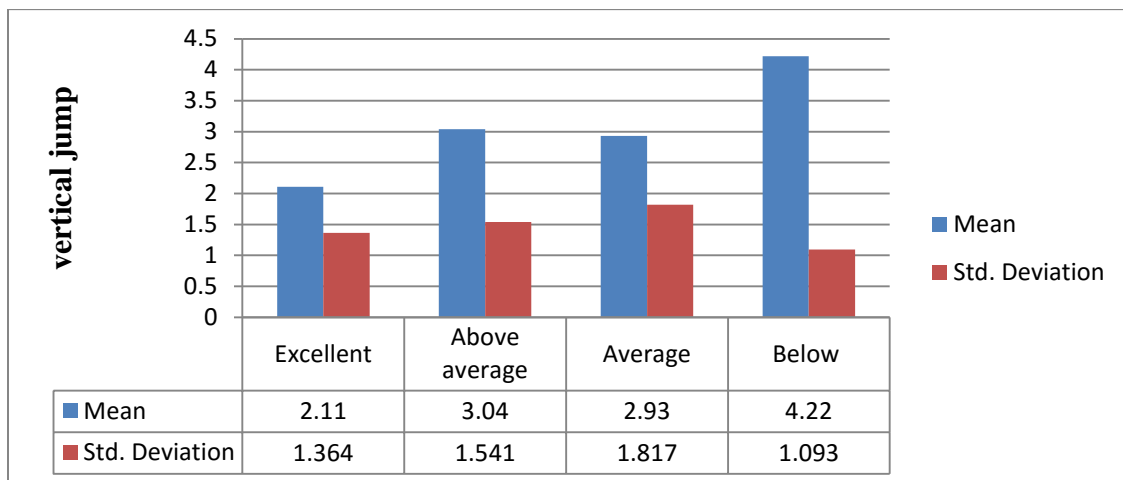
The results revealed the current level of the sprinters on 35 meter sprint test are most of the athletes were found above average and excellent and also some athletes were found below average. In generally we can understand from the results Oromia athletics clubs most of the athletes were developed their speed skill related physical fitness and some athletes were not.

**Table 8. Normative data for Vertical jump (sergeant jump) for both male and female the age of (16-19)**

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	<30cm

SOURCE: Davis B. et al; (2000)

**Figure 3. Compression of vertical jump test with athlete normative data**



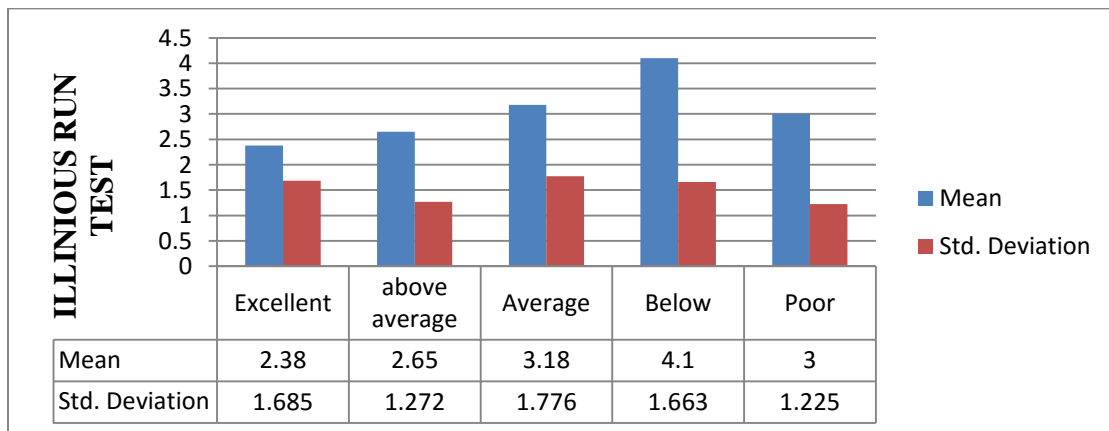
From the above illustrated graph mean  $\pm$  standard deviation values for power variable for vertical jump test of sprinters Oromia athletics clubs were recorded as  $3.05 \pm 1.608$ . And establishing a comparison between the results obtained vertical jump test of sprinters of Oromia athletics clubs with normative data using the mean and standard deviation, the results shows that (M=2.11, SD=1.364) were in scale of excellent (M=3.04, SD=1.541) were in scale of above average, (M=2.93, SD=1.817) were in scale of average and (M=4.22, SD=1.093) are in scale of below average.

The results revealed the current level of the sprinters on vertical jump test are most of the athletes were found below average and above average and also some athletes are found excellent. In generally we can understand from the results Oromia athletics clubs they are not developed power from skill related physical fitness.

