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Effects of 10 Weeks Soccer Specific Circuit Training on Speed, Agility and Flexibility of U-15 Female Football Project Trainers: The Case of Chagni Town

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BAHIR DAR UNIVERSITY

SPORT ACADAMY

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A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF FOOTBALL COACHING

ADVISOR: - BewiketuChekol (Asst. professor)

JULY, 2022

BAHIR DAR, ETHIOPIA

DECLARATION

I, the undersigned, declare that the study entitled “effects of 10 weeks soccer specific circuit training on speed, agility and flexibility of u-15 female football project trainers” is the result of my own effort and study that all sources of materials used for the study have been acknowledged. I have conducted the study independently with the guidance and comments of the research advisor. This study has not been submitted for any degree in any university. It is conducted for the partial fulfillment of the degree of Master of football coaching.

_____ _____ _____

SintayehuEnyew **Date** **Place**

BAHIR DAR UNIVERSITY

SPORT ACADAMY

DEPARTMENT OF SPORT SCIENCE

Approval of thesis for defense

I hereby certify that I have supervised, read, and evaluated this thesis titled "effects of 10 weeks soccer specific circuit training on speed, agility and flexibility of u-15 female football project trainers" by SintayehuEnyew prepared under my guidance. I recommend the thesis be submitted for oral defense.

BewiketuChekol(Asst. Professor)_____		_____
Advisor	Signature	Date
_____	_____	_____
Co-advisor	Signature	Date
_____	_____	_____
Department head	Signature	Date

BAHIR DAR UNIVERSITY

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DEPARTMENT OF SPORT SCIENCE

As members of board of examiners, we examined this thesis entitled “effects of 10 weeks soccer specific circuit training on speed, agility and flexibility of u-15 female football project trainers” by SintayehuEnyew. We hereby certify that the thesis is accepted for fulfilling the requirements for the award of the degree of football coaching in masters.

Approved by Board of Examiners

_____	_____	_____
External examiner	Signature	Date
_____	_____	_____
Internal examiner	Signature	Date
_____	_____	_____
Chairperson	Signature	Date

LETTER OF CERTIFICATION

This is to certify that this study entitled “effects of 10 weeks soccer specific circuit training on speed, agility and flexibility of u-15 female football project trainers” for the partial fulfillment of Masters of football coaching at Bahir Dar University, is an original work and not submitted earlier for any degree either at this University or any other University.

Research Advisor: BewiketuChekol/***Asst.Professor*** /

Signature _____

Date_____

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ACRONYMS

BMI: Body Mass Index

CG: Control Group

DGC: Department Graduate of Committee

EG: Experimental Group

FIFA: Federation International de Football Association

HRmax: Maximum Heart Rate

PNF: Proprioceptive Neuromuscular Facilitation

RD: Randomized Design

SAQ: Speed, Agility and Quickness

SPSS: Statistical Package for Social Sciences

U-15:- Under fifteen years of age

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ABSTRACT

The aim of the recent study was to investigate "effects of 10 weeks soccer specific circuit training on speed, agility and flexibilityof u-15 female football project trainers". In order to achieve the intended objective Experimental design is implemented. For this study 30 Chagni town U-15 female football project players, who had been fulfilled the health history questionnaire are included as the study sample, and grouped to Experimental Group (EG) and Control Group (CG), in the first group EG (N=15), mean age 13.52 years old players are assigned randomly to the treatment condition and followed ten week intervention program for three days per week, 60 minute per session. They were engaged in soccer specific speed, agility and flexibility on Circuit exercise. While the other section CG (N=15) players of corresponding age, mean 13.72 years also assigned to serve as control group and continue their regular training. The study physical fitness variables are soccer specific speed, agility, and flexibility, to see the actual changes, 35 meter run test, T-test, Sit and reach test used as measuring tool. Paired sample t-test is used to analyze the data, in line to this level of significance was set at p<0.05. Results showed EG have significantly improved speed performance, pre 5.88 ± 0.16s to post5.42 ± 0.99*(p=0.00), and a significant improvement in agility, pre* 11.11 ± 0.43s to post 10.35 ± 0.47*s (p=0.00). Moreover they also showed an improvement in flexibility, pre* 6.32 ± 1.25cm to post 7.58 ± 1.37*cm (p=0.00), major finding in the study is the significant improvement on speed, agility and flexibility in the intervention group. This is due to the effect of the training program they were engaged in, and the investigator noticed that the suggested training program has positive effect on developing and promoting the speed, agility and flexibility of football players.*

Key words: *Physical Fitness, Agility, Speed, Flexibility*

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

Football is the most popular sport in the world, and while it was once primarily a male sport, it is today enjoyed by both men and women. Women's football has become increasingly popular in recent years. According to data from the International Federation of Association Football (FIFA) released in 2019, 73 percent of associations have an active senior women's national team, up from 55 percent in 2015. Approximately 13 million women currently participate in organized football, with that number predicted to rise to 60 million by 2026(FIFA, 2019).

Football is by far the most popular sport in the world. Young and old, boys and girls can play it in every nation without exception. Football quickly spread over continental Europe, then to South America and other continents. FIFA (Federation Internationale de Football Association) was founded in 1904 as the world's governing body of football (Reilly, T. 2003).

The future of football is feminine", is the famous declaration of Joseph S. Blatter, former Fe´de´rationInternationale de Football Association (FIFA) president, that reflects the rising popularity of the women's game around the world and highlights the clear objective of FIFA to continue supporting its growth (FIFA, 2012). Currently, about 29 million women play football, which corresponds to nearly 10% of the total number of male and female footballers worldwide. The number of registered female players (at the youth and senior level) grew by over 50% in 2006 compared to the previous FIFA Big Count in 2000(FIFA, 2006). Additionally, the number of international competitions,professional and recreational leagues for female players of various age groups has considerably increased in recent years. This has given a large number of female footballers the opportunity to train and compete in professional environments, which at the same time has raised the performance expectations placed upon players and increased the need for specific scientific research that could help improve their performance.

Despite the increased popularity and professionalization of women's football around the world, there is still limited scientific research specific to female players compared to their male counterparts, especially in the areas of players' physical and physiological characteristics and

game demands. For instance, in the case of men's football, there are numerous full text peer-reviewed studies that have been published on these topics including players of several nationalities, competitive levels, age groups, and playing positions. Additionally, several comprehensive literature reviews have been published in order to discuss and summarize the findings of a large number of studies in this area (Reilly T, 1994; shepherd, 1999; Bangsbo, 2006).

During a 90-minute match, soccer players must perform numerous actions that require speed, agility, flexibility, and endurance, as well as complete numerous jumps (Krustrup et al., 2005; Stolen et al., 2005). According to (Bloomfield et al., 2007; Gorostiaga et al., 2004; Helgerud et al., 2001) physical training of footballers is a complicated procedure. During a soccer match, players cover approximately 10 km in total, with a sprint every 90 seconds (11 % activity), with each action lasting on average 2 to 4 seconds and covering a distance of 15 meters (Stolen et al., 2005).

The ability to conduct a straight-line sprint and positive and negative acceleration with fast changes of direction, sometimes known as agility, are among the physical abilities required (Muijka et al., 2009).

Physical fitness is a concept that has existed since the dawn of time. Physical fitness has been regarded an important part of everyday living throughout human history. For physical survival, ancient peoples relied mostly on their own strength, vigor, and vitality. This involved mastery of some basic skills like, speed, strength, flexibility, agility for running, jumping, climbing and other skills employed in hunting for their livings. Physical fitness is deterioration in adult across all genders, ages and racial/ethnic groups (Ichinohe *et al*., 2004).

Decreased physical fitness has substantial and multi-faceted consequences for both individuals and society. It has been linked to an increase in all-cause mortality, as well as coronary heart disease, some types of cancer, diabetes, hypertension, stroke, gall bladder illnesses, osteoarthritis, and respiratory difficulties (Cataldo, 1999).

Football is about eleven players on the pitch at one time but these eleven individuals have different needs with regards to fitness. An external midfield player could take forty high

speed sprints in one game while a holding midfield player might only manage twelve high speed sprints in a game. The coach and the sport scientists can design the training sessions to improve the overall fitness of players by position fitness where players train movements similar to game situations. One size does not fit all so it is crucial to identify the optimum load with relation to intensity, frequency and volume. If an individual has worked particularly hard or covered more kilometers than the rest of the team, the coach can adjust the individual's recovery session so that he or she recovers with the proper load, reducing the risk of injury, especially in young players (Haugen &Seile, 2015).

External midfield players can take as many as forty-seven sprints in a game with distances ranging from twenty to forty-five meters and speeds up to thirty kilometers per hour, and holding midfield players have shown that they can cover seven hundred meters of high speed running in the first fifteen minutes of a game, though these statistics do not apply to all players; some only manage two hundred meters. External midfield players can take as many as forty-seven sprints in a game with distances ranging from twenty to forty Fast sprints are explosive motions that last up to five seconds; for example, leading sprints are gradual and go for a long time.; Fast sprints come under the title of explosive movements which last up to zero point five seconds, for instance leading sprints are gradual and go from slow to fast. Players in different positions use different sprints (Bangsbo, 2013).

Even though the six components of physical fitness affect a player's performance, Mazumdar (2012) indicated that for a football player to produce a successful performance, he or she must possess speed, agility, and flexibility. Physical fitness characteristics such as speed, agility, and flexibility were chosen by the researcher. According to Haugen and Seile (2015), agility (change of direction) at high speed is required during football games, and for some players, exceeding forty-seven sprints per match may cause injury, which flexibility training can help to prevent.

In sports like football, speed, agility, and flexibility are essential. There are limited research on the impact of training on youth soccer players' agility and sprint distances shorter than 30 meters, as well as flexibility. As a result, the current study focused on the aforementioned common football variables, with the goal of determining the impact of a 10-week plyometric, circuit,

interval, static, and dynamic stretching program on the speed, agility, and flexibility of Chagni town administration U-15 female football project players.

1.2. Statement of the problem

The number of international competitions, professional and recreational leagues for female players of various age groups has considerably increased in recent years. This has given a large number of female footballers the opportunity to train and compete in professional environments, which at the same time has raised the performance expectations placed upon players and increased the need for specific scientific research that could help improve their performance.

Concomitant with the substantial rise in participation and the increased recognition from international governing bodies, women's football has received significant attention from sport academics around the world. The number of scientific publications has been constantly increasing in the last two decades as researchers have given attention to the development of women's football and its stakeholders. In particular, scholarly inquiry on the women's game has bridged different academic domains (e.g. sport sciences, social sciences, humanities and management) and created interactions between various actors (e.g. players, coaches, fans, the media, policy-makers, football governing bodies) thus contributing to a broader understanding of the directions that this sport has taken over time.

Even though all components of physical fitness affect a player's performance, Mazumdar (2012) indicated that for a football player to produce a successful performance, he or she must possess speed, agility, and flexibility. Plyometric, circuit, interval training, as well as static, dynamic, and ballistic stretching exercise programs, according to many research studies, are important for the development of physical fitness and have numerous benefits for athletes' overall fitness and performance in a variety of sports, including football. The investigator chose speed, agility, and flexibility as physical fitness variables because, according to Haugen and Seile (2015), agility (change of direction) at high speed is required during football games, and for some players, over forty-seven sprints per match may cause injury, which flexibility training can reduce.

