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# EFFECT OF FOOTBALL MINOR-GAMES TRAINING ON STUDENTS SELECTED PHYSICAL FITNESS COMPONENTS IN TAGEL GENERAL PREPARATORY SCHOOL BY: GEDEFAW ABEBE

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# BAHIR DAR UNIVERSITY

# SPORT ACADAMY

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**DEPARTMENT OF SPORT SCIENCE MED PROGRAM**

## APPROVAL PAGE

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## DECLARATION OF AUTHORSHIP

I, hereby that this thesis for the partial fulfillment of the requirement for the degree of master of education in teaching physical education on the title of **"EFFECT OF FOOTBALL MINOR-GAMES TRAINING ON STUDENTS SELECTED PHYSICAL FITNESS COMPONENTS IN TAGEL GENERAL PREPARATORY SCHOOL "** is my real original work and all sources of material used in this thesis have been acknowledged. It has not previously formed on the basis for the award of any Degree, Diploma of any university, other Institution of higher learning or publication except where due acknowledgement is made in acknowledgements.

Mr. Gedefaw Abebe

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# DEDICATION

I dedicate this thesis manuscript to my beloved parents and families. As well as the researcher extended his dedication to peoples who contribute even a piece of advice through in my life to reach in this stage.

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## LIST OF ACRONYMS & ABBREVIATIONS

ACSM = American collage of sport medicine

CG =Control group

CVE= Cardio vascular endurance

EG = Experimental group

FMS = Fundamental movement skill

HR = Heart rate

ME = Muscular endurance

RPE =Rating of perceived exertion

SSG = Small sided game

SPSS = Statistical packages of social science

TGFU = Teaching game for understanding

Vo2max= Maximum oxygen consumption

# ABSTRACT

*Developing football minor game training program for student is a strategy for improve physical fitness to minimizing passiveness of student during practical lesson. The purpose of this study was to evaluate the effect of teaching twelve week minor game training program on student physical fitness. The study employed quasi-experimental research design for pretest and post test result on both experimental and control group. From grade 12$^{th}$ Male students selected samples of the study consisted of (40) students divided in to two equal groups from Tagel preparatory school were selected with age (EG=18.3 ±0.657, CG=18.85±0.75). The researcher developed twelve week minor game training interventions ware gave for only experimental group(n=20) participated 3 sessions per a week 40-60 minute per session of exercise training in addition, to one day per week physical education program. Control group (n=20) did not join in any sporting activity except for physical education class at the school. Six tests were used to determine students physical fitness improvement such as twelve minute run test, laying sit up ,sit and reach test, vertical jump test,30m acceleration and Illinois agility test. The data collected for the study subject was analyzed using SPSS version 20 software (statistically packages of social science) by paired t- test with level of significant 0.05. The result showed on football minor games training statistical significant improve on CVE (MD=77.5), muscular endurance (MD=2.5), flexibility (MD=1.95), leg power (MD=2.45), speed (-0.204) and agility (-0.326) at 0.05 level of confidence. But, no statistical significant difference found in the entire variable in control group (P>0.05). After statistical processing of measurements, the study revealed the following results: football minor- games have statistical significant effect on improvement of physical fitness (P < 0.05) among the preparatory school 12$^{th}$ grade students, between the pre and post measurements in favor of post measurement. Furthermore, results revealed that the experimental group members were improved physical fitness performance in comparison with control group members. The study was assessing only physical fitness it is possible to conduct similar studies in collective games while using minor - games program that contains social skills, performance skill and life skills.*

***Key words**: Game, Minor- game, Physical fitness.*

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

Minor games are one of the most common drills used by trainer and coaches for team training. Although in the past minor game are mainly used to improve the interaction among players and to develop technical and tactical ability Kempele, (1999). Key components of game are rules, challenge and interaction which involve mental and physical stimulation. Many games help develop practical skills serve as a form of exercise. Small-sided games are often used by adults as part of their regular training programs in various forms, depending on the aim and the philosophy of the coach. Small-sided games allow more time spent managing the ball under game-like conditions compared with generic training. Thus, most exercise sessions in team sports have minor – game played with a reduced number of players on a smaller area than the regular official game pitch size Rampinini & Impellizzeri, (2007).

The best factor for determining the activity levels of school children are the extent of participation in organized sports and physical education classes. Considering that teenagers spend most of their time at school, physical education and sport classes should significantly contribute to their physical and mental development Johnston, (2007).