**Table 9. Normative data for Illinois agility run test for both male and female the age of (16-19)**

Gender	Excellent	Above average	Average	Below average	Poor
Male	<15.2 sec	15.2 - 16.1 sec	16.2 - 18.1 sec	18.2 - 19.3	>19.3 sec
Female	<17.0 sec	17.0 - 17.9 sec	18.0 - 21.7	21.8 - 23.0	>23.0

SOURCE ; DAVIS, B. et al. (2000)



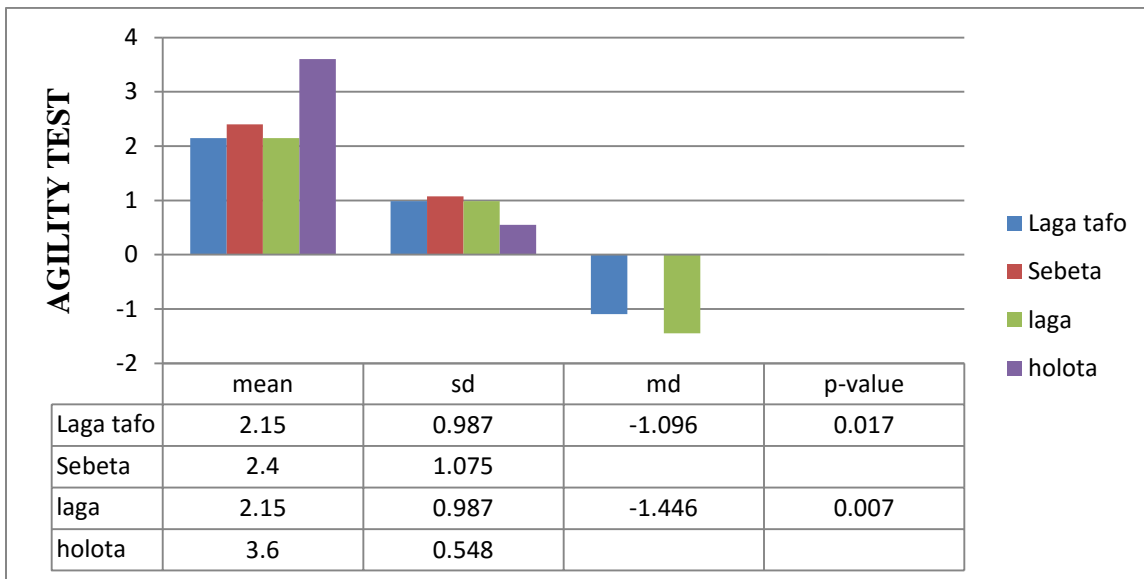
**Figure 4. Compression of Illinois agility run test with athlete normative data**

From the above illustrated mean  $\pm$  standard deviation values for agility variable for Illinois agility run test of sprinters Oromia athletics clubs were recorded as  $3.05 \pm 1.608$ . And establishing a comparison between the results obtained Illinois agility run test of sprinters of Oromia athletics clubs with normative data using the mean and standard deviation, the results shows that (M=2.38, SD=3.423) were in scale of excellent (M=2.65, SD=1.272), were in scale of above average, (M=3.18, SD=1.776) were in scale of average, (M=4.10, SD=1.663), were in scale of below average and (M=3.00, SD=1.225) were in the scale of poor.

The results exposed the current level of the sprinters on Illinois agility run test were, below the average, and some of the athletes were found excellent, when compare with standard norm. In generally we can understand from the results Oromia athletics clubs they were not developed agility from skill related physical fitness

**4.3. Is there significant mean difference values on agility skill related physical fitness of among Oromia athletics clubs?**

**Figure 5. Independent samples t-test on agility test among Oromia athletics clubs.**



**Figure 5. Independent samples t-test on agility test among Oromia athletics clubs.**

**\*Significant at  $p \leq 0.05$  level**

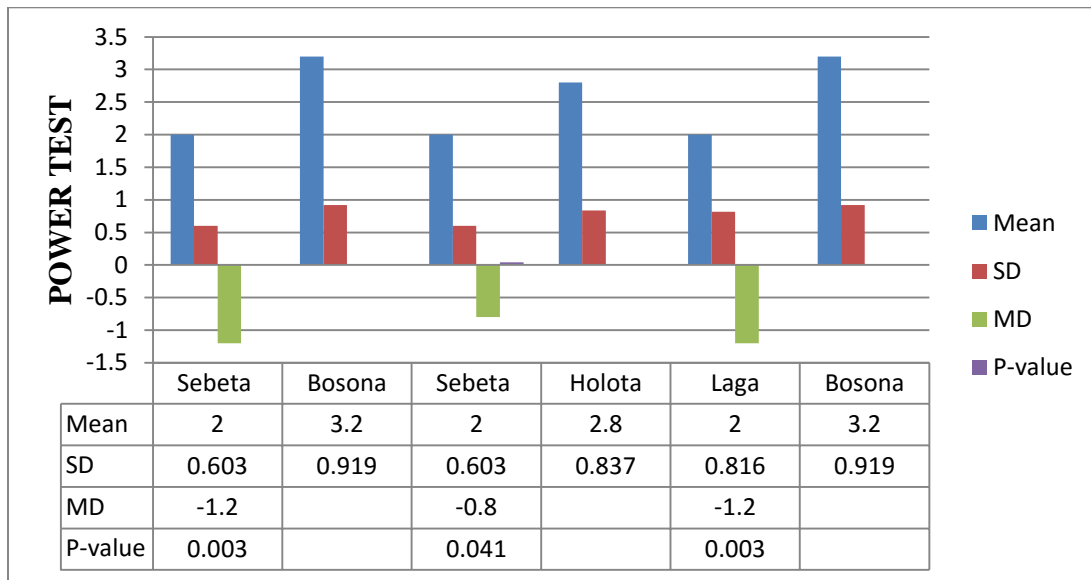
According to independent samples t-test was conducted to compare the agility test of Oromia athletics clubs between Laga tafo athletics and Sebeta athletics clubs. To compare the agility test of athletics clubs between Laga tafo athletics and Sebeta athletics clubs. Sebeta athletics clubs (M=2.40, SD= 1.075) scoring higher than Laga tafo athletics clubs (M= 2.15, SD=.987). The magnitude of the mean differences (MD = -1.096. The results show that there was significant mean difference has been observed in between Sebeta and Laga tafo clubs in agility at  $p < 0.05$ . This is implies that Laga tafo athletics clubs, develop their, agility than Sebeta