Foot speed improves agility and reaction time while playing the game. Therefore, work on speed training for specific movements and skills are essential. Muscles well-conditioned with speed

training for specific movements will easily assist when a player need to change directions and get from one point to another. Good speed helps the player react that much faster to stimulus.

Agility is one of the main determinants of performance in soccer. It can be successfully developed if the training is based on the changes of direction, which are done quickly and easily. By working on agility and improving the balance and coordination, football players will be able to move faster and change directions more quickly while maintaining control.

Football players, due to the repetitive nature of their sport, are at an increased risk of sustaining a muscular injury, especially if they are not focused on flexibility. Without stretching, muscles can shorten, tighten and are more susceptible to tearing. Increased flexibility can improve aerobic fitness training, muscular strength and endurance, and sport-specific training. Increased range of motion (ROM) is a key component in preventing injuries through unimpeded, fluid movement. Flexibility enhances movement and mobility for the athlete. Flexibility increases a joint's range of motion, relaxes muscles, increases mobility, decreases stiffness in muscles and tendons and reduces post-exercise soreness. When a muscle is properly stretched, the associated joints become more flexible and range of motion increases. Due to these factors making players flexible is important to improve their physical fitness.

Besides this few researches has been done on the improvement of physical fitness variables of football players. However, so far in Ethiopia, especially in Chagni town there is no obvious data and records that show the effect of soccer specific circuit training on speed, agility and flexibility of U-15 female football project players. The trainers in the study area do not give specific training on speed, agility and flexibility for female project players. Moreover,those studies can't conduct and explained effect of plyometric,circuit,interval training, and alsostatic, dynamic and ballistic stretchingexercise program on speed, agility and flexibility on this study area, To fill this gap, this scientific study have provided practical information on effects of 10 weeks soccer specific training on Speed, Agility and flexibility that can be used by all football players to develop those physical fitness variables.

1.3. Research hypothesis

- H_0: There is no significance speed difference between experimental and control group players after 10 weeks of soccer specificcircuit training

- H_0: There is no significance agility difference between experimental and control group players after 10 weeks of soccer specificcircuittraining.
- H_0: There is no significance flexibility difference between experimental and control group players after 10 weeks of soccer specificcircuittraining.

1.4. Objective of the study

1.4.1. General objective

- The general objective of this study is to test effects of 10 weeks soccer specific circuit training on speed, agility and flexibilityof u-15 female football project trainers

1.4.2. Specific objective

The specific objectives of the study are:

- ✓ To test effects of 10 weeks soccer specific circuit training on speed training of u-15 female football project trainers
- ✓ To evaluateeffects of 10 weeks soccer specific circuit training on agility training of u-15 female football project trainers
- ✓ To measureeffects of 10 weeks soccer specific circuit training on flexibility training of u-15 female football project trainers

1.5. Significance of the study

Despite the importance of training in sports such as soccer, few researches have been conducted on the impact ofsoccer specific training on physical fitness in female soccer players. As a result, the primary goal of this study was to measure the effects of a 10-weeksoccer specific circuittraining on speed, agility and flexebility of U-15 female football project trainers. The findings primarily address soccer specificphysical fitness training issues in Chagni town female u-15 football project players; although this does not imply that the findings of this study are limited to Chagnitown football projects. It has been critical to boost Ethiopia's overall physical fitness training programs. Coaches, players, and Ethiopian football projects will benefit from this scientific study.

For Coaches this study helps to;

- Identify the effects of soccer specific training on player performance in terms of speed, agility, and flexibility.

- Assess their fitness level as it relates to a few soccerspecific physical fitness components.
- Understand the effects of soccer specific circuit training on a player's physical fitness over the course of ten weeks.
- Pre- and post-tests on Speed, Agility, and Flexibility are used to assess a player's fitness level.

For players these study;

- Understand the impact of soccer specific circuit training on their Speed, Agility, and Flexibility performance, as well as how to enhance their physical fitness in these areas.

For the project this study;

- Assist in the development of well-suited, competitive, and successful players in the areas of Speed, Agility, and Flexibility, as well as the contribution of fitted, skilled, and confident players in those fitness variables for our country clubs and national team. In addition, this study is intended to signify for other researchers to undertake similar studies at different levels.

1.6. Scope of the study

The study is limited to female U-15 project located in Chagni. In terms of variables the study examined the effect of soccer specific circuittraining on three dimensional physical fitness components. This means the researcher has chosen three physical fitness components i.e. speed, agility and flexibility. The researcher has chosen female football for this study purpose as they implement and practice physical fitness components.

1.7. Limitations of the Study

- The players extra training may be performed outside the required training sessions;
- The players may not got enough nutrition that is needed for training

In this study, the researcher considered confounding and extraneous variables that may influence both independent and dependent variables, such as; Extra exercise, rest and sleep, nutrition, motivation, weather condition.

1.8. Definition of Terms

Conceptual definition of terms that would be mentioned quit a lot of times and words that I do believe that reader of study should know the definition for easy and better understanding of this research are written below.

Physical fitness; is the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure-time pursuits that comprises speed, agility and flexibility.

Agility: refers to the ability to change of direction rapidly with accuracy and speed.

Flexibility: is the ability to move your arms, legs, and trunk freely throughout a full, no restricted, pain-free range of motion.

Speed: is the ability to perform a movement in a short period of time.

1.9. Organization of the study

The study is divided into six chapters. The first chapter consists of an introduction, problem statement, objectives, significance, scope, research questions, hypothesis and organization of the study. Chapter two provided a review of related literature of the study with emphasis on a theoretical framework as well as an empirical analysis of the study while the third chapter outlines the methodology of the study which includes population, research design, sampling and sampling procedures, sources of data, data collection and procedures for data presentation and analyses. Chapter four is result and chapter five is discussion part which puts the finding of the study. Chapter six consists of summary, conclusion and recommendation of the study.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. Demands in football

Football is the most popular sport in the world, with around 260 million players and 5 million referees and officials taking part (Haugen &Seile, 2015). Individuals are under a great deal of strain as a result of this pressure. They risk being dropped from the team, demoted to the bench, or even left out of the group if they fail to provide the expected results. The player gets sold or released from the club in the worst case scenario (Haugen &Seile, 2015). Football projects and reserve teams bear a significant amount of responsibility in terms of developing players for the future. They'd be honing soccer-specific motor abilities and increasing their physiological ability to be a great athlete. Players must have aerobic and anaerobic physical and physiological capacities. They must meet the parameters that are required in today's game. It is critical to be able to traverse great distances without becoming fatigued over the game's ninety minutes (Bangsbo, 2006). Being able to shift direction quickly and for some players, completing more than forty-seven sprints in a single game. Many physical tests, such as repeated sprint ability, VO2 max test, and yoyo intermitted tests, have been introduced in clubs and projects throughout the years to measure repeated sprint ability (Haugen &Seile, 2015).

2.1.1. Physical demands in football

Football consists of eleven players on the field at any given time, yet each of these eleven players has varied fitness requirements. A holding midfielder may only be able to complete twelve high-speed sprints in a game, whereas an external midfielder may complete forty high-speed sprints in a game. Coaches and sport scientists can construct training sessions to improve players' overall fitness through position fitness, in which players practice motions that are comparable to those seen in games. Because one size does not fit all, it is critical to identify the optimal load in terms of intensity, frequency, and volume. If an individual has worked particularly hard or covered more kilometers than the rest of the team, the coach can adjust the person's recovery session so that he or she recovers with the proper load, reducing the risk of injury, especially in young players (Haugen &Seile, 2015).

It has been demonstrated that players may cover 700 meters of high-speed running in the first fifteen minutes of a game; however, these statistics do not apply to all players; some only manage 200 meters. External midfielders can sprint up to forty-seven times in a game, covering distances of twenty to forty-five meters at speeds of up to thirty kilometers per hour. Holding midfielders have demonstrated that they can do eleven sprints in a game that last up to sixteen meters, but their speed never exceeds thirty kilometers per hour. Different classifications exist for sprints. Fast sprints are defined as explosive motions lasting up to 0.5 seconds. The transition from slow to quick in leading sprints is gradual. Different sprints are used by players in different positions (Bangsbo, 2013).

2.2. Study on Physical Fitness Training

"The effects of a 12-week exercise program on health-related fitness components and blood lipids in obese females," according to zcanSaygn and Mehmet Ali ztürk (2011). In this study, 40 girls were divided into two groups: exercise (n = 20) and control (n = 19). For a 12-week period, participants attended sessions that lasted 60 minutes each day, three days per week. "Regular exercise may have a good effect on health-related physical fitness components and blood lipids in females," the researchers found. Furthermore, it may lead to a reduction in female obesity."Yuvaraj and Vishnuvardhan (2015) also investigated the "impact of cross training on selected physical fitness components physiological variables and skill performance variables of high school football players." A total of 40 high school football players were chosen for this reason." The subjects were placed into two groups, one experimental and the other control. The experimental group was given a six-week cross-training regimen. The control group received no special instruction and went about their normal business throughout that time. The factors for the study were speed, agility, leg explosive power, and cardio respiratory endurance, vital capacity, kicking, and throwing in. The t-test is used to determine whether or not there is a significant difference between groups.

After the six week of cross training it was concluded that "*physical fitness components, physiological variables and skill performance are improved. Further it was concluded that the experimental group shows significant improvement than the control group on physical fitness components, physiological variables and skill performance".*

"Selected effect of training on selected physiological indicators among college guys," according to Selvam and Sudha (2008),aerobic exercise is used in this study because it engages vast muscle groups in a regular and continuous manner and raises heart rate and breathing for a long time. 60 females from Villupuram'sTheivannaiAmmal College for Women were chosen for this purpose. The participants were between the ages of 18 and 20. The subjects were separated into two groups. The groups began by doing aerobic activity. The training group trained for eight weeks on five days a week, while the control group was used to compensate for differences in the beginning means and evaluate the adjusted post-test means for significant differences. The results were interpreted using analysis of covariance (ANCOVA) by the researcher. "Aerobic exercise had a substantial influence in the improvement of physiological variables such as resting pulse rate, breath holding time, vital capacity, and respiratory rate," according to the study's findings.

Despite some debate over the importance of fundamental motor skills in the maintenance of physical activity levels, training programs have a significant effect on improving physiological variables and are also important for developing and maintaining many aspects of motor fitness. As a result, a reduced training program will have a negative impact on fitness (reversibility) (Cairneyet al., 2005b; Bouffardet al., 1996).