Game-based training is increasingly being used to improve the skill and physical fitness of team-sport athletes. The use of games in training is based on the premise that the greatest improvements in performance occur when the physiological demands and movements patterns replicate the demands of the sport. A teacher can enhance the child's personal aspects through mobility games (minor- games) which aim at developing the entertainment, enjoy, social interaction and friendship elements, at the same time, they are compatible with surrounding environment conditions, furthermore, they are characterized by being not governed by standard rules and not restricted by means or

instruments, in addition, they are Compatible with child's various age stages, For these reasons these games are called minor or small games Shawqi, (1997).

Ball games require a detailed skill, including physical, mental, technical and tactical aspects. Among these, the physical fitness of the players significantly affects their game intelligence and the tactics of the team, because ball games require repeated maximum effort. That is why players should have physical fitness to strengthen their aerobic and anaerobic capacities in order to undertake fast and hard movements, and to have long lasting offensive and defensive efficiency Shawqi, (1999).

Micro- games are concerned with the youngster's development through their development stages. These games allow them to exploit the appropriate opportunities to enhance their readiness, abilities and capabilities, in addition, these micro games fulfill the child's primary needs such as: physical mobility and mental development Al Rumi, (1999).

Buker, (1964) argues that micro games are activity for all age stages, with multiple purposes as any other activities that involve physical activity, also, they are the true standard to be judged with, to abide by these purposes is connected with the goals of each of these micro games;

Soccer game is physical activity that requires moderate to high level of conditioning in addition to technical and tactical skills Reilly and William, (2002). Team sports such as volleyball and football require Athletes to have well developed speed, muscular strength and power, agility, and maximal aerobic power. Reilly & Gilbourne, (2003).However, while well-developed physiological capacities are important for team sports, athletes are also required to have well-developed technical skill, fitness and decision making ability. Specifically, fitness such as endurance, strength, speed, and agility must all be well developed in order to achieve a high performance level in game.

The soccer is a team game which requires very fast body movement is determined by situations with in the competition; such as opposing team player with and without the ball, ball movement and team movement. Because these reasons modern soccer game seems to be all about speed (fast movements) which becomes prominent in short and long

sprint kapidzic & et al. (2011). Bangsb, (1994) stated that the overall aim of anaerobic training in soccer is to increase player's potential to perform moderate to high intensity exercise during the game. The specific aim of anaerobic training in soccer game is to improve the ability, act quickly and produce power rapidly .thus, a player reduces the time required to react and elevates performance of a sprit during a game.to improve the capacity, produced power and energy continuously via the anaerobic energy path way. There by a player elevates the ability to perform high intensity exercise for long periods during a game.

Baltimore & et al. (1995) defined physical fitness as the ability of the body to Perform moderate to vigorous level of physical activity without undo fatigue and capability of maintaining such abilities throughout the life. It is also refers to a set of health and skill related attributes a person has in regard to their ability to perform physical activity behavior. The need to indicate component of fitness in to the training program of soccer players would indicate that the exercise prescription should be multi-dimensional. Physical fitness during child hood has been identified as strong predictor of current and future health states. However, the usual school day lasts more than five hours in most case, and a great amount of this time is composed of sedentary activity. The most commonly researched use for physical fitness is certainly for the purpose of physical exercise directly impacting the body.

The correlation between physical fitness and health has been researched including the importance of cardiac, muscle, joint, and pulmonary functioning and even psychological functioning. Because physical fitness is associated with the person ability to work effectively, to be healthy, to enjoy leisure time, resist hypo kinetic conditions, neuromuscular coordination and maintain optimal state of health Corbin & et al. (2006).

In modern football, increasingly observed importance of a strong fast players , able to withstand the high demands of a match and still maintaining a high level of competitiveness, for instance, able to with stand and resist stressful condition of the game professional soccer. But the researcher goal will be to examine the component of same selected physical fitness components in relation to the effect of minor game training Tagel general preparatory school.

## 1.2 Statement of the Problem

As the researcher observed the teaching of physical education practical session on high school students in various aspects, due to the school teachers are feeling compelled to create more time to teach theoretical and give ball to the students simply to play But, this well not effective for the goal of practical class to improve physical fitness and movement skills rather techniques development.

Many teachers use traditional minor - game programs because of their belief that it gives children their desires such as fun and happiness, but the educational fact ensure that minor-games program hold many properties in learning health, gaining physical fitness, emotional traits and social traits as well as knowledge and application skills in life span that aims to develop a balanced personality for children Alajnaf, (2005).

Generally, most of the students in high school have a limitation of fitness to perform skill and drills, tired (fatigued) with different intermural and extramural school competition and even passive throughout the period of physical education practical class. As the researcher was followed upon the field of teaching physical education practical session on high school students, most of the teachers used individual technical drills with large class size without sufficient materials and equipment, once class per week is difficult to improve physical fitness.