The above chart shows that, Holota athletics clubs (M=3.6, SD= 0.548) scoring higher than Laga tafo athletics clubs (M= 2.15, SD=.987). The magnitude of the mean differences (MD = -1.446.



The results show that there was significant mean difference has been observed in between Holota and Laga tafo clubs in agility at  $p < 0.05$ . As far as one can understand from this interpretation, Holota athletics clubs develop their, agility when we compare with some selected Oromia athletics clubs.

**Figure 6. Independent samples t-test on power test among Oromia athletics clubs**



**Figure 6. Independent samples t-test on power test among Oromia athletics clubs**

**\*Significant at  $p \leq 0.05$  level**

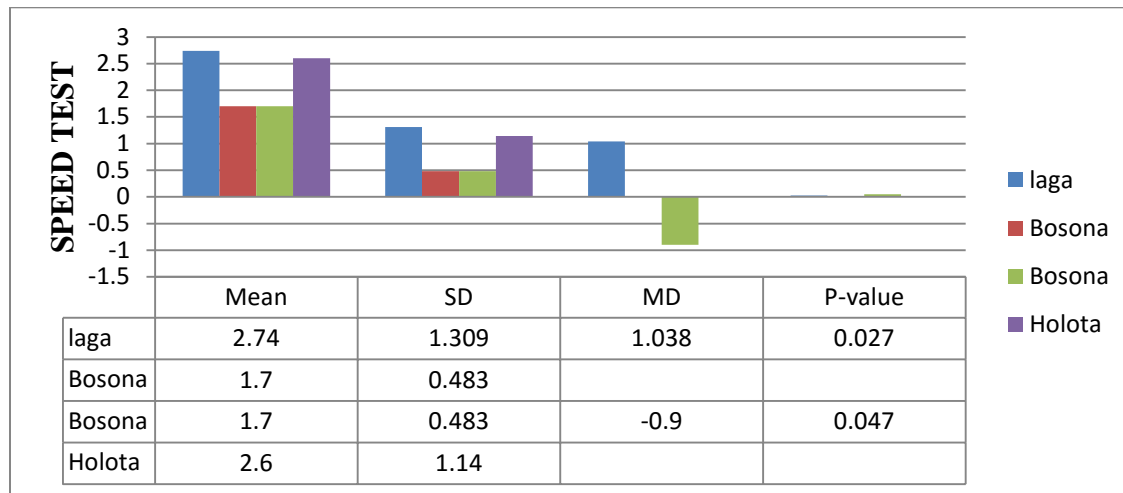
The above illustration indicate that, Bosona athletics clubs ( $M=3.20$ ,  $SD= .919$ ) scoring higher than Sebeta athletics clubs ( $M= 2.00$ ,  $SD=0.603$ ). The magnitude of the mean differences ( $MD = -1.2$ ). According to the results shows that there was significant mean difference has been observed in between Bosona and Sebeta clubs in power at  $p < 0.05$

An independent samples t-test was conducted to compare the power test of Oromia athletics clubs between Laga tafo athletics and Bosona athletics clubs. Bosona athletics clubs ( $M=3.20$ ,  $SD= .919$ ) scoring higher than Laga tafo athletics clubs ( $M= 2.00$ ,  $SD=.816$ ). The magnitude of the mean differences ( $MD = -1.200$ ). The results show that there was significant mean difference has been observed in between Bosona and Laga tafo clubs in power at  $p < 0.05$

From the result of Oromia athletics clubs Bosona Oromia athletics clubs showed a better mean difference than Laga tafo in power test, The results shows that there was significant mean

difference has been observed in between Bosona and Laga tafo clubs in power at  $p < 0.05$ . As far as one can understand from the above interpretation, Bosona athletics clubs develop their, power and speed than Laga tafo athletics clubs. As far as one can understand from this interpretation, Bosona athletics clubs develop their, power when we compare with some selected Oromia athletics clubs.