2.3. Components of Physical Fitness Variables

Physical fitness has two dimensions via health related fitness and skill-related physical fitness.
Skill-related physical fitness is defined as "those components of physical fitness that have a relationship with enhanced performance in sports and motor skills. Health related fitness is "those components of physical fitness that have a relationship with being healthy in day to day life activities. (Surgeon, 1996) Several health- and skill-related components of physical fitness are essential pre-requisites for successful performance in (Female) soccer. In fact, earlier studies identified that higher levels of aerobic endurance (Hoff, 2005; McMillan et al., 2005; Castagna et al., 2006), speed (Murphy et al., 2003; Little and Williams, 2005), agility/change-of-direction speed (Gambetta, 1990; Little and Williams, 2005), strength and power (Wisløff et al., 1998) are important determinants of superior soccer performance (Turner and Stewart, 2014).

Speed Agility, power, and speed are some of the skill related fitness components. These fitness components are basic skills in performing different sport activities including football game. Flexibility, muscular strength and endurances are some of the health related physical fitness components (ACSM, 2003). And the level of muscular strength and endurance affects an individual ability to perform daily functions and various physical activities throughout the entire life of an individual. Functional training is becoming increasingly popular within the fitness industry and has been considered to be a better alternative than traditional resistance training for improving various measures of muscular fitness including strength, endurance, and Fitness is defined as a condition in which an individual has enough energy to avoid fatigue and enjoy life. Physical fitness is divided into two (health related and Skill related fitness). Skill related components are fitness types which enhances one's performance in athletic or sports settings. Health-related fitness is the ability to become and stay physically healthy.

This component focuses on factors that promote optimum health and prevent the onset of disease and coordination and balance. For instance it is doing functional training safely and independently complete activities of daily living without undue fatigue. Functional fitness has-been defined by Brill (2008) as emphasizing multiple muscle and joint activities, combining upper body and lower body movements, and utilizing more of the body in each movement. Physical fitness are a set of attributes that people have or achieve. Being physically fit has been defined as the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure time pursuits and to meet unforeseen emergences. (Gutin,1980)

Problems associated with inactivity (NASPE, 2009). Nowadays, elite volleyball players are quicker, stronger and in better physical condition than before, which could be a result of year-round training and developing skills that add strength, power and fitness specific to their sport (Scates& Linn, 2003).

Physical fitness is a highly complex phenomenon. In the literature various definition of Physical fitness is given. According to President's Council on Physical fitness and sports (2005), Physical fitness is the ability to carry out daily tasks with vague and alertness without undue fatigue and with ample energy to energy leisure time pursuits and to meet unforeseen emergencies. In adults,

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

2.4. Circuit Training

Circuit training was originally developed in 1953 by Morgan and Anderson in England at the University of Leeds (Sorani, 1966). The original purpose of circuit training was to allow individuals to work out at their own level of intensity while still working out together as a group. An original circuit was made up of nine to twelve stations. An individual would work out at a station for a set period of time before moving on to the next station with little or no rest. Traditionally, a fifteen second to three minute aerobic station will be added between works out stations. This kept the aerobic system pumping and ready to go so that the individual burns fatter during their work out. Another variation of this that has been used in the past is having a group run around a gym or open area in a circle, with a trainer calling out bodyweight exercises at intervals (Adeniji, 2007).

Marciniket al., (1985).First selected 43 navy men aged 32.1 years and assigned to one of three exercise training protocols: circuit weight training performed at either 40 or 60% of determined one-repetition maximum strength or aerobic/calisthenics training. During the 10 weeks study, each exercise group participated in three training sessions per week performed on alternate days. The results of this study indicate that dynamic strength (both upper and lower) increased for the aerobic/circuit weight training groups but not for the aerobic/calisthenics group. With the exception of bench press endurance for the aerobic/calisthenics group, all groups showed significant increases in muscular endurance and stamina. No significant changes were seen in static strength or flexibility in any of the groups.

Marciniket al.,(1985).Secondly selected 87 male navy personnel aged 19.8 years receiving basic training at the recruit training command. One company of recruits (N=41) participated in an experimental aerobic/circuit weight training program at 70% of determined one-repetition maximum. A second company (N=46) received the standard navy recruit physical training

program (aerobic/calisthenics training). During the 8 weeks study, both groups participated in an identical running program performed three times per week on alternate days. Additionally, aerobic/circuit weight training participants 10 completed two circuits (1circuit=15 exercises) three times per weeks on alternate days to running. Study findings show the experimental aerobic/circuit weight training program produced significantly greater dynamic muscular strength and muscular endurance changes than the standard aerobic/ calisthenics program. Recruits following the standard training program showed decrements in several muscular strength and muscular endurance measures.

2.4.1. Benefit of circuit training on physical fitness variable

There have been numerous studies on circuit training and its effects on the body. Studies showed that circuit training met the qualifications for an effective muscular workout, cardiovascular workout and this exercise method is the most effective method for increasing muscular endurance. Studies have also shown that circuit training for women is the most effective method of exercise that, when combined with diet, was helping them lose weight and keep it off long term. Today, circuit training is completed by individuals and groups, men and women alike. The exercise method is trained as being the most effective way to build explosive power for sports of all types, including fighting styles. It is also considered the best way to improve muscle strength and endurance which is important for today's athlete (Adeniji, 2007)

There were many benefits to using circuit training in your exercise program. These benefits stem from the fact that you were moving continuously throughout your workout. You were enjoying the benefits of strength training as well as the benefits of cardiovascular fitness. One of the major benefits of circuit training was that it was versatile. You can include whatever exercises you want in your circuit training. This means that you can work with what you have instead of forcing the need for exercise machines and expensive weight sets. You can use your own body weight, dumbbells, medicine balls or simple tools like jump ropes. Circuit training can include from 6 to 15 stations, depending on your personal work out goals and your level of fitness prior to starting this type of training. Variability also allows for the individual to keep from becoming bored with their fitness training. This keeps people interested in their work out 11 routines and makes them less likely to stop before reaching their fitness goals. Additionally, variability means that you can easily choose exercises based on your fitness level. This makes circuit training ideal

for beginners and expert strength trainers alike. Circuit training serves athletes as a way to keep their body fit and generally conditioned without the stress of in season sports. This way you can keep yourself conditioned and in good physical shape even on the off season (Adeniji, 2007)

Additionally, if you do suffer an injury you can simply remove that type of exercise from your circuit and replace it with something you are physically capable of doing. For example, if you sprain an ankle, you can take jumping rope out of the circuit and add in some bench presses until your injury is healed. This way you can continue to get a work out and nurse your injury at the same time (Adeniji, 2007).

2.5. Effect of soccer specific circuit training on Speed, Agility and flexibility

Exercise protocols consisting of sport-specific drills have shown positive effect on sprint performance, while most methods consisting of strength and power training have failed to improve agility performance (Brughelli et al. (2008). Previous experiments resulting in no or small effect, may be due to ineffective training load or lack of specificity (Jovanovic et al. 2011; Muijka et al., 2009; Jullien et al., 2008; Steffen et al., 2007). Recovery periods in the present study was from 60 to 90 seconds, and is in line with previous programs for young soccer players (Ramirez-Campillo et al., 2014), however, two to five minutes are recommended among adults (Ramirez-Campillo et al., 2014). Limitations of this study are the small number of participants, and no assessment to determine any effects on the outcome to match-play. However, enhanced sprint performance is beneficial in match play (Polman et al., 2007), and both short linear speed, and agility is powerful discriminators between youths (Muijka et al., 2009, Reilly et al., 2000).

In addition to this, flexibility improvement were reported by Behm, who stated that flexibility improved by 11.8% in sit-and-reach test, 19.7% in hip extension, and 13.4% in hip flexion after a four-week stretching training. Improvements in flexibility in sit-and-reach test were also reported by Turki-Belkhiria, after eight weeks. The subjects of the two groups performed dynamic stretches during warm up. The first subgroup performed SDS, and the second one performed ADS. The improvement was 57.6% for SDS and 45.1% for ADS. No change was observed in the CG.

2.5.1. Effect of soccer specific circuit training on Speed

Speed is the ability to perform a movement in a short period of time and the way football is played today speed is a very important aspect (Bangsbo& Andersen, 2013). Not only attacking but also defending. It is very important for players to be quick over the first few meters. Being able to unlock a defense with speed is very important or to stop a goal attempt on your goal, relationship between basic muscle strength and sprint performance is also important (Bourgase, 2012). Speed is a very important aspect of football, but anticipation and reading the game is also very important. Being able to read situations at a split second can save a player time in reaction speed. Player's height and weight and ability to coordinate play a big part in speed. Being able to run a thirty meters sprint needs muscle power and muscle strength (Bradley et al., 2009). Speed training is supposed to have a positive effect, stimulating the nervous system and muscular coordination during this stage of natural maturation (Aagaard, 2001; Mero, 1998), with an increase in testosterone, and in muscle mass (Rowland, 2005; Malina, Bouchard & Bar-Or, 2004). Therefore, training regimens that simulate speed performance are critical for optimal training results at this age (Venturelli, Bishop &Pettene, 2008; Diallo et al., 2001).

Previous studies have shown a difference in running speed between high- level and the non-elite youth players in those qualities (Mujika et al., 2009; Malina et al., 2007; Gissis et al., 2006), and sprint performance has been reported to be among the most important variables in predicting player selection (Vescovi, 2012; Gil et al., 2007). Sprint bouts during games are mostly reported to be between 10-30 m, and high-speed actions are known to have an impact on match performance, as the faster player will have an advantage in match scenarios (Krustrup et al., 2005).

Mujika, I., Santisteban, J.,&Castanga, C. (2009) conducted a study on " In-season effect of short-term sprint and power training program on elite junior soccer players". They suggested that short-term sprint and power training program had enhanced effect and confirm to positive effect in female soccer players of similar age.Most experiments have been conducted on males, with programs combining strength and speed training (Rumpf et al., 2012; MaioAlves et al., 2010; Faigenbaum et al., 2007). Reports of male youth athletes aged 14 to 18 years, have showed an enhanced effect on sprint with high-intensity strength and speed training (Jovanovic et al. (2011);

Mujika et al., (2009); Kotzaminidis et al., (2005). Buchheit et al. (2010) found that a 10 week training program, with one hour per week shuttle sprint and explosive strength training, produced significant improvement in 30m sprint, but no significant improvement in 10 meter sprint in adolescent male soccer players.

Previous studies have suggested that speed training have an improvement on players acceleration, and also it was concluded that in speed training, it is important to improve as many fast motor units as possible, which are more suitable for fast movements. The gains in sprint performance occurred in the initial acceleration and speed-maintenance phases. The ability to accelerate quickly from a stationary position will provide a competitive advantage for athletes. (Cecilia Geva, HalilTaskin, FatmaArslanet,al 2012).

2.5.2. Effect of soccer specific circuit training on Agility

Physical factors are important in youth soccer development, among them running at straight-line speed and change-of-direction speed, often referred to as agility (Stroyer, Hansen &Klausen, 2004). Agility performance is a physiological prerequisite in soccer because players are often involved in sudden direction change in order to be effective during the game (Little & Williams, 2005). Match analyses have shown that sprint time is often only a few seconds (Castanga, D'Ottavio&Abt, 2003), and most sprints are shorter than 20 meter (Haugen et al., 2013).