Goodman, (2001) games is an approach to teaching that makes very effective use of active learning in that the students are learning though playing the games. In addition to this, 'questioning is a powerful method of encouraging players to analyses their actions, both individually, and as a team'. Although in the past minor game are mainly used to improve the interaction among players and to develop technical and tactical ability Kempele et al. (1999).

The main reason behind the researcher interest in the football lesson is the lesson itself is part of the Physical education curriculum for the high school student, familiar with the rural area and better to organize the student in the game than other ball games. In these stages the students perfect and appropriate can learn fitness skill, performance skills, social and emotional traits needed on football.

Hence, the researcher wants to motivate to fill this gaps that created 12 week football minor game trainings to improve students physical fitness on different running actions& technical skill, and they can become the core of this game's continuity and nourishment.

## 1.3 Objective of the Study

### 1.3.1 General Objective

The general objective of the study was to evaluate the effect of football minor games training on the students selected physical fitness components on Tagel General and Preparatory school.

### 1.3.2 Specific Objectives

- To find out the effect of using football minor game training in improving CVE
- To assessing the effect of using football minor game training in improving endurance
- To find out the effect of using football minor game training in improving flexibility
- To investigate the effect of using football minor game training in improving explosive strength
- To investigate the effect of using football minor game training in improving speed
- To investigate the effect of using football minor game training in improving agility

## 1.4 Hypotheses of the Study

To develop a specific direction, better understanding about the study to insure research process remains scientific and reliable the following hypotheses were formulated.

1. **$H_o$**: football minor game training has no statistical significant effect on improving CVE on student's comparison pre and post-test results.
2. **$H_a$**: football minor game training has statistical significant effect on improving CVE on student's comparison pre and post-test
3. **$H_o$**: football minor game training has no statistical significant effect on improving muscular endurance on student's comparison pre and post-test results.
4. **$H_a$**: football minor game training has statistical significant effect on improving muscular endurance on student's comparison pre and post-test

5. **$H_0$:** football minor game training has no statistical significant effect on improving power on student's comparison pre and post-test results.
6. **$H_a$:** football minor game training has statistical significant effect on improving power on student's comparison pre and post-test
7. **$H_0$:** football minor game training has no statistical significant effect on improving flexibility on student's comparison pre and post-test results.
8. **$H_a$:** football minor game training has statistical significant effect on improving flexibility on student's comparison pre and post-test
9. **$H_0$:** football minor game training has no statistical significant effect on improving speed and agility on student's comparison pre and post-test results.
10. **$H_a$:** football minor game training has statistical significant effect on improving speed and agility on student's comparison pre and post-test

## 1.5 Significances of the Study

The outcome of the finding will be the following significances.

Help the teacher to employing physical education class /especially ball game in revealing the motor talents of students, and direct them to wards teaching team game.

Help the student to improved physical fitness and gain information to understand the effect of minor game on physical fitness.

Help the teacher and coaches to give information about the relevance of minor game training with or without awareness of the current level of trainee's.

Help to provide fertile ground for practitioners, teachers and coaches with motivation to use small sided games of football training during school in order to improve physical fitness and mobility skills.

Help to initiate concerned researcher in the area to expand finding and to come up a new ideas and suggestions that can contribute to the betterment of training in particular and its contribution to the other projects in general.

The study's significance stems from its importance in improving the content characteristics of the physical education class, and the benefits from minor- games in developing life traits such as physical fitness, self – reliance, relive tension, social communication and collective work.

## 1.6 Delimitations of the Study

In research, delimitations address how the study is narrowed in scope Creswell, (1998). This study was designed to evaluate the effect of teaching minor- game training on student physical fitness improvement, in Amhara region south Gonder, Simada district Tagel general preparatory school on grade $12^{th}$ male students

The test was including selected fitness components such as the strength, endurance, flexibility, speed, power and agility of the students

They were only healthy individual, that has no any physical conditions and medical conditions are participated in this study.

Training program are includes only twelve week football minor-game training.

They were only filed test uses that are easily administer for pre- test before straining training program and post-test after training program.

## 1.7 Limitations of the Study

The researcher faced the following limitations:

The researcher unable to control the subject nutritional status, sleep habit, the requirement of a high level of technical and tactical proficiency to achieve appropriate exercise, lack of available relevant research materials, lack the current research knowledge into the prescriptive variables that affect intensity, the availability of assistance to control and monitor this type of training was the limitation encounter in this study. In addition to these tests that were used for variables were emphasizing to the specific field test that are easily monitored and administered.

## 1.8 Definition of Key Terms

**Game:** structured form of play, usually undertaken for enjoyment and used as an educational tool, achievement and reward as well Shawqi, (1999).