**Figure 7. Independent samples t-test on Speed test among Oromia athletics clubs**



**Figure 7. Independent samples t-test on Speed test among Oromia athletics clubs**

\*Significant at  $p \leq 0.05$  level

The above illustration indicate that, Laga Tafo athletics clubs ( $M=2.74$ ,  $SD= 1.309$ ) scoring higher than Bosona athletics clubs ( $M= 1.70$ ,  $SD=.483$ ). The scope of the mean differences ( $MD = 1.038$ ) The results shows that there was significant mean difference has been observed in between Bosona and Laga tafo clubs in speed at  $p < 0.05$  This is implies that Laga tafo athletics clubs, develop their, power than Bosona. An independent samples, t-test was conducted to compare the speed test of Oromia athletics clubs between Bosona athletics and Holota athletics clubs. Laga Tafo Holota athletics clubs ( $M=2.6$ ,  $SD= 1.14$ ) scoring higher than Bosona athletics clubs ( $M= 1.7$ ,  $SD=.483$ ). The scope of the mean differences ( $MD = -0.9$ ) The results shows that there was significant mean difference has been observed in between Bosona and Holota clubs in speed at  $p < 0.05$  This is implies that Laga tafo athletics clubs,

develop their, power than Bosona. As far as one can understand from this interpretation. Laga Tafo athletics clubs develop their, speed when we compare with some selected Oromia athletics clubs.

This implies that Laga Tafo Oromia athletics clubs is developed their speed skill related physical fitness when we compare with other Oromia athletics clubs and Bosona Oromia athletics clubs is the lowest in speed by this result. And the other results show that in power skill related physical fitness Bosona Oromia athletics clubs is the first clubs and the lowest clubs in power test are Laga Tafo athletics clubs According to this research results. This implies that Holota Oromia athletics clubs is developed their agility skill related physical fitness when we compare with other Oromia athletics clubs and Laga tafo, Oromia athletics clubs are the lowest in agility by this research result. These findings show that there is a most mean difference value's speed, power and agility of among Oromia athletics clubs.

**4.4. What is the level of skill related physical fitness components of sprinters Oromia athletics clubs with international norms?**

**Table 8 classifying sprinters of Oromia athletics clubs with standard norms?**

Variables	Rating	Frequency	Percent (%)
Speed test	Excellent	12	21.1
	Above average	31	54.3
	Average	9	15.7
	Below	5	8.8
Power test	Excellent	9	15.8
	Above average	25	43.9
	Average	14	24.6
	Below	9	15.8
Agility test	Excellent	8	14.0
	Above average	17	29.8
	Average	17	29.8
	Below	10	17.5
	Poor	5	8.8

The above table indicate that results show that when comparing to an international standard, the results obtained from 35 meter sprints test of sprinters of Oromia athletics clubs the results show that 21.1% are in scale of excellent, 54.3% were in scale of above average, 15.7% were in scale

of average and 8.8% are in scale of below average. This was found that when comparing the values of sprinters of Oromia athletics clubs with the reference value provided by the normative data, the current level of athlete on 35 meter sprint run test were above average when comparing with normative data.

And results obtained from vertical jump test of sprinters of Oromia athletics clubs with normative data using the percentage, the results shows that 15.78% are in scale of excellent, 43.85% were in scale of above average, 24.56% were in scale of average and 15.78% were in scale of below average. This was found that when comparing the values of sprinters of Oromia athletics clubs with the reference value provided by the normative data, the current level of athlete on vertical jump test were above average when comparing with normative data and also the results obtained from Illinois agility run test of sprinters of Oromia athletics clubs with normative data using the percentage, the results shows that 14% were in scale of excellent, 29.8% were in scale of above average, 29.8% were in scale of average, 17.5% were in scale of below average and 8.77% were in scale of poor. This was found that when comparing the values of sprinters of Oromia athletics clubs with the reference value provided by the normative data, the current level of athlete on Illinois agility run test were above average when comparing with normative data.

#### **4.5 Discussion**

Finding assessing sprinter's skill related physical fitness components the case of Oromia athletics of some selected Oromia athletics clubs of short distance runners, almost female and male respondents were equivalently treated in this study. Most of the athletes were 19 years and some sprinters were 16 years old. The result shows that when comparing the values of sprinters of Oromia athletics clubs obtained with the reference values provided by the normative data. The current level of the sprinters on a 35-meter sprint test, most of the athletes was above average and some athletes were below the average when compare with standard norms.

Similar to these findings (Sporiš, G et al., 2010)suggested that speed and agility were (two) than independent qualities, the agility can affect the sprinting performance which could lead us to the conclusion that these abilities are interlinked together and dependable on one another(Young et al., (1996)state that agility is often represented in the same context with speed.

The finding of this study revealed that when comparing the values of sprinters of Oromia athletics clubs obtained with the reference values provided by the normative data. The current level of the sprinters on vertical jump test, most of the athletes was above average when compare with the standard norms. The findings of this study is contrary with the studies(Bizuayehu et al., 2017)state that Forward players were better than other position players in agility, power and speed test.