Michael G. Miller, Jeremy J. Herniman, et,al conducted a study on "the effects of a 6-week plyometric training program on agility" Subjects were divided into two groups, a plyometric training and a control group. The plyometric training group performed in a six week plyometric training program and the control group did not perform any plyometric training techniques. All subjects participated in two agility tests: T-test and Illinois Agility Test, and a force plate test for ground reaction times both pre and post testing. Uni-variate ANCOVA were conducted to analyze the change scores (post – pre) in the independent variables by group (training or control) with pre scores as covariates.

The Univariate ANCOVA revealed a significant group effect F2, 26= 25.42, p=0.0000 for the T-test agility measure. For the Illinois Agility test, a significant group effect F2, 26= 27.24, p =

0.000 was also found. The plyometric training group had quicker posttest times compared to the control group for the agility tests.

A significant group effect F2, 26= 7.81, p = 0.002 was found for the Force Plate test. The plyometric training group reduced time on the ground on the posttest compared to the control group. The results of this study show that plyometric training can be an effective training technique to improve an athlete's agility.

ZoranMilanović, et,al (2013) conducted study on the effects of a 12 week conditioning program involving speed, agility and quickness (SAQ) training and its effect on agility performance in young soccer players. Soccer players were randomly assigned to two groups: experimental group (EG; n = 66,) and control group (CG; n= 66). All participants were male members of teams playing in the First Croatian Junior U-19 League during the 2010/2011 competitive season. Agility performance was assessed using field tests: Slalom; Slalom with ball; Sprint with 90° turns; Sprint with 90° turns with ball; Sprint with 180° turns; Sprint with backward and forward running; Sprint 4 x 5 m. Statistically significant improvements ($p < 0.05$) between pre and post training were evident for almost all measures of agility, with and without the ball, with the exception being the Sprint with backward and forward running. This suggests that SAQ training is an effective way of improving agility, with and without the ball, for young soccer players and can be included in physical conditioning programs.

R. Arjunan (2015) also conducted a study on "effect of speed, agility and quickness (S. A. Q) training on selected physical fitness variables among school soccer players". It was suggested that Agility and Quickness training has significantly contributed to improve the selected Physical Fitness Variables such as speed, agility muscular strength endurance, and explosive power

2.5.3. Effect of soccer specific circuit training on Flexibility

Flexibility is the degree to which body segments can move or be moved around joints. (Brown, 1986).Sit and reach test measure the flexibility of the lower back and hamstring muscle. Many researchers and sports scientists indicate that stretching exercises have beneficial effects on athletic performance, including flexibility improvement (Zakas, A., Vergou, A. et,al 2003), muscle stiffness reduction (Kokkonen, J., Nelson, A.G., Elderedge, C., Winchester, J.B. 2007), injury protection, reflective interceptor reduction, running economy improvement. Kocak M,

Akkoyunlu Y, Taskin H. (2005) stated that flexibility is effective in providing an optimal development appropriate to needs of sport branch, physical factors such as the speed, strength and development of technique.

2.5.3.1.Stretching to improve flexibility

Flexibility is an intrinsic property of the body tissues that determines the range of motion achievable without injury at a joint or group of joints. There are several methods of stretching aimed at improving flexibility like passive, static, isometric, ballistic and proprioceptive neuromuscular facilitation (PNF). Passive and PNF techniques require a second person with specific skills. PNF techniques might increase the risk of injuries because of the resulting increase in stretching tolerance. That method is the most effective to improve the range of motion. Static stretching is the easiest and the most frequently used method. The practice of ballistic stretching has caused some connective tissue damage and has fallen out of favor.(De Vries1961).

2.5.3.2.Stretching and athletic performance

Recent studies have shown a negative effect of pre-participation stretching on sport performance. These negative influences concern performance in speed (running economy), in strength (strength deficit up to 1 h), and especially in jump. An Experimental researchconducted study on "effect of flexibility training on symptoms of exercise-induced muscle damage" the study suggests thatThe PNF training program led to increased flexibility associated with the hamstring muscle group, as indicated by an increased sit-and-reach score. There was a trend for better maintenance of strength at long muscle lengths in the flexibility-trained group, but there was no evidence that increased flexibility offered protection from strength loss at short muscle lengths, soreness, or stiffness. (Roger G. Eston, Ann V. Rowlands, David Coultonet,al2007)

2.6. Intensity levels in football training

High intensity training is very important in football in the right heart rate zone in training; timing of rest periods is very important (Bangsbo& Mohr, 2014). During short sprints and change of direction lasting one to five seconds energy is produced by breaking down of phosphates (Bangsbo, Mohr, &Krustrup, 2006). On average in football matches sprints during games last around three seconds (Bangsbo& Mohr, 2014).

Energy systems in football are very important, and the time spent in each system is equally important. Too much time spent in the wrong zone is not going to improve anaerobic capacity. Quality of speed and agility training with the right recovery is the key (Brewer, 2008). Training fitness for football is very important to train with the ball, while using a ball specific muscle groups would be used like in competitive games. Players also find running with the ball fun, so the benefits would be greater because of enjoyment. Trying to lose players and defending are situations that arise in football all the time so this gives the coach to access fitness levels, movement with and without the ball and quality to work under pressure. ("Sports Med 2004; 34 (3): 165-180 - Endurance_strength_training.pdf,"n.d.).

2.7. Principles of Physical Training

Adherence to certain basic exercise principles is important for developing an effective program. The principles of exercise apply to everyone at all levels of physical training, from the Olympic Caliber athlete to the weekend jogger (Head Quarters Department of the US army, 1998). The theory and methodology of training has its own specific principles based on the biological, psychological, and pedagogical sciences. These guidelines and regulations which systematically direct the whole process of training are known as the "principles of training," (Kernan, 1999).

Many literatures like (Dick, 1997) and (Carbin et al.., 2002) and others site law of overload, principle of progression, principle of adaptation, principle of use or disuse, law of reversibility, law of specificity, principle of individualism, principle of variety and principle of active involvement as principles of physical fitness training or exercise. But the following 24 consensus principles from various sport training and science experts, such as Bompa, Harre, Costill, Epley, et al.., are presented by (John Kernan, 1999).

A coach or trainer of any sport or fitness activity will enhance his or her success by following these principles of training when designing and planning training or lesson plans for athletes or trainees and teams (Kernan, 1999). These are :-principles of physical examination, active participation in training, multi-lateral development, individualization, feasibility, specificity or specialization, ground-based activities, multiple joint actions, three-dimensional movements, progressive overload, train the correct energy system, interval training, train explosively,

adaptation, consistency, variety or variation, split routine, hard-easy system, modeling, warm-up, cool-down, rest and recovery, reversibility, and long-term per iodization and planning.

2.7.1. Basic Principles of Football Training

Kacany (1987:33) (as cited in Wondimu and Damen, 2004:41) defines training as a complex, long and conscious educational process, with the aim of making use of specific means, to contribute to the achievement of maximum sports performance by a player on the basis of balanced development of his/her personality and further explains training as a systematic process of repetitive, progressive exercise and acclimatization. For this purpose, the principles of training help ensure that sensible, realistic and safe training programs are developed.

Therefore, the principles of specificity, overload, progression, variance, and principles of long-term training are the basic principles of training specific to football/soccer. The details of each principle are discussed as follows:

2.6.1.1 Principles of Specificity: every activity requires a specific mix of fitness components and the training should reflect the contribution made by each component. However, before attempt any specific training it is mandatory to develop a general level of fitness.

2.6.1.2 Individualization: training should be specific to the individual. It is important to assess the initial stage of fitness so that the workload can be accurately estimated.

2.6.1.3 Principles of Overload: this principle indicates that whole point of training is to improve level of fitness, but the level of fitness will improved only if the body is overloaded. In other words, the body should work harder than normal by increasing the amount of work to be performed. This can be applied through:

- ✓ Increasing the number of times (frequency: F) of the training.
- ✓ Increasing the intensity (intensity: I) of the activity.
- ✓ Increasing the duration (time: T) of each individual session.
- ✓ Change nature (type: T) of the exercise that the performer completes.

2.6.1.4 Principles of Progression: regarding this principle, the body will improve only if it put under stress, but the principle of progression underlines the fact that the amount of overload attempted should be progressively made more difficult. The workload should be increased only once some adaptations have occurred, so it is important to monitor the

players or trainees performance closely so that the coach does not put too much stress on the players too soon.

2.6.1.5 Principles of Variance: variety is the spice of life! Doing the same thing week after week becomes monotonous and boring. The principle of variance suggests that a training program should include a variety of training methods. This will help to maintain interest and motivation, and makes sure that the loads of training are varied.

2.8. Conceptual Framework

The researcher's synthesis of literature on how to explain a phenomenon is represented by a conceptual framework. It lays out the steps that must be taken during the investigation, based on past knowledge of other researchers' perspectives and observations on the research topic. As a result, it specifies the variables that must be included in the research study. It serves as the researcher's "road plan" for carrying out the investigation.

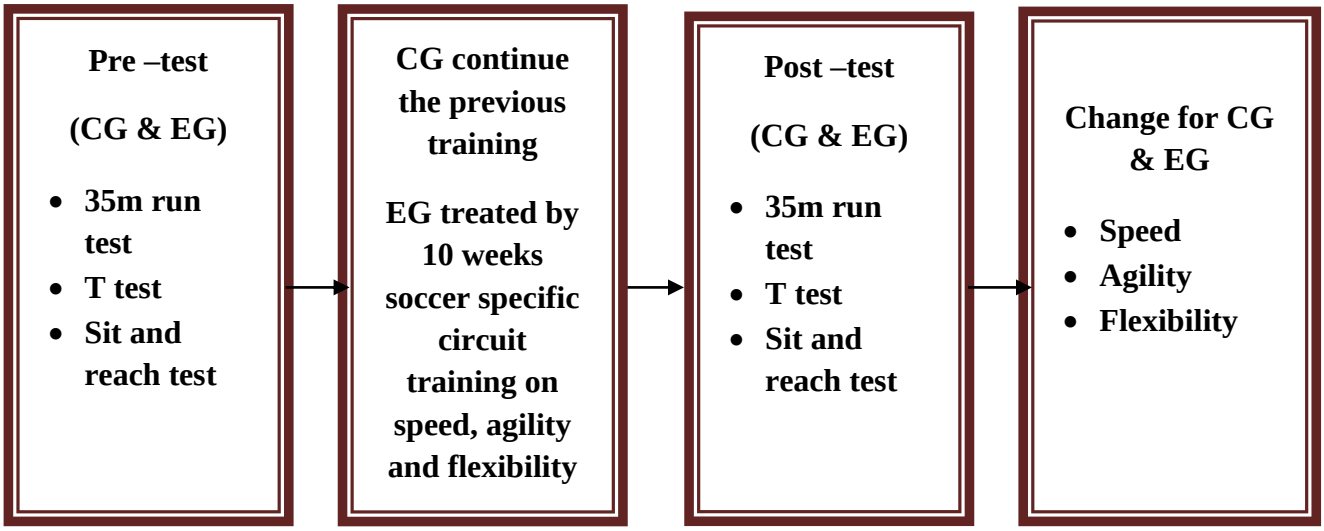

Figure 1:self-developed conceptual model for measuring the effects of 10 weeks soccer specific circuit training on speed, agility and flexibility training of u-15 female football project trainers.