**Minor-game:** a set of easy, simple and structured movements which are designed to serve mobility skills and life aspects with the aim of preparing the individuals balanced personality Hill-Haas & et al. (2009).

**Physical fitness:** refers to a set of attributes people have or achieve, and related to the ability of the body to work effectively and efficiently in daily activity Singh, (2007).

## 1.9 Organization of the Study

This study was organized on the base of the common scientific procedures. The research was consists of five chapters. The first chapter deals about introduction consists of background of the study, statement of the problem, objective of the study, research hypotheses ,delimitation of the study ,limitation , operational definitions and organization of the study . The second chapter deals with the review of related literature, and the third chapter deals methods of the study Such as Description of the study area, Overall Design of the study, Population, Sample and Sampling techniques, Data gathering instruments and procedure, training protocol, Test administration and scoring and Data analysis techniques. The fourth chapter deals with Result and Discussion of the study. Finally, based on the analysis data Summery, Conclusion and Recommendation are made and cited in chapter five**.**

# CHAPTER TWO

# REVIEW OF RELATED LITERATURE

## 2.1 Concepts of minor-Game on football

Minor game is referred to as skill-based conditioning games Gabbett, (2006) or game-based training, are modified games played on reduced pitch areas, often using adapted rules and involving a smaller number of players than traditional football games. Game is structured form of play, same times played purely for entertainment, achievement or rewarded as well. They can be played alone, in a team by amateurs or by professions. Key components of game are rules, challenge several studies showed the physiological impact of small-sided games on diverse team sports. Minor games in football are widely considered for formally practical advantages that have led to its popularity as a training modality in football at all ages and levels.

Gabbet, (2008) showed that skill-based conditioning games that simulate the physiological demands of competition in junior football players offer a specific training stimulus. The goal of small sided game is to be of particular use for junior, youth and young adult players. However, the long term plan should be to develop a full pathway of modified games so that new or younger players can move through the various formats ending up at the 6 v 6 games with a fully developed range of the required tactical and technical skills.

The study of Singh, (2007) also support the result of study he conclude in his study that players of trained were found significantly better on all physical fitness variables i.e. endurance, strength, speed, power, flexibility and agility that of non-trained one. Some studies have compared the effectiveness of the traditional technique approach and the game-based instructional model on game performance in school settings.

Sport games represent a high-strategy sports in which sport-specific declarative and procedural knowledge area of crucial importance for sport performance Abernethy & Thomas, (1993).Some studies have compared the effectiveness of the traditional

technique approach and the game-based instructional model on game performance in school settings. Kirk & Macphail, (2002).Although the traditional instructional model might be effective in improving technical skills; it has been criticized for the loss of the contextual nature of the skills in sport game.

Griffin, Oslin & Mitchell, (1995) showed that declarative knowledge was significantly higher in a group of students taught with a game-based instructional approach compared with a technical teaching approach and a control group. The concept and motive behind the use of small sided games is a reduced number of players equals a higher number of ball contacts, and consequently a greater number of learning opportunities.

Gabbett, (2006) showed that skill-based conditioning games that simulate the physiological demands of competition in junior elite football players offer a specific training stimulus. The goal of small sided game is to be of particular use for junior, youth and young adult players. However, the long term plan should be to develop a full pathway of modified games so that new or younger players can move through the various formats ending up at the maximum number with a fully developed range of the required tactical and technical skills. Little, (2009) Although fitness development based on running methods is well supported by using small-sided soccer games, because greater methodological development for small-sided games in soccer training is needed to optimize the training periodization and help coaches systematize the sessions. This review aims to propose guidelines for soccer training based on small-sided games.

The primary benefits of minor game are that they appear to replicate the movement demands, physiological intensity and technical requirements of competitive match play little, (2009) whilst also requiring players to make decisions under pressure and fatigue. However, the realization of these advantages is dependent on game design. Finally, SSGs are considered to be more time efficient, as physical performance, technical skills and tactical awareness, can be developed concurrently.

## 2.2 Quantifying Exercise Intensity during minor game

Exercise intensity in minor game has typically been assessed via heart rate (HR), blood lactate concentration and rating of perceived exertion (RPE; how you feel). Indeed, HR is

the most common measure used for objectively monitoring training intensity in many sports. Drust & Relly, (2000) for example, the mean HR and oxygen consumption (VO2) relationship has been reported to be similar during treadmill based intermittent exercise that reproduced the demands of a football game. Similarly, several studies have shown that the HR/ VO2 relationship established in the laboratory is similar to the HR/ VO2 relationship measured at different intensities during football-specific exercises (five vs. five).