The finding of this study assessing sprinters skill related physical fitness components the case of Oromia athletics of some selected Oromia athletics clubs of short distance runners, exposed that when comparing the values of sprinters of Oromia athletics clubs obtained with the reference values provided by the normative data. Current level of the sprinters on Illinois agility run test, most of the athletes were average and poor when compare with standard norm. The findings of this study were in agreement with the studies of players were found to be under excellent rank as per the agility T-test scale and their jumping ability resulted in average scale(Arkistall, 2010).

Based on the results of the findings the current physical fitness level of sprinters of Oromia athletics clubs were mostly at above average, average and excellent on speed, in contrary of this (Khan et al., 2015) they find out in their study that of male youth football project players below and poor on, speed and agility tests when comparing with the values obtained with the reference values provided by the normative data.

Contrary to this finding (Hirko and Samson, 2017)suggested that agility performance has been observed as excellent, while vertical jump performance has been found to be average,

The study of this results exposed that the current physical fitness level of sprinters of Oromia athletics clubs an above average and average on power when comparing with the values obtained with the referenced values provided by the normative data. However, the overall selected physical fitness variable's level of Oromia athletics clubs of sprinters was almost good on speed, but not good on agility and power.

Based on the results of the findings, it was concluded that the current physical fitness level of sprinters of Oromia athletics clubs are average and below average on agility, consistence of this study (Khan et al., 2015)they find out in their study that of male youth football project, players below and poor on agility tests when comparing with the values obtained with the reference values provided by the normative data.

The findings of this study consistence with (Gezachew, et al., 2015)they find out in their study that Male sport science students' is fulfilling the international norms in most physical fitness tests. Female sport science, students' was not fulfilling the international norms in most physical fitness tests. The results reported by (Milenko, S, 2016)stated that vertical jump abilities, straight sprinting speed and change of direction speed are distinct physical qualities. Therefore, training and testing these very important abilities for the performance of sprint athletes should highly specific In our thesis, the cynosure was sprinter's runner's vertical jump performance has been resulted in above average related.

Correspondingly, with this result obtained by(Hedrick, 2007) suggested that vertical jumping ability is related to power production, it is important to remember that the effect of speed on power is multiplicative. This means that the best gains in power was occurred when there are increase in both strength and speed.

The results of the study shows that there was significance mean difference among Oromia athletics clubs in speed, agility and power test, at  $p < 0.05$ , similar with (Gaurav A.2011) result An independent samples t-test revealed that individual games athletes had significantly higher muscular strength, agility, power, speed and cardiovascular endurance ( $p < 0.01$ ) than team games athletes .in case of power and speed of individual game and team games athletes mean value were 2.01 and 6.98 and 1.92 and 6.34 respectively. The results showed: that there was a significant effect of speed, agility and quickness training program in improving in speed, agility and acceleration(Azim,2018)

The findings of this research is consistence with (Gill,M 2010) the results showed significant differences in strength, endurance and speed components between rural and urban female students, where rural female students were found superior to their counterparts. Vertical jump, agility, acceleration and sprint tests measures are becoming increasingly important in the evaluation of performance for various sports (Sahin, H. M. 2014).

Young et al., (2002) suggested that winning CODS is influenced by various physical and technical attributes, including straight sprinting speed/acceleration, eccentric and concentric strength and power and reactive strength.

According to results obtained from independent samples t-test results show that, Sebeta athletics clubs (M=2.40, SD= 1.075) scoring higher than Laga tafo athletics clubs (M= 2.15, SD=.987). The magnitude of the mean differences (MD = -1.096). The results show that there was significant mean difference has been observed in between Sebeta and Laga tafo clubs in agility at  $p < 0.05$ . This implies that Laga tafo athletics clubs, develop their, agility than Sebeta. Bosona athletics clubs (M=3.20, SD= .919) scoring higher than Laga tafo athletics clubs (M= 2.00, SD=.816). The magnitude of the mean differences (MD = -1.200). The results show that there was significant mean difference has been observed in between Bosona and Laga tafo clubs in power at  $p < 0.05$

In addition independent samples, t-test was conducted to compare the speed test of Oromia athletics clubs between Bosona athletics and Holota athletics clubs. Laga Tafo Holota athletics clubs (M=2.6, SD= 1.14) scoring higher than Bosona athletics clubs (M= 1.7, SD=.483). The scope of the mean differences (MD = -0.9) the results shows that there was significant mean difference has been observed in between Bosona and Holota clubs in speed at  $p < 0.05$ . this results consistence with (Spasic, *et al.*2015) Research conducted in India on Comparison of selected physical fitness variables of school national level baseball and softball players Results revealed that there was significant difference in speed, power, agility and strength of boys and girls. The general tendency is superiority of boys in speed, agility, leg explosive strength, abdominal muscular strength endurance, and basic endurance.