CHAPTER THREE

3. RESEARCH METHODOLOGY

Research methodology is a method of systematically solving a research topic that involves the actions that a researcher typically takes in examining his research problem, as well as the logic that behind them. As a result, this section covers the study methodology, research design, data types and sources, population and sample frame, sample size, sampling technique, data collection methods, variable measurements, data analysis methodologies, validity, reliability, and ethical issues in depth.

3.1. Description of the Study area and period

The study was carried out in Chagni town on U-15 female football project. Found in Awi zone, Amhara Region, Ethiopia. Geographically it is located 10°57′N , latitude and 36°30′E, longitudes and it is situated at elevation 1583 meters above sea level and 505 kilometers far from the capital city, Addis Ababa. The study will be carried out for 10 weeks, from march/01/2014 to april/30/2014. All the tests and training program will be delivered in Chagni 01 primary school football court.

3.2. The Study Design

In this study Experimental design was used. The essence of the experimental design is the notion that two or more groups are equal on relevant characteristics before the treatment is applied to one of the groups. Also, in order to judge whether the training program have been an effect, the groups may usually compared before and after the training program.

Therefore, the study had been two groups (EG and CG). Participants who fulfilled the health history questionnaire wererandomly assigned to as the study subject. The pre and post-test on speed, agility and flexibility administered for study group. In the Experimental group (EG) players concerned to as the treatment condition they have been taken the treatment (training), but the CG do not allowed to participate in any of the special training program except their regular training, they only restricted to taken the treatment.

As Roberts and Taylor (1998) suggest that as the most advanced type of quantitative research, experimental designs are most likely to show the strength of an association between variables, and to demonstrate whether changes in one variable cause effects in the other. In this study the investigator will undermine confounding and extraneous variables that may influence both the independent and dependent variables, such as; Extra exercise, rest and sleep, nutrition, motivation, weather condition and etc.

3.3. Study Population

The source of study population was30Chagni U-15 female football project players, the total number of population (N= 30) players. The selection was depending on their interest to participate in the study.

3.4. Sample size and Sampling Techniques

In this study 30 players participated that are consisted in Chagni U-15 female players.From this, all players were the sample size of the study. Since the number of players are very much less, all players are included under the study through implementing purposive sampling technique. Participants who fulfill the health history questionnaire were included to the study. From the total population of players (N= 30) the investigator grouped the project players in to two groups; Experimental group (EG) and Control (CG), in the first group (EG=15) players will be assigned randomly to the treatment condition, while the other section (CG=15) players were also be assigned to serve as the control group.

3.5. Source of Data

In this study the primary data that has been taken from both experimental and control groups through pre, and post-tests by fitness test measures like 35 meter run test, sit and reach test, and t-test.

3.6. Experimental Materials and Equipment

The investigator usedChagni 01 primary school court to test as well as to give the training program to the treatment group. The material and equipment that was used for this study included stopwatch, pen, whistle, paper, box, meter ruler, scoring sheet, tape, and cones during training and for tests.

3.7. Inclusion and Exclusion Criteria

A player, who was participating in Chagni U-15 female football project and who fulfilled the health history questionnaire included in this study. In addition to that,

- ☞ Chagni U-15 female football project players who have willingness to participate in the study
- ☞ A healthy individual without any physical impairment.
- ☞ Non smoker
- ☞ An individual not on medication

Thirty participants, who fulfilled the above requirements and the health history questionnaire, were included for this study, but in the study there were no players who had any recent physical injury, unwillingness, smoker, on medication; all players were selected and allowed to participate in the selected training program.

3.8. Methods and Procedures of Data Collection

Quantitative data was collected through standardized fitness test measures like 35 meter dash to measure speed, T-test to test for agility, sit and reach for flexibility before and after given training. The data was recorded by the investigator with the help of two assistant data collectors.

3.9. Fitness Test

The following tests were selected as measuring parameter for physical fitness. The tests are credited by scholars like (Davies, 2002, Wells and Dillon, 1952) and from the website (topendsports.com) because of their validity and reliability.

3.9.1. Speed

35 meter sprint test

35 meter sprint test was used to monitor the speed of the individual. This test requires the athlete to conduct 3 x 35 meter time trails.

Materials

- ☞ 35 meter marked section in a straight line, preferably on a running track, Starting blocks, Stopwatch and Assistant

Procedure

The athlete warms up for 10 minutes then the assistant marks a 35 meter straight section with cones and the athlete taken up a sprint start position then the assistant given the commands “On Your Marks, Set, GO” and started the stopwatch. The athlete sprint the 35 meter and the assistance stop the stopwatch when the athlete's torso crossed the finishing line and record the time the athlete conducted 3 x 35 meter sprints with a 1 minute recovery between each sprint the assistant used the fastest time to assess the athlete's performance. Repeat the sprint three times; the average of three completed trials will be recorded (Davies, 2002)

3.9.2. Agility

T-Test

T-test was be used to measure the agility of the individual.

Materials

- ☞ Flat, non-slip surface, 4 cones, Stopwatch, Assistance

Procedure

The athlete warm up for 10 minutes. This t-test will be done on the football field, this test required the athlete to touch a series of cones set out in “T” shape whilst side stepping and running as fast as possible and the test included forward, lateral, and backward running. The measuring tape, marking cones, stopwatch, timing gates was used to arrange the test. The assistant place 3 cones 5 meters apart on a straight line (A, B, C) and a 4th cone (D) is placed 10 meters from the middle cone (B) so that the 4 cones form a 'T'. The athletes stand at the cone (D) at the base of the “T” faced the “T”. The assistant will give the signal to 'Go', start the stopwatch and the athlete commenced the test. The athlete run to and touché the middle cone (B) , side step 5 meters to the left cone (A) and touch it, side step 10 meters to the far cone (C) and touch it, side step 5 meters back to the middle cone (B) and touch it and then run 10 meters backwards to the base of the 'T' and touch that cone (D). The timekeeper will stop the stopwatch and record the time when the athlete touches the cone at the base of the “T”. The trial is not counted. The average time of three successful trials will be recorded as his score.

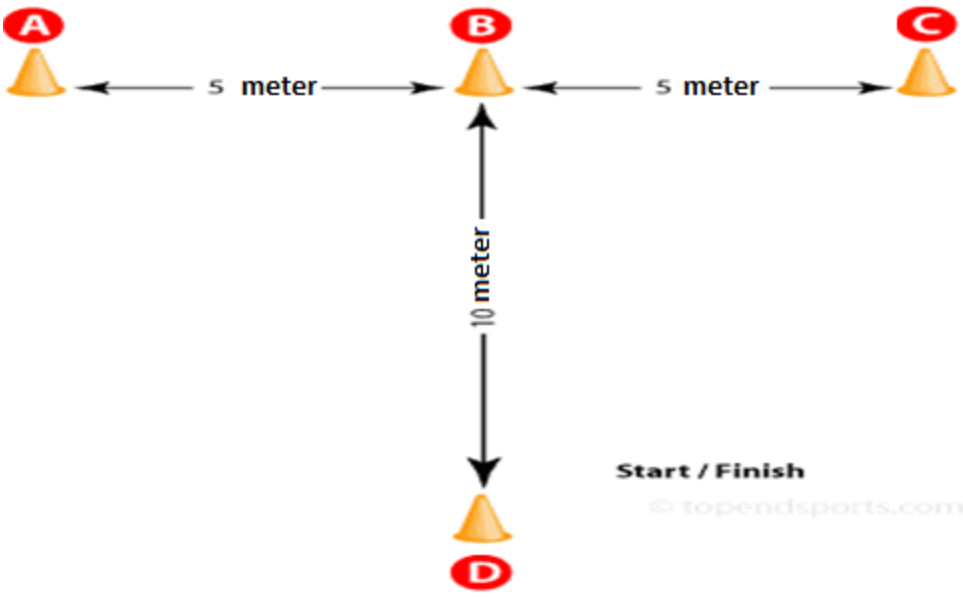

Figure 2, T- test diagram

3.9.3. Flexibility Test

Sit and Reach Test

Materials

☞ A box and a measuring tape or a sit and reach table was used for the test.

Procedure

The Sit and Reach Test is conducted as follows:

Firstly, The athlete warmed up for 10 minutes and then removed their shoes The assistant secured the ruler to the box top with the tape so that the front edge of the box lined up with the 15cm (6 inches) mark on the ruler and the zero end of the ruler pointed towards the athlete. The athlete sited on the floor with their legs fully extended with the bottom of their bare feet against the box. The athlete placed one hand on top of the other, slowly bended forward and reached along the top of the ruler as far as possible holding the stretch for two seconds. The assistant recorded the distance reached by the athlete's finger tips (cm). The athlete performed the test three times. The assistant was calculated and recorded the average of the three distances and used this value to assess the athlete's performance (Wells and Dillon, 1952).

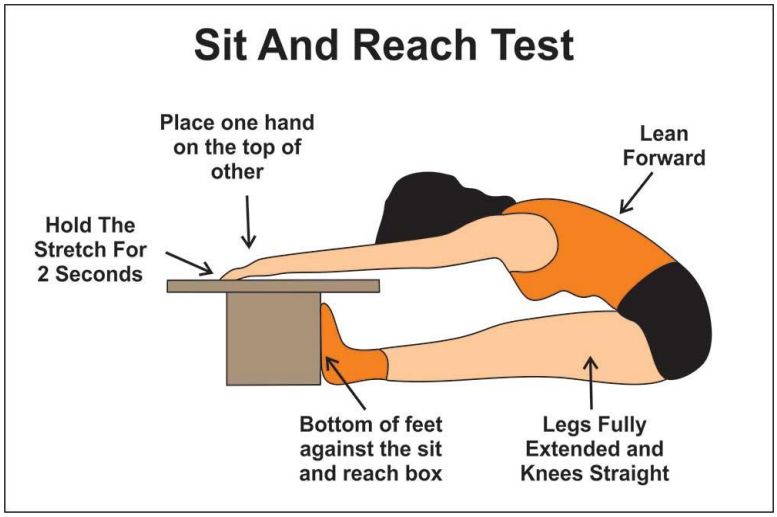

Figure 3, Sit and reach test diagram

3.10. **Exercise Training Protocol**

This study includedChagni U-15 female football project players as study group. The Experimental group begun the designed training and engages in conditional exercise. The duration of the exercises session is 55 to 60 minutes. The frequencies of training per week wereMonday, Wednesday, and Friday. The training includes 10 minute of warm up and 5 minute stretching, 30 minute of main activity, 5 minute of cool down exercises and 5 minute active rest respectively. From the beginning up to the end of this study, experimental group involved in the same exercise and the researcher informed them not to perform any other physical activities except the given one. For instance, the experimental group consists different kind of speed, agility and flexibility trainings such as, the proper warm up exercise include; incremental, synchronized movement of hands and legs, arm circles and different types of stretching exercise as well as from dynamic warm up include:- Buttock kicks and stepping buttock kicks, walking high knees and with steeping the knees in four direction, as main session selected trainings include; for Flexibility; stretching training (Dynamic, Static and Ballistic) for Agility; plyometric training,rope jumping, sprints with changes-of-directions-drill, Zig-zag run,, strength training, for speed; hollow & Acceleration sprints, shuffle run, short-burst high-intensity sprint,straight-line sprints, Suicide, leg press, chest press, incline run, shuttle run, and lastly cooling down. Those trainings consist warming up, jogging, circuit training ainterval training, three days per week; for 10 consecutive weeks.