Bangsbo, (1994) In contrast, there is also evidence showing that HR monitoring may underestimate the intensity of football drills that have a high anaerobic component, including short-duration SSGs involving few players (e.g. 2-minute bouts; two vs. two). Another way to gauge your exercise intensity is see how hard your heart is beating during physical activity. To use this method, you first have to figure out your maximum heart rate. You can calculate maximum heart rate by subtracting age from 220. American Heart Association generally recommended target heart rate of Moderate exercise intensity: 50%-70%of maximum heart rate, and vigorous exercise intensity: 70-85%of maximum heart rate. However, given the intermittent nature of football, blood lactate concentration is a poor indicator of muscle lactate concentration during football match play and, consequently, may be misrepresentative of individual exercise intensities. In contrast to blood lactate concentration, RPE is a simple, non-invasive and inexpensive method of monitoring exercise intensity.

Bors, (1982) several studies have shown that RPE can be validly used to assess exercise intensity at a specific time during exercise and as a global indicator of overall session intensity Coutts et al. (2009) examined the relationship between RPE with both HR and blood lactate concentration measures. The findings of this study demonstrated that the combination of HR and blood lactate concentration predicted RPE better than HR or blood lactate concentration measures alone. Therefore, it was suggested that RPE may be a more valid marker of global exercise intensity than any physiological measures independently. Session RPE measures may be a more valid global measure of exercise intensity during high-intensity intermittent exercise such as minor game. However, all the methods currently available to assess exercise intensity during minor game do have limitations.

There is no clear evidence to suggest that one particular method is superior to the others. The methodology chosen may depend on what the variable of interest is. Therefore, on the basis of studies examining the validity of HR, RPE and blood lactate concentration during football-specific training, it has been suggested that minor game training is best monitored via a combination of each of these measures of internal exercise intensity Coutts & et al. (2009).

## 2.3. Variables Affecting minor game Intensity

The exercise intensity of minor game can be demonstrated through a player's movement and/or physiological/perceptual responses. Many prescriptive variables that can be controlled by the coach may influence the exercise intensity during minor game. Balsom & et al. (1999) these factors include pitch area, player number, coach encouragement, training regimen (continuous or interval, including work: rest manipulations) rule modifications, and the use of goals and goalkeeper

### 2.3.1 Pitch Area

The total pitch area, both in absolute and relative terms, can be varied, and this may influence the intensity of minor game. The relative pitch area per player is defined as the total pitch area divided by the total number of players. The majority of studies report an increased HR, RPE and blood lactic concentration response with increased pitch area. For example Rampinini & et al. (2007) increased the pitch area by 20% across a variety of minor game formats (three vs. three to six vs. six, inclusive). Both the percentage of maximum HR (%HR max) and blood lactate concentration were higher during minor game played on a large pitch than on a medium-sized or small pitch. RPE was also higher on medium and large pitch sizes compared with small pitches.

### 2.3.2 Player Number

The number of players on each team in a minor game can also be altered to regulate the intensity of this training mode. Studies that have investigated the effect of altering player number on minor game training intensity have altered player numbers while, at the same time, held many other factors constant, including the pitch area. In summary, despite

some methodological concerns (very short game duration; differing work: rest ratios), most studies have shown that minor game containing smaller numbers of players elicit greater HR, blood lactate and perceptual responses. Coutts & et al. (2010) on closer analysis, the results suggest the possible existence of a threshold pitch area. For example, the most pronounced reductions in HR occurred when two versus two was increased to three versus three, and three versus three was increased to four versus four, on a 25 by 20 meter pitch area. In contrast, less pronounced reductions in HR occurred when two versus two was increased to three versus three, and three versus three was increased to four versus four on 20 by 15 meter and 30 by 25 meter pitch areas, respectively.

### 2.3.3 Concurrent Manipulation of Pitch Area and Player Number

Few studies have systematically examined the influence of the concurrent manipulation of pitch area and player number on exercise intensity in minor game. Rampinini & et al. (2007) In addition; there are several differences in the design and prescription of the SSGs in the studies that inadvertently manipulated both player number and pitch area, making comparisons between these studies very difficult. In general, it appears that a concurrent increase in player number and relative pitch area per player in minor game elicits lower exercise intensity.

For example, Rampinini et al. (2007), investigated the effects of concurrently increasing the player number and pitch area on %HR max, blood lactate concentration and RPE in 20 amateur football players. The main finding of this study was that the exercise intensity during all game formats was decreased when there was an increase in the number of players and more pitch area per player. An increase in absolute pitch area and player number also resulted in a greater relative pitch area per player. Therefore, the observed reduction in minor game intensity by several of these studies may have been due to either the independent effects of increasing the number of players or the inability of the additional players to cover more of the available pitch area.