## CHAPTER FIVE

### 5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

In this chapter summary of the major findings of the study are addressed, conclusions drawn and recommendations were prepared based on the finding of the study.

#### 5.1 SUMMARY

The purpose of the study was to assessing sprinter's skill related physical fitness components Oromia athletics of some selected Oromia athletics clubs of short distance runners. The researcher was used cross-sectional design. Subject of the study were 57 athletes from six Oromia athletics clubs. Since the study was estimated to examine the above mentioned topics, it assumed that it was quite suitable to get relevant data directly from 57(41.3%) athletes was participating in testing.

Based on the analyzed data the following major findings were obtained from the study:-

1. Does the performance of Oromia athletics clubs related to skill related physical fitness are in line with international standard norm?
2. Is there significant difference mean of speed, power and agility among Oromia athletics clubs of sprinters?
3. What is the level of skill related physical fitness components of sprinters Oromia athletics clubs with international norms?

Demographic characteristics of respondents show that was 56.1% of male.

The ages athletes are 19 years and some sprinters are 16 years old

According to this finding that the current level of the sprinters on 35 meter sprint test is most of the athletes were found above average and excellent and also some of the athletes were found below average.

The results revealed that the current level of the sprinters on vertical jump test are most of the athletes were found below average and above average and also a few of the athletes are found excellent.



The results exposed that the current level of the sprinters on Illinois agility run test were average, and a few athletes were found excellent, when compare with standard norm.

Marjory findings exposed that there was significant mean difference has been observed in between Sebeta and Laga tafo clubs in agility at  $p < 0.05$ .

According to the results obtained from vertical jump test of sprinters of Oromia athletics clubs with normative data using the percentage, the results show that, 43.85% are in scale of above average and 15.78% are in scale of below average.

In addition, the results obtained from Illinois agility run test of sprinters of Oromia athletics clubs with normative data using the percentage, the results show that, 29.8% are in scale of average, and 8.77% are in scale of poor.

Finally, main finding of this study reviled that 35 meter sprint test of sprinters of Oromia athletics clubs the results show that, 54.3% are in scale of above average and 8.8% are in scale of below average.

## 5.2 CONCLUSION

Based on the result of the study the researcher obtained and analyzed the following basic points were forwarded as conclusion:

After the results of the findings, researcher was concluded that the current physical fitness level of sprinters of Oromia athletics clubs was mostly above average on speed and on power and average on agility. When comparing with the values obtained with the referenced values provided by the normative data.

The results show that there was significant mean difference has been observed in between Bosona and Laga tafo clubs in speed,  $p=0.02$ , between Bosona and Holota clubs in speed  $p=0.047$ , between Bosona and Sebeta clubs in power  $p=0.003$ , between Sebeta and Laga tafo clubs in agility  $p=0.017$ , and between Holota and Laga tafo clubs in agility at  $p=0.007$

The results obtained from skill related physical fitness test of sprinters of Oromia athletics clubs with normative data show that, 43.85% are in scale of above average, 29.8% are in scale of average and 54.3% are in scale of above average of vertical jump, Illinois and 35 meter sprint test respectively.

### 5.3 RECOMMENDATION

Based on the result of the study the researcher suggested the following recommendations in the light of the summery and conclusion made:-

- The results obtained from vertical jump test of sprinters of Oromia athletics clubs with normative data using the percentage, the results show that 43.85% are in scale of above average, 24.56% are in scale of average and 15.78% are in scale of below average, to be more beneficial Oromia athletics clubs try to design a pre physical fitness exam before joining athletics clubs.
- The results of the study shows that there was significance mean difference among Oromia athletics clubs in speed, agility and power test, so it is highly expected from coach and club's managers to facilitate as athletes exchange the experience on how the athletes develop their skill related physical fitness.
- According to this finding the sprinters of Oromia athletics clubs was mostly above average, average above, and average on speed, power and agility respectively. So, Oromia athletics clubs try to design a special physical fitness program for their athletes.
- The coaches and a club's manager's attempt to included assessment of skill related physical fitness to improve the performance of their athletes.
- Further study of the issue is still needed to assess and incorporate the athlete speed, agility, and power performance during preseason, competition season and offseason.
- Managers of the clubs and coaches should adapt test items to their clubs consider such variables as available equipment, physical space, and availability of test administers, and factors related to cost and athlete's privacy in which it might be more feasible and manageable to conduct physical fitness.
- To improve sprinting event athletes performance in both Oromia athletics federation and Ethiopia athletics federation formulate programs for identifying athlete conducting skill related physical fitness components test.
- This study focused on assessment of some selected skill related physical fitness components in case of sprinters of Oromia athletics clubs. It is therefore, suggested that other research be undertaken to asses other skill related physical fitness and health related physical fitness components test.

- The study also focused on only sprint event discipline in some selected Oromia athletics clubs. It also recommended that the study be replicated in the other sports disciplines and clubs in the country.
- The researcher also recommended that, the other research be undertaken to determine the other condition that may affect sprinting event performance and development.