3.11. Data Quality Control

To ensure quality of data, only standardized measuring instrument and test were used. To minimize the mistakes during data collection, continuous video record and photograph were used and the assistant fitness test collectors were trained on how to use test equipment's and measurements for five days by the investigator.

3.12. Methods of Data Analysis

The data was collected through fitnesstest measurement tools. The data analyzed, interpreted and tabulated in to meaningful idea by using simple descriptive statistical and Statistical Package for Social Science (SPSS Version 23). The paired t-test was used to compare mean value of pre training, and post training data as described by Kothari. The level of significant set at < 0.05%.

3.13. Ethical consideration

Ethical clearance was obtained from ethical review board of Bahir Dar University. Informed consent was obtained from study participant to confirm willingness for participation after explaining the objective of the study. The respondents were notified that they have the right to refuse or terminate at any point of the study. The information provided by each participant kept confidential.

CHAPTER FOUR

4. RESULTS

4.1. Overview

This chapter deals with the analysis of data collected from the subject under the study. The purpose of this study was to test the effect of soccer specific circuit training on speed, agility and flexibility performances of Chagnitown U-15 female football project players. To achieve the purpose of the study 30 female football project players were selected. From the total population of players (N= 30) the investigator grouped the project players in to two groups; Experimental Group (EG) and Control Group (CG), in the first group (EG=15), mean age 13.52 years old players were assigned randomly to the treatment condition, and EG followed ten week intervention program for three days per week, 60' minute per session. They were engaged in plyometric,Circuit,Interval training, staticdynamic and ballistic stretching exercise, while the other section (CG=15) players of corresponding age, mean age 13.72 years also assigned to serve as CG. The parameters selected for this study were speed, agility, and flexibility, to evaluate the effect of training; 35 meter run test, T-test and Sit and reach test were administered. The pre and post-test were conducted for all thirty participants on selected physical fitness variables and the scores were recorded. Paired sample t-test was used to analyze the collected data. The level of significance was set at $p < 0.05\%$ and the results for each fitness variable are discussed below.

4.2. 35 meter run Speed test

Table1: 35 meter run Speed test result (sec)

	EG				CG			
Variable	**(M ± SD)**				**(M ± SD)**			
	PT	**PoT**	**MD**	**Sig.**	**PT**	**PoT**	**MD**	**Sig.**
Speed	5.88 ± 0.16	5.42 ± 0.99	-0.45	0.00	5.80 ± 0.23	5. 80 ± 0.23	-0.0006	0.95

M ± SD= mean ± standard deviation, MD= mean difference, EG=Experimental Group CG= Control Group, PT = pre- test, PoT = post- test,

Results showed a significant improvement in 35 meter run test, the speed performance of the EG decreased their total time pre to post, they spend to finish a given distance from5.88 ± 0.16s to 5.42 ± 0.99s, with mean difference -0.45s ($p<0.05$), Thus, there was significant improvement in speed performance of EG. Whereas the CG improved their speed minimally on 35 meter run

speed test, the mean value clearly show the total time was decreased by -0.0006 sec in mean value from 5.8053 to 5. 8047 (they perform better than pre-test). However the improvement is not significant, ($p>0.05$), the above results clearly showed that selected training can improve football player's speed performance within 10 weeks. Thus, it can be stated that a 10 week selected training program produced significant improvement on speed performance of U-15 female football project players.

4.3. T-test

Table 2: T-test Agility result (sec)

	EG				CG			
Variable	**(M ± SD)**				**(M ± SD)**			
	PT	**PoT**	**MD**	**Sig.**	**PT**	**PoT**	**MD**	**Sig.**
Agility	11.11 ± 0.43	10.35 ± 0.47	-0.76	0.00	10.97 ± 0.36	10.96 ± 0.37	-0.01	0.11

M ± SD= mean ± standard deviation, MD= mean difference, EG=Experimental Group CG= Control Group, PT = pre- test, PoT = post- test,

After 10 weeks soccer specific circuit on agility training the EG decreased the time from pre to post in Agility, the mean value clearly shows, they spend a given distance from 11.11 ± 0.43 to 10.35 ± 0.47, with mean difference -0.76s ($p<0.05$), there was significant difference between PT and POT. whereas, in Control Group the mean value decreased by 0.01s from 10.97 ± 0.36s to 10.96s ± 0.37s, but it is not significant; ($p>0.05$). Therefore, it can be stated that the rationale behind the improvement of EG in agility performance was due to the exercise that they took in the selected training schedule.

4.4. Sit and reach test

Table 3: Sit and reach test Flexibility result (Cm)

	EG				CG			
Variable	**(M ± SD)**				**(M ± SD)**			
	PT	**PoT**	**MD**	**Sig.**	**PT**	**PoT**	**MD**	**Sig.**
Flexibility	6.32 ± 1.25	7.58 ± 1.37	1.26	0.00	6.56 ± 1.02	6.68 ± 1.02	0.12	0.07

M ± SD= mean ± standard deviation, MD= mean difference, EG=Experimental Group CG= Control Group, PT = pre- test, PoT = post- test,

There is statistically significant differences between the pre and post measurements of the EG in sit and reach test (flexibility), The mean value of sit and reach test of this group was significantly increased from 6.32 cm to 7.58cm, with the mean difference 1.26cm($p<0.05$), this result showed that there was significant improvement over the pre-test. In the same way the minimal improvement was observed in Control Group (CG) from pre to post-test i.e. 6.56 to 6.68 , with the mean difference 0.12cm ($p>0.05$), the improvement is not significant. Therefore, it can be stated that the rationale behind the improvement in flexibility on EG is due to the selected training that they took in the training schedule. The result clearly showed that soccer specific circuit training program can have great effect on female football player's flexibility performance within 10 weeks.

CHAPTER FIVE
5. DISCUSSION

5.1. Speed

The results of the current study are in line with junior male soccer players following programs consisting of short-sprint training (Muijka et al., 2009; Markovic et al., 2007), and confirm to positive effect in female soccer players of similar age.Experiments that have been conducted on females, with programs combining strength and speed training (Rumpf et al., 2012; MaioAlves et al., 2010; Faigenbaum et al., 2007) showed that the speed of the players is improved with a given speed test. Reports of female youth athletes aged 13 to 15 years, have showed an enhanced effect on sprint with high-intensity speed training (Jovanovic et al. (2011); Mujika et al., (2009); Kotzaminidis et al., (2005). Buchheit et al. (2010) found that a 10 week training program, with one hour per week shuttle sprint training, produced significant improvement in 30m sprint. The research results of my study agree to the above ones, those studies have also suggested that speed training have an improvement on player's acceleration, and also it was concluded that in speed training, it is important to improve as many fast motor units as possible, which are more suitable for fast movements. The gains in sprint performance occurred in the initial acceleration and speed-maintenance phases. The ability to accelerate quickly from a stationary position will provide a competitive advantage for athletes (Cecilia Geva, HalilTaskin, FatmaArslanet,al 2012).

The result of this study finding is not consistent with the finding of Wieman and Klee (2000) they showed that the passive stretching negatively influences the level of performance in serial sprints. Athletes were enrolled in an experiment where they achieved a 15 minutes stretching session of the flexor and extensor muscles of the hip, followed by sprints of 40 meters. The stretching group saw its total time increased by 0.14 seconds (thus performed less quickly), whereas the CG which did only a slow race between then sprints did not present any significant increase in the time of race (+ 0,03 s). But the result of this study finding showed us that it may be occurred due to ineffective training load or lack of specificity (Jovanovic et al. 2011; Muijka et al., 2009; Jullien et al., 2008; Steffen et al., 2007)

5.2. Agility

Other research findings also indicated that soccer specific agility training can be an effective training technique to improve an athlete's agility. This study finding was consistent with the finding of (Michael G. Miller, Jeremy J. Herniman, et,al, 2006) who conducted the study on the effects of a 6-week plyometric training program on agility, a study results revealed that six weeks plyometric exercises program can significantly improve the performance of players agility. The result of this study finding was also in line with the finding of study conducted by ZoranMilanović, et,al (2013) on the effects of a 12 week conditioning program involving speed, agility and quickness (SAQ) training and its effect on agility performance in young soccer players. This study suggests that SAQ training is an effective way of improving agility, with and without the ball, for young soccer players.

Moreover this the finding of this study complemented with the finding of R. Arjunan(2015),the improvements observed is supposed to be induced byspeed, agility and quickness (S.A.Q) training. On the basis of the results obtained the impact of Speed, Agility and Quickness training has significantly contributed to improve the selected Physical Fitness Variables such as speed, agility muscular strength endurance, and explosive power (R. Arjunan 2015).

5.3. Flexibility

The result of this study is in line with Konstantinos M, Christos P, et al (2015) who conducted effect of an eight week program of static and dynamic stretching on the range of motion (ROM) of the joints of the lower limbs, the 20 m sprint, and the performance of the standing long jump (LJ) and the drop jump (DJ 20 cm) Statistical analysis indicated significant improvements after the stretching exercises of ROM. The finding showed that the program has a positive effect on the ROM of the joints, as well as the speed and jumping ability of the subjects.

These results agree with those of Kokkonen, who reported that the distance of sit-and-reach test increased by 18.1%. The above mentioned results are in accordance with those of Tabary, who reported that stretching the soleus resulted in a 20% increase in the number of sarcomeres in series. Those changes increased muscle capability to a new functional length. In addition, Williams stated that 30 min of daily stretching is enough to increase the number of "in series" sarcomeres. Similar results about flexibility improvement were reported by Behm, who stated that flexibility improved by 11.8% in sit-and-reach test, 19.7% in hip extension, and 13.4% in

hip flexion after a four-week stretching training. Improvements in flexibility in sit-and-reach test were also reported by Turki-Belkhiria, after eight weeks. The subjects of the two groups performed dynamic stretches during warm up. The first subgroup performed SDS, and the second one performed ADS. The improvement was 57.6% for SDS and 45.1% for ADS. No change was observed in the CG.

The results of the current study are in line withRoger G. Eston, Ann V. Rowlands, David Coultonet,al (2007) the study suggested thatPNF training program led to increased flexibility associated with the hamstring muscle group, as indicated by an increased sit-and-reach score. There was a trend for better maintenance of strength at long muscle lengths in the flexibility-trained group, but there was no evidence that increased flexibility offered protection from strength loss at short muscle lengths, soreness, or stiffness.