### 2.3.4 Rule Modifications

In practice, football coaches quite often modify playing rules in minor game to achieve greater exercise intensity, or develop specific technical and tactical skills. However, there have only been a few studies that have examined how the modification of rules can

influence these variables. Although these simple rule modifications relate to technical aspects of the game, other studies have investigated the influence of providing 'artificial' changes. An example of an artificial rule change is the requirement for a player to complete a series of sprints of planned duration during minor game. The artificial rule change that required players to complete extra sprint efforts around the pitch during each minor- game at pre-set times, imposed a greater external training load on the players, but did not affect HR, blood lactate concentration or RPE. In contrast, changes in technical rules that were related to a team's chances of scoring may have improved player motivation and thereby increased the exercise intensity during the minor game. Although there have been relatively few studies that have examined the influence of rule modifications on exercise intensity during minor games, the rule changes that have been investigated are by no means exhaustive. To date, the rule changes that have been investigated have altered either the physiological and/or perceptual responses, as well as the time-motion characteristics of various minor games. However, this may not be the case for all types of rule changes that could possibly be implemented. Future studies should aim to more systematically classify the types of rules changes that appear to have differential effects on physiological, perceptual and time-emotional responses during minor games Hill-Haas & et al. (2010).

### 2.3.5 Training Regimen (Game Duration and Work: Rest Ratios)

Similar to interval running, many prescriptive variables can be used in minor game to alter exercise intensity. The majority of the studies have used a traditional 'interval' training format, whereby several consecutive bouts of minor game play are interspersed with active or passive rest periods. The duration of each minor game bout interval, alternating with planned rest periods, is used to determine work: rest ratios. Although most studies examining minor game have prescribed the minor game bouts using intervals with short rests, some recent studies have used continuous minor game formats of differing duration (e.g. 10–30 minutes). Unfortunately, previous studies have not used consistent work: rest ratios and there is a large variation in the length, duration, and number of work bouts and rest interval studies which makes comparison difficult. For example, a minor game 'interval' training prescription consisting of a 1·3-minute work

bout with a 12-minute rest represents a very low work: rest ratio (1:4) and a very short total game duration (3 minutes).

### 2.3.6 Coach Encouragement

Direct supervision and coaching of exercise sessions have been shown to improve adherence to an exercise programmer, increase training intensity and increase performance measures in a variety of training modes. In football, active, consistent coach encouragement has also been suggested to have an influence on training intensity. For example, Rampinini & et al. (2007), demonstrated that HR, blood lactate concentration and RPE were higher when coaches provided consistent encouragement during minor game with 20 football players in a variety of minor game formats (three vs. three, four vs. four, five vs. five and six vs. six players and on small, medium and large-sized pitches). Similarly, Sampaio & et al. (2007) reported a significant increase in RPE (for two vs. two and three vs. three) with verbal encouragement, but no significant change in %HR max. Collectively, these studies support the role of the coach in providing consistent encouragement during minor game s, especially when it is planned that high intensity be achieve.