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## APPENDIX –A

Jimma University

College of Natural Science

Department of Sport Science

Post Graduate Program in Athletics Coaching

Dear Respondents,

This sheet score record is designed to gather data was been Assessment of some selected skill related physical fitness components of sprinters; in the case of Oromia athletics clubs. This research was been conducted as a partial fulfillment of Master’s Degree in athletics coaching at Jimma University. The data you provide are believed to have a great value for the success of this research. I confirm you that all data will be used for academic purpose and analyzed anonymously through the authorization of the university. As a result, you are not exposed to any harm because of the information you provide

**Table10. Demographic Information and sheet score record**

NO	Sex	Age	Speed in sec	Power in cm	Agility in sec
1	Male	19	4.80 sec	35 cm	19.3 sec
2	Male	17	4.79 sec	28 cm	19.5 sec
3	Male	19	5.50 sec	31 cm	18.3 sec
4	Female	18	6.20 sec	25 cm	23.2 sec
5	Female	19	6.10 sec	25 cm	22.8 sec
6	Female	17	6.95 sec	27 cm	18.5 sec
7	Female	17	5.35 sec	37 cm	20.0 sec
8	Female	19	5.40 sec	38 cm	19.7 sec
9	Male	18	5.51 sec	29 cm	19.5 sec
10	Male	18	5.40 sec	32 cm	18.4 sec
11	Male	17	5.55 sec	28 cm	19.0 sec
12	Male	19	5.15 sec	42 cm	16.5 sec
13	Male	19	5.10 sec	46 cm	15.5 sec
14	Male	18	4.90 sec	35 cm	17.0 sec
15	Female	18	5.95 sec	24 cm	21.9 sec
16	Female	19	5.75 sec	38 cm	19.0 sec
17	Male	19	5.60 sec	29 cm	19.3 sec
18	Male	16	5.35 sec	35 cm	16.8 sec
19	Male	17	5.40 sec	32 cm	15.0 sec
20	Female	19	6.25 sec	28 cm	22.1 sec

21	Female	18	6.15 sec	38 cm	21.9 sec
22	Female	18	5.80 sec	49 cm	16.95 sec
23	Female	19	5.85 sec	40 cm	22.0 sec
24	Male	19	5.55 sec	29 cm	16.9 sec
25	Male	17	5.40 sec	34 cm	18.5 sec
26	Male	18	4.90 sec	46 cm	16.5 sec
27	Female	18	6.30 sec	31 cm	21.9 sec
28	Female	19	5.98 sec	29 cm	18.6 sec
29	Female	17	5.99 sec	30 cm	16.9 sec
30	Male	18	5.60 sec	28 cm	15.5 sec
31	Male	19	5.55 sec	35 cm	15.8 sec
32	Male	19	5.50 sec	37 cm	15.0 sec
33	Female	17	5.95 sec	39 cm	17.8 sec
34	Male	16	5.45 sec	34 cm	18.5 sec
35	Male	18	5.40 sec	32 cm	18.3 sec
36	Male	18	5.33 sec	45 cm	16.4 sec
37	Male	17	5.38 sec	55 cm	15.9 sec
38	Female	19	5.97 sec	52 cm	21.9 sec
39	Male	17	5.56 sec	37 cm	18.8 sec
40	Male	16	5.31 sec	38 cm	18.7 sec
41	Male	19	5.39 sec	48 cm	15.5 sec
42	Female	18	6.25 sec	47 cm	23.2 sec
43	Female	18	5.95 sec	50 cm	22.5 sec
44	Female	18	5.98 sec	49 cm	18.5 sec
45	Male	19	5.60 sec	39 cm	19.5 sec
46	Male	18	5.34 sec	38 cm	16.5 sec
47	Male	17	5.37 sec	48 cm	16.0 sec
48	Female	18	5.94 sec	34 cm	22.1 sec
49	Female	19	6.10 sec	54 cm	20.3
50	Female	18	5.65 sec	56 cm	17.3
51	Male	17	5.60 sec	30 cm	19.5
52	Male	16	5.40 sec	39 cm	16.9
53	Male	19	5.15 sec	38 cm	17.5
54	Male	19	5.65 sec	48 cm	15.6
55	Female	18	5.95 sec	33 cm	18.9
56	Female	17	5.65 sec	27 cm	20.5
57	Female	19	5.30 sec	47 cm	17.5

## APPENDIX 2

### DURING THE SKILL RELATED PHYSICAL FITNESS COMPONENTS TEST

During the skill related physical fitness components (35-meter sprint run test, vertical jump test and Illinois agility run test) of some selected Oromia athletics clubs of sprinters.



## APPENDIX 3

### 35m Sprint Speed Test

A 35 m sprint running test was used to measure maximum running velocity (MRV), stride rate (SR) and stride length (SL). To undertake this test, you will require: Flat non-slip surface, Measuring tape, Stopwatch, Cones and Assistant.

Objective.

The main objective of the sprint speed test is to evaluate the athlete's sprint acceleration.

Required resources to undertake this test, you were required:

- flat non-slip surface
- stopwatch
- Cones
- Assistant
- Measuring tape

How to conduct the test

This test the athlete to conduct 3\*35 meters time trails.