In the study the mean difference revealed that there was a significant improvement in agility, speed and flexibility performance in the intervention group. This was due to the effect of selected training program they were engaged in. The investigator noticed that the suggested training program has positive effect on developing and promoting the selected physical fitness variables.
The current study also indicated that a training program including straight-line sprints, sprints with changes-of-directions, plyometric and strength trainings, are effective in the development of sprint and agility performance, in the same waystatic and dynamic stretching exercises are crucial for development of flexibility performance in U-15 football project players beyond the gain of traditional soccer training.

There is a question about the effect of enhanced speed and agility performance on soccer match play. The capacity to produce high-speed actions is known to have an impact on soccer match performance (Little & Williams, 2005), and both initial acceleration and agility performance are found to be powerful discriminators between elite and regional junior players (Reilly, Bangsbo& Franks, 2000; Reilly et al., 2000b). Therefore, the program demonstrated in the present study consisting of speed and Agility training may have a positive effect on this type of physical demand and also static, dynamic and ballistic stretching exercises have a significant improvement on flexibility performance in male football players.

These findings suggest that organizing the training sessions with short-burst high-intensity sprint, interval training and plyometric exercises interspersed with adequate recovery time, may result in improvements in both agility and in sprint performance in U-15female soccer players.

Training protocol consisting of speed, agility and flexibility exercises have shown positive significant effect on football player's performance, while most methods consisting of strength and power training have failed to improve agility performance (Brughelli et al. (2008). Previous experiments resulting in no or small effect, may be due to ineffective training load or lack of specificity (Jovanovic et al. 2011; Muijka et al., 2009; Jullien et al., 2008; Steffen et al., 2007). Recovery periods in the present study was from 60 to 90 seconds, and is in line with previous programs for young soccer players (Ramirez-Campillo et al., 2014), however, two to five minutes are recommended among adults (Ramirez-Campillo et al., 2014).

Limitations of this study are the small number of participants, and no assessment to determine any effects on the outcome to match-play, However, enhanced sprint performance is beneficial in football match play (Polman et al., 2007), and both short linear speed, and agility is powerful discriminators between youths (Muijka et al., 2009, Reilly et al., 2000).

5.4. Hypothesis Testing

Table 4.4: hypothesis testing

Hypothesis	Result	Decision
H_0: There is no significance speed difference between experimental and control group players after 10 weeks of soccer specific circuit training	False	Rejected
H_0: There is no significance agility difference between experimental and control group players after 10 weeks of soccer specific circuittraining.	False	Rejected
H_0: There is no significance flexibility difference between experimental and control group players after 10 weeks of soccer specific circuit training.	False	Rejected

CHAPTER SIX
6. SUMMARY, CONCLUSION AND RECOMMEDATION

6.1. SUMMARY

- The main objective of this study is to test the effects of 10 weeks soccer specific circuit training on speed, agility and flexibilityof u-15 female football project trainers. In the study descriptive and analytical quantitative research approaches are implemented. A cross sectional research design was employed in the research to evaluate the effects of 10 weeks soccer specific circuit training on speed, agility and flexeblity of u-15 female football project trainers. The target populations of the study were female trainers of U-15 football project. In this study, only primary data were used as source of information. Based on the research objective, English version questionnaire is translated to Amharic version to interview students who are eligible for the study. Thirty trainees (30) were selected for the study and random sampling technique was used to identify control and experimental groups.

- To achieve the purpose of the study, 30 participants were selected from chagni town U-15 female football project players. In order to achieve the intended objective randomized design was implemented, from the total population of players (N= 30) the investigator grouped the project players in to two groups; Experimental Group (EG) and Control Group (CG), in the first group (EG=15) players followed 10 week intervention program for three days per week and 60 minute per session. They were engaged in plyometric,Circuit,Interval training static,dynamic and ballistic stretching exercise, while the other section (CG=15) playersalso assigned to serve as control group and they continue their daily training program.
- Based on the result obtained significant improvement in 35 meter run test, the speed performance of the EG decreased their total time pre to post, they spend to finish a given distance from5.88 ± 0.16s to 5.42 ± 0.99s, with mean difference -0.45s ($p<0.05$), Thus, there was significant improvement in speed performance of EG. Whereas the CG improved their speed minimally on 35 meter run speed test, the mean value clearly show the total time was decreased by -0.0006 sec in mean value from 5.8053 to 5. 8047 (they perform better than pre-test).
- On the other hand the result obtained for agility showed that EG decreased the time from pre to post in Agility, the mean value clearly shows, they spend a given distance from 11.11 ±

0.43 to 10.35 ± 0.47, with mean difference -0.76s ($p<0.05$), there was significant difference between PT and POT. whereas, in Control Group the mean value decreased by 0.01s from 10.97 ± 0.36s to 10.96s ± 0.37s, which is not significant; ($p>0.05$).

- The result obtained from flexibility training indicated that EG trainees result increased from 6.32 cm to 7.58cm, with the mean difference 1.26cm($p<0.05$), according to the result there was significant improvement from pre to post-test. Control Group (CG) showed minimal improvement from pre to post-test i.e. 6.56 to 6.68 , with the mean difference 0.12cm ($p>0.05$), which is not significant statistically.
- The selected physical fitness variables were speed, agility, and flexibility, to see the actual changes, 35 meter run test, T-test, Sit and reach test were used as measuring tool. Tests were taken from the project players at pre and post training programs. Before the training program, the pre physical fitness tests for each variable were taken. At the end of the training program the post test was taken from the participants. By using Paired sample T-test was used to find out the significant difference ($p < 0.05$) between the post training result and pre training result of each variable.
- The result obtained in this study showed significant improvements in selected physical fitness components in the Experimental group. After analyzing the pre-post mean difference of each variable, the study showed that physical fitness variables improved significantly. This was due to the effect of selected training program they were engaged in. The investigator noticed that the suggested training program has positive effect on developing and promoting the selected physical fitness.

6.2. CONCLUSION

To improve soccer related physical fitness components, no single type of training is sufficient. In order to promote Speed, Agility, and Flexibility, Suggested training may be included in the training schedule of intermediary and elite soccer players.

In light of the results of the study and the limits of the sample and the framework of statistical treatments used, the following points were concluded:

- 10 weeks soccer specific speedtraining program given for football players has a significant effect on the speed of U-15 female project players in Chagni town.
- 10 weeks soccer specific agilitytraining program given for football players has a significant effect on the agility of U-15 female project players in Chagni town.

- 10 weeks soccer specific flexibility training program given for football players has a significant effect on the flexibility of U-15 female project players in Chagni town.
- Circuit training are important training protocol to bring improvement in soccer specific speed, agility and flexibility.
- Organizing the training sessions with short-burst high-intensity sprint,straight-line sprints, sprints with changes-of-directions interval training and plyometric exercises interspersed with adequate recovery time may result in improvements in both agility and in sprint performance in U-15 female soccer players. .

6.3. RECOMMENDATION

Based on the findings of the study, the following recommendations are forwarded:

- Female U-15 project coaches need to focus on soccer specific speed development training in order to bring better adaptation on speed performance
- To bring better adaptation for agility the female U-15 project trainees, coaches need to train their athletes using soccer specific agility training, such as circuit training.
- Coaches in U-15 projectneedto focus on soccer specific flexibility training protocol in order to improve theirathlete's level of flexibility.

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APPENDICES

Appendix I: Participant Information Sheet and Consent Form

Researcher's Name: -SintayehuEnyew

Supervisor's Name: BewketuChekol

Thesis title: -effects of 10 weeks soccer specific circuit training on speed, agility and flexibility of u-15 female football project trainers

You are kindly requested to participate in this research study as described below. This research study will be carried out and governed by the regulations for research on human beings. These regulations require that the researcher should obtain a signed agreement (consent) from you to participate in this research project.

The researcher will explain to you in detail the purpose of the project, the procedures to be used, the potential benefits and the possible risks of participation in this study. You can ask the researcher any questions that you may have about the study, and expect to receive satisfactory answers regarding the study. A basic explanation of the project is summarized below.

After discussion, if you agree to participate in the study, please sign this form in the presence of the researcher. You may discontinue at any time from the study if you choose to do so.

1. Purpose:

The purpose of this research project is to testeffects of 10 weeks soccer specific circuit training on speed, agility and flexibility training of u-15 female football project trainers. The subjects to be involved in this study will be 30 female Football Project Players from Chagni town U-15 female football project.

2. Risks and the Safeguards:

The risks of this research study are minimal. While administering the tests and during training session you may experience localized muscle fatigue in your thighs. You might feel some muscle soreness and fatigue during and after the cessation of the exercise tests and training but we do not expect any unusual risks as a direct result of this study. If any unexpected physical injury occurs, appropriate first aid will be provided, and the researcher will take responsibility of treatment.

3. Confidentiality:

The information obtained about you will be kept in confidence, although you are free to release it to your own physician. The information will be used only for scientific purposes without identifying you as an individual.

4. Contact address:

SintayehuEnyew : +251912404084

I certify that I have read and fully understand the above project. I willingly consent to participate.

Signature of Subject_____

Name: _____

Address: _____

Date: _____

I certify that I have explained fully to the above subject the nature, the purpose, the potential benefits and the possible risks involved in this research study.

Date: _____Signature of Investigator: _____

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የአማካሪዉ ስም፡_____

የጥናቱ ርዕስ፡_____

ከዚህ በታች በቀረበዉ መስፈርት መሰረት በጥናቱ ለመሳተፍ ፈቃደኛ እንድትሆኑ ትጠየቃላችሁ። በሰዉ ልጅ የሚሰሩ ጥናቶች ሀግና ደንብ አላቸዉ። እነዚህ ሀጎች የስምምነት ዉል አንዲዘጋጅ በሚያዙት መሰረት በዚህ ጥናት ለመሳተፍ ይሄንን የጥናት ተሳታፊዎች መረጃና ስምምነት ዉል ተዘጋጅቶል።

አጥኚዉ የጥናቱን ጥቅም እና ዓላማ፣ የጥናቱን አካሔድ፣ በተጨማሪም በጥናቱ መሳተፍ ያለዉን ጥቅምና ሊደርሱ ስለሚችሉት ጉዳቶች በዝርዝር የሚያብራራ ይሆናል። በዚህ ጥናት ዙሪያ ስለ ጥናቱ ያልገባችሁን ማነኛዉንም ነገር አጥኚዉ መጠየቅ ትችላላችሁ። የጥናቱ መሰረታዊ ማብራሪያ ከዚህ በታች ተዘርዝረዋል። በደንብ አንባችሁ በጥናቱ ለመሳተፍ ከተሰማማችሁ ፊርማችሁን ማስቀመጣችሁን አትርሱ።

1. የጥናቱ ዓላማ፡

የዚህ ጥናት ዋና አላማ የሚሰጣችሁ ስልጠና በ 10 ሳምንት ዉስጥ በእናንተ ስለሚያመጣዉ አካላዊ ለዉጥ ነዉ።

2. ሊደርሱ የሚችሉ ጉዳቶች፡ በዚህ ጥናት ስልጠና በመሳተፋችሁ በጣም የከፋ ጉዳት አይደርስባችሁም ነገር ግን መጠነኛ የሆነ የጡንቻ መያያዝ ሊከሰት ይችላል። ያልተጠበቀ ጉዳት ከተፈጠረ ግን የመጀመሪያ ህክምና ይሰጣል። አንዲሁም አጥኚዉ ለሚከሰተዉ ጉዳት ሙሉ ሃላፊነቱን የሚወስድ ይሆናል።

ስንታየሁ እንየዉ፡- 0912404084

የጥናቱን ዝርዝር ዓላማ፣ የጥናቱን አካሔድ፣ በተጨማሪም በጥናቱ መሳተፍ ያለዉን ጥቅምና ሊደርሱ ስለሚችሉት ጉዳቶች በዝርዝር አንብቤ በመረዳቴ በዚህ ጥናት ለመሳተፍ ተስማምቻለሁ።

ፊርማ፡_____

ስም፡_____

አድራሻ፡_____

ቀን፡_____

የጥናቱን ዝርዝር ዓላማ እና ጥቅም፣ የጥናቱን አካሔድ፣ በተጨማሪም በጥናቱ መሳተፍ ያለዉን ጥቅምና ሊደርሱ ስለሚችሉት ጉዳቶች በዝርዝር አቅርቤለሁ።

ቀን፡ _____ ፊርማ_____

Appendix II; Health History and Physical Readiness Questionnaire of the Participants

This questionnaire is designed to obtain information on the health status and physical readiness of the subjects participating for the research study. The information will be kept strictly confidential.