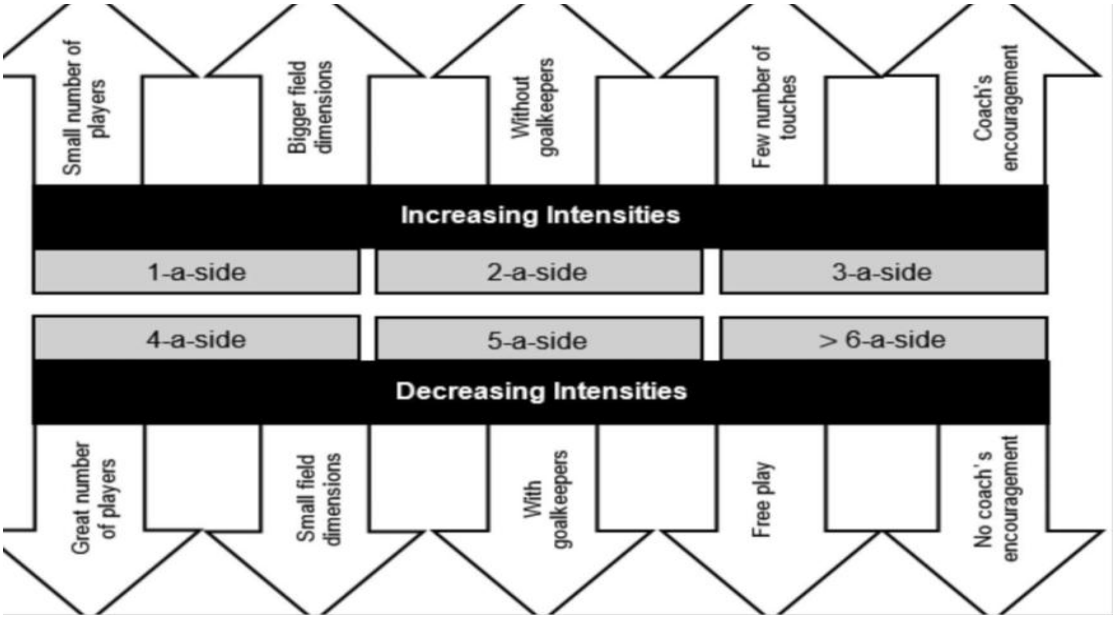


**Figure 1: Reflects all of these above variables how to affecting the minor game intensity,** to increasing intensity with small number of player, bigger field dimension, without goal keeper, few number of touches & coach encouragement and the reverse is true with decreasing intensity. **Balsom & et al. (1999)**

## 2.4 Physiology of Game Based Training

Game-based training is increasingly being used as a means of improving the skill and physical fitness levels of team sport athletes. As it allows the simulation of movement patterns of team sports, while maintaining a competitive environment where athletes must perform under pressure and while fatigued. Perhaps more importantly, game-based training offers an additional challenge to team-sport athletes that would not normally be present in non-skill related conditioning activities. Hill-Haas, (2010) that SSGs in football, our understanding of their effectiveness as a training tool for developing physical fitness, technical and tactical skills in football players. It also appears that similar fitness and performance gains can be made with SSGs as is achieved with traditional interval training methods.

Reilly & White, (2004) However, a closer examination of the repeated-sprint demands (defined as a minimum of 3 sprints separated by less than 21 seconds recovery) showed that players completed significantly fewer repeated sprint bouts in game-based training .Collectively, the available evidence from the research to date suggests that game-based training offers a specific method of conditioning the overall demands of team-sport competition, but may not replicate the high intensity, repeated-sprint demands of competition.

Practical application: The majority of evidence has demonstrated that game-based training can be used to simulate the overall demands of competition. However, game-based training may not simulate the high intensity, repeated-sprint demands of competition. From a practical perspective, these findings may suggest that game-based training should be supplemented with more traditional conditioning that simulates the high-intensity, repeated-sprint demands of competition. Alternatively, coaches can modify the content and nature of game-based training (e.g., by modifying pitch dimensions and rules, player numbers, and number of balls) to increase the physiological

demands of the training stimulus. In addition, the use of one-on-one “markups” (in which defenders continually mark the same attacking player) are likely to increase the repeated-sprint demands of training, by forcing players to sprint in deface, rapidly recover, and then mount an effective counterattack.

## 2.5 Concepts of physical fitness

Physical fitness has defined by scholars in different literature. Baltimore et al. (1995) defined physical fitness as, the ability of the body to perform moderate to vigorous physical activity without undue fatigue and capability of maintaining such ability throughout the life. American college of sport medicine has also defined physical fitness as a set of characteristics (i.e. the working capacity heart and lung, the strength and endurance of muscles and the flexibility of joints) that related to the ability to perform physical activity (Singh 2007). Physical fitness is the associated with person ability to work effectively enjoy leisure time to be healthy, resist hypokinetic condition, meet emergency situation. So, it is the basic requirement of life, which is achieved through participating regular movement. Although physical fitness is influenced by genetics and environmental factor, physical exercise is one of the main determinant factor situation (corbin et al.2006). Generally, fitness is the ability of the body to live happy, well balanced life. It embraces the physical, intellectual, social and spiritual aspects of person’s life Baltimore et al. (1995)

## 2.6 Fitness Training

Regular training has needed for all area of fitness. Here are some important factors to remember for an effective training program. The training had directed to maximize the physical capability of particular player. By using cross training and by incorporating into the training drills it will keep it interesting and maintain the motivation of the athletes. Physical fitness is one of the most important aspects of soccer performance. Skill full player will go a long way in the sport, but without the fitness part of their game, they will not be the complete player. Aerobic endurance fitness is one of the most important physical fitness physical fitness attributes for soccer players Robert, (2008). American collage of sport medicine has also define physical fitness as a set of characteristics (i.e.

the work capacity of heart and lung, the strength and endurance of muscles and the flexibility of joints) that relate to the ability to perform physical activity Singh,(2007).

## 2.7 Targeted Training for Fitness Using Minor Game

In soccer training, it is very important to specifically define the physiological targets. This theory is well developed in regular sports sciences handbooks. Nevertheless, it is essential to consider a set of new variables to ensure the highest quality of training development in the specific case of small-sided soccer games. Therefore, this section will present the generic recommendations for aerobic and anaerobic soccer training based on small-sided games.