The athlete warms up for 10 minutes

The assistant marks a 35 meters straight section with cones

The athlete takes up a sprint start position

The assistant gives the commands “On Your Marks, Set, GO” and starts the stopwatch

The athlete sprints the 35 meters

The assistance stops the stopwatch when the athlete's torso crosses the finishing line and records the time

The athlete conducts 3 x 35metre sprints with a 5-minute recovery between each sprint

The assistant uses the fastest time to assess the athlete's performance

**Table 1: Normative data for 35 meter speed sprint test**

Rating	Male	Female
Excellent	< 4.80	< 5.30
Good	4.80 - 5.09	5.30 - 5.59
Average	5.10 - 5.29	5.60 - 5.89
Fair	5.30 - 5.60	5.90 - 6.20
Poor	> 5.60	> 6.20

**SOURCE;** ARKINSTALL, M et al. (2010)

Assessment The following normative data provides ratings for the 35-meter sprint run test  
Reliability Test reliability is how much a test is constant and firm in measuring what it is planned to measure. Reliability was depending on how strict the test is conducted, and the individual's level of motivation to perform the test. The following link provides different factors that may influence the results' fact and therefore the test reliability. Validity Test validity is how much the test in fact measures what it claims to assess and the extent to which inferences, conclusions, and decisions complete on the base of test scores are suitable and significant. This test provides a means to examine the effect of training on the athlete's physical increase.





## APPENDIX 5

### **Vertical jump (sergeant jump)**

Power tests for the lower extremities should be kinematic chain tests rather than isolated tests of the hip, knee, or ankle. The vertical jump test is not an inaccessible measurement of knee purpose. The propulsive phase of vertical jump on a force plate shows that the hip contributes 40% of the total jump force; the knee, 24%; and the ankle, 36%. Robertson DG, Fleming D. (1987) Arm swing consistently increases vertical jump height. Reliability of the vertical jump ranges between 0.93 and 0.99. In sequencing FPT, the vertical jump should be performed before standing long jump.

The vertical jump test can be done with a piece of chalk and a wall or the Vertical Jump System the vertical jump test is considered a measure of explosive anaerobic power. When athlete starts, stands with equal weight on both limbs while reaching as high as achievable with a single arm. Taking a counter step is the most reliable and valid field test for estimation of explosive leg power. The score is the distance between the first reach and the second (Vollestad N 2008)

The Sergeant Jump test is used to measure a client's lower limb power.

This assessment can then be used to record any development on retest. The best vertical jump recorded ever is 142 cm, while the average height athlete in the NBA can jump is 71cm.t (Johnson, J. et al 2005)

**How to conduct this test.**

Equipment required: measuring tape or marked wall, chalk for marking wall

Description / procedure (see variations below also): the person stands side on to a wall and reaches up with the hand over nearby to the wall. Maintenance the feet flat on the ground, the point of the fingertips is marked or recorded. This is called the standing reach. The person puts chalk on their finger tips to mark the wall at the height of their jump. The person then stands away from the wall, and jumps vertically as high as possible using both arms and legs to assist in projecting the body upwards. The performers try to touch the wall at the maximum point of the jump. The variation in distance between the position reach height and the jump height is the score. The best of three attempts is recorded.

Scoring system: The jump height is generally recorded as a distance score. \

Objective.

To observe the progress of the athlete's elastic leg strength.

Required resources to undertake this test, you were required:

-chalk

-wall

-step ladder

-Assistant

-Measuring tape

How to conduct the test

The athlete warm ups for 10 minutes

The athlete chucks the end of his/her fingertips

The athlete 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)

The athlete from a static position jumps as high as achievable and symbols the wall with the chalk on his fingers (M2)

The assistant measures and records the distance among M1 and M2

The athlete repeats the test 3 times

**Table 3: Normative data for Vertical jump (sergeant jump)**

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	<30cm

SOURCE: Davis B. et al; (2000)



## Reliability

Test reliability is how much a test is consistent and stable in measuring what it is a future to measure. Reliability was depending on how strict the test is conducted, and the individual's level of motivation to perform the test.

## Validity

Test validity is how much the test actually measures what it claims to measure and the extent to which inferences, conclusions, and decisions made on the basis of test scores are appropriate and meaningful. This test provides a means to see the outcome of training on the athlete's physical progress.

## Procedure

Before beginning, have the client stand against a wall and reach up as high as they can with flat feet. Much this point as the standing reaches height. Include the client stand away from the wall and jump vertically as high as they can. Encourage them to use both arms and bent legs to propel them up as much as achievable. Have them done this three times and record the best one.

Much the distance between the reach height and the jump height. Equipment A measuring tape and chalk to mark the wall. Record the distance between the reach height and jump height of three attempts and then calculate an average.

This assessment can then be used to record any development on retest. The best vertical jump recorded ever is 142 cm, while the average height athlete in the NBA can jump is 71cm.t (Johnson, J. et al 2005)