For participants: please read the following question carefully and indicate your correct response to each question by encircling it on the choice letter given.

1. Do you have a recent physical injury such as bone, muscle and joint which will be aggravated by physical exercise? A. Yes B. No

If yes indicate the type of injury that you had_____

2. Do you have suffered with heart condition? A. Yes B. No

3. Do you have high or low blood pressure while you are checking in clinic or hospital?

A. Yes B. No

4. Have you ever felt pain in your chest when you do physical exercise?

A. Yes B. No

5. Are you taking any prescription medicines recently?

A. Yes B. No

If yes, name them below:

Name of drug	Dosage
_____	_____
_____	_____
_____	_____

6. Have you ever suffered from shortness of breath at rest or with mild exercise?

A. Yes B. No

7. Is there any history of Coronary Heart Disease within your family?

A. Yes B. No C. Don't know

8. Do you ever feel feint, have spells of dizziness or have you ever lost consciousness?

A. Yes B. No

9. Do you currently drink more than the average amount of alcohol per week (21 units for men and 14 units for women)? A. Yes B. No

10. Do you currently smoke?

A. Yes B. No

Note: If the participant answer one of the above questions as 'yes' she will be excluded from the study.

I hereby state that I have read, understood and answered honestly the questions above. I also state that I wish to participate in activities, which may include aerobic and anaerobic exercises.

Client's Signature: _____

Date: _____

Appendix III: Subjects Physical Fitness Record Sheetand training program

Chagni U- 15 female Football project players physical fitness test record sheet

No	Name	Selected physical fitness variables test											
		TESTS	Speed (Unit= Second)				Agility (Unit= Second)				Flexibility (Centimeter)		
			35m dash run test				*"T" test*				*Sit and reach test*		
			Trials			*Aver.*	*Trials*			*Aver.*	*Trials*		*Aver.*
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Chagni U- 15 female Football project players physical fitness training program						
Days per week	**Types of Exercise**	**Duration**	**Repetition per Sets**	**Rest b/n Sets**	**recovery time**	**intensity of exercise**
	Warming up exercises		-	-		
	Warm up, High knee, +Jogging	4’				
	Side kick, karaoke, etc…….….....	6’				
	light stretching	5’	-	-		
	.**Main session**				5 minute	Moderate intensity
Monday	Shuttle Run 20 meter……	7’	3x2	1’ active rest		(55-69% MHR)
(5:30-6:30)	Suicide 20 m ……	7’	3x1	-		
	Zig-zag run 20 meter……..	7’	3x2	1’ active rest		
	T-drill 30 meter……..	7’	3x1	-		
	Circuit training 30, 15, & 10 meter……..…..	7’	3x1	-		
	Cooling down;					
	Different types of light stretching……..	5’	-	-		
	Warming up exercises		-	-		
	High knee, Warm up +Jogging+ light					
	Stretching, side kick, karaoke, etc…….....	10				
	light stretching	5’	-	-		
Wednesday	.**Main session**				5 minute	Moderate intensity
(5:30-6:30)	Static stretching exercises……	7’	-			(55-69% MHR)
	Dynamic stretching exercises……	7’	-			
	Shuttle Run 20 meter…….……	7’	3x2	1’ active rest		
	Circuit training…….…..	7’	3x1	-		
	Circuit training 30, 20, & 10 meter……..….	7’	3x1	-		
	Cooling down;					

	Different types of light stretching……..	5’	-	-		
Friday	**<u>Warming up exercises</u>**		-	-		
(5:30-6:30)	Warm up, High knee, +Jogging	4’				
	Side kick, karaoke, etc…….....	6’				
	light stretching	5’	-	-		
	.**<u>Main session</u>**				5 minute	Moderate intensity
	Shuttle Run 20 meter……	7’	3x2	1’ active rest		(55-69% MHR)
	sprints with changes-of-directions…….……	7’	3x1	-		
	Zig-zag run 30 meter……..	7’	3x2	1’ active rest		
	T-drill 40 meter……..	7’	3x1	-		
	Circuit training 30, 20, & 10 meter……...…..	7’	3x1	-		
	<u>Cooling down;</u>	5’	-	-		

Days per week	Types of Exercise	Duration	Repetition per Sets	Rest b/n Sets	recovery time	intensity of exercise
	Warming up exercises		-	-		
	Different types of exercise for					
	General &**Specific** warming up exercise sessions……..	20’				
	Jogging, karaoke, side steps, high knee, Light stretching	5’		-		
	.**Main session**				5 minute	Moderate intensity
Monday	Rope jump……..…	7’	20x3	1’ active rest		(55-69% MHR)
(5:30-6:30)	Suicide 50 m ……	7’	4x1	-		
	Zig-zag run 30 meter……..	7’	4x2	1’ active rest		
	Squat jump……..	7’	15x3	-		
	Circuit training 30, 20, & 10 meter……..…..	7’	4x1	-		
	Cooling down;					
	Different types of light stretching……..	15’	-	-		
	Warming up exercises		-	-		
	High knee, Warm up +Jogging+ light					
	Stretching, side kick, karaoke, etc…….....	20				
	light stretching	5’	-	-		
Wednesday	.**Main session**				5 minute	Moderate intensity
(5:30-6:30)	Static stretching exercises…….……	7’				(55-69% MHR)
	Dynamic stretching exercises……	7’				
	Leg press,……..	5’	4x2	1’ active rest		
	chest press,……..	5’	4x1	-		
	incline run ……...…….	15’	4x1	-		
	Cooling down;					
	Different types of light stretching……..	15’	-	-		
Friday	**Warming up exercises**		-	-		
(5:30-6:30)	Warm up, High knee, +Jogging	4’				

	Side kick, karaoke, etc……....	6’				
	light stretching	5’	-	-		
	.**Main session**				5 minute	Moderate intensity
	Shuttle Run 20 meter……	7’	4x2	1’ active rest		(55-69% MHR)
	Suicide 50 m ……	7’	4x1	-		
	Zig-zag run 30 meter……..	7’	4x2	1’ active rest		
	T-drill 40 meter……..	7’	4x1	-		
	Circuit training 30, 20, & 10 meter…….……...…..	7’	4x1	-		
	Cooling down;	5’	-	-		

Days per week	Types of Exercise	Duration	Repetition per Sets	Rest b/n Sets	recovery time	intensity of exercise
	Warming up exercises		-	-		
	Warm up, High knee, +Jogging……..	4’				
	Side kick, karaoke, etc…….….....	6’				
	light stretching	5’	-	-		
	.**Main session**				5 minute	Moderate intensity
Monday	Shuttle Run 20 meter……	7’	3x2	1’ active rest		(55-69% MHR)
(5:30-6:30)	Suicide 50 m ……	7’	3x1	-		
	Zig-zag run 30 meter……..	7’	3x2	1’ active rest		
	T-drill 40 meter……..	7’	3x1	-		
	Circuit training 30, 20, & 10 meter…….……...…..	7’	3x1	-		
	Cooling down;					
	Different types of light stretching…….……..	5’	-	-		
	Warming up exercises		-	-		
	High knee, Warm up +Jogging+ light……	4’				
	Stretching, side kick, karaoke, etc…….....	5’				
	light stretching 5’		-	-		
Wednesday	.**Main session**				5 minute	Moderate intensity
(5:30-6:30)	Static stretching exercises…….……	7’	-			(55-69% MHR)
	Dynamic stretching exercises…….……	7’	-			
	Shuttle Run 20 meter…….……..…	7’	3x2	1’ active rest		
	Suicide 50 m …….……	7’	3x1	-		
	Circuit training 30, 20, & 10 meter…….….	7’	3x1	-		
	Cooling down;					
	Different types of light stretching……...	5’	-	-		
Friday	**Warming up exercises**		-	-		
(5:30-6:30)	Warm up, High knee, +Jogging	4’				
	Side kick, karaoke, etc…….....	6’				

	light stretching	5’	-	-		
	.**Main session**				5 minute	Moderate intensity
	Shuttle Run 20 meter……	7’	3x2	1’ active rest		(55-69% MHR)
	Suicide 50 m ……	7’	3x1	-		
	Zig-zag run 30 meter……..	7’	3x2	1’ active rest		
	T-drill 40 meter……..	7’	3x1	-		
	Circuit training 30, 20, & 10 meter……..…..	7’	3x1	-		
	Cooling down;	5’	-	-		

Appendix V: Table 2: Paired sample T-test results of Speed, Agility and Flexibility

Paired Samples T-test

		Paired Differences							t	df	Sig. (2-tailed)
		Mean		Std. Deviation		Std. Error Mean	95% Confidence Interval of the Difference				
		PT	POT	PT	POT		Lower	Upper			
35m run test	**CG**	5.8053	5.8047	.23913	.23778	.01049	-.02182	.02316	.064	14	.950
	EG	5.8827	5.4273	.16158	.09903	.03469	.38092	.52974	13.124	14	.000
T test	**CG**	10.9760	10.9680	.36327	.37436	.00470	-.00208	.01808	1.702	14	.111
	EG	11.1120	10.3507	.43264	.47890	.04263	.66991	.85276	17.861	14	.000
Sit and reach test	**CG**	6.5600	6.6800	1.02106	1.02901	.06188	-.25271	.01271	-1.939	14	.073
	EG	6.3200	7.5867	1.25368	1.37418	.06068	-1.39682	-1.13651	-20.873	14	.000

M= mean, Std. Deviation =standard deviation,* EG=experimental group CG= control group, *PT = pre- test, POT = post- test, TT