Reilly & White, (2004) compared the effectiveness of 6 weeks of aerobic interval training and game-based training on improvements in muscular power, agility, skill, anaerobic capacity, and maximal aerobic power in professional academy soccer players. There were no significant differences between groups for any of the performance tests following training, leading the authors to conclude that game-based training offered an acceptable substitute for aerobic interval training to maintain fitness during the competitive season. Gamble, (2004) reported significant improvements in aerobic fitness following a 9-week pre-season training period that consisted entirely of game-based training in elite rugby union players.

More recently, studies have compared game-based training and traditional conditioning activities on physical fitness and playing performance in team-sport athletes. Impellizzeri & et al. (2004) investigated the effects of game-based training with aerobic interval training on maximum oxygen consumption, lactate threshold, running economy at lactate threshold, soccer-specific endurance and indices of physical performance during soccer matches (total distance covered, and time spent standing, walking and running) in junior soccer players. The authors reported no significant differences between groups for any of the measured variables, including the soccer-specific tests.

Gabbett, (2006) compared game-based training and traditional conditioning activities for improving speed, agility, muscular power, and maximal aerobic power in rugby league players. Game-based training induced a significant improvement in 10m, 20m, and 40m

speed, muscular power, and maximal aerobic power, whereas traditional conditioning activities improved 10m speed and maximal aerobic power only. Both groups won six of eight matches played during the training period, but on average the game-based training group scored more points in attack and had a greater points-differential than the traditional conditioning activities group. Collectively, these findings demonstrate that game-based training offers an effective method of conditioning for team sport athletes that result in comparable (and, in some cases, greater) improvements in physical fitness and performance than traditional conditioning activities.

Practical Application: - While studies have demonstrated that game-based training and traditional conditioning programs result in similar improvements in physical fitness, the optimum balance between traditional conditioning and game-based training activities remains unclear. It is also unclear whether a combination of game-based training and traditional conditioning activities results in greater physiological adaptations than either game-based training or traditional conditioning in isolation, and whether the research (that has been predominantly performed on elite athletes) can be directly applied to non-elite performers. Some investigators have found significant improvements in physical fitness with game-based training of short duration (e.g., 4 bouts of 4 minutes) Impellizzeri & et al. (2004), while others have found improvements in physical qualities when using longer duration (3 bouts of 12-15 minutes) games Gabbett, (2006). Clearly, further research investigating the training-performance (or dose-response) relationships of game based training and traditional conditioning activities are warranted. There is also evidence that while some players may exhibit work-rates during game-based training that will elicit a positive physiological adaptation, others may not.

### 2.7.1 Aerobic Training

Aerobic training is developed to improve the oxygen transport system Rampinini & et al. (2007. The oxygen transport system is best trained by endurance workouts, that is, exercises of relatively long duration at submaximal level. Jangsbo, (1996) the specific aerobic training improves the ability to continue exercising for a prolonged period and the ability to quickly recover from high-intensity exercises. Usually, the intensity and volume of aerobic exercise are inversely related. Increasing the volume (time) training

will reduce the intensity to a tolerable level. Coaching manual, (1973) recognizes that football game is a physical demanding sport characterized by explosive activity such as speed explosive leg power, agility, flexibility, in addition to high intensity running and sprints over relatively short distance.

Endurance training is developed to improve the aerobic capacity Rampinini & Coutts, (2007). There are 3 main types of endurance training methods: (a) intensive endurance training, (b) intermediate endurance training, and (c) extensive endurance training. Each endurance method is based on the training regime and the practice intensity.

The principles of aerobic training are proposed by Bangsbo, (1996) one can observe that the intensity values vary based on the different types of training targets. As presented above, intensity and volume of training are inversely related, and it is important to define specific regimes of training to ensure the specific intensities. Therefore, continuous and intermittent regimes must be properly used based on the specific training targets. The intermittent regime is based on practice with repetitions and blocks, which ensures high intensity training followed by appropriate recovery periods. The continuous regime is used for the development of aerobic fitness and ensures that the training will not increase the lactate levels above the threshold. Both regimes can be used for aerobic training and must be organized for intensive, intermediate, and endurance training. Generally, intermediate and extensive trainings are developed for specific long-distance sports with a regular cadence of practice and small oscillations such as cycling or marathon running. However, soccer has specific characteristics of both anaerobic and aerobic profiles because it is played at a minimum of 75% HR max. Consequently, the following section will present only the purposes of short and long intensive endurance soccer training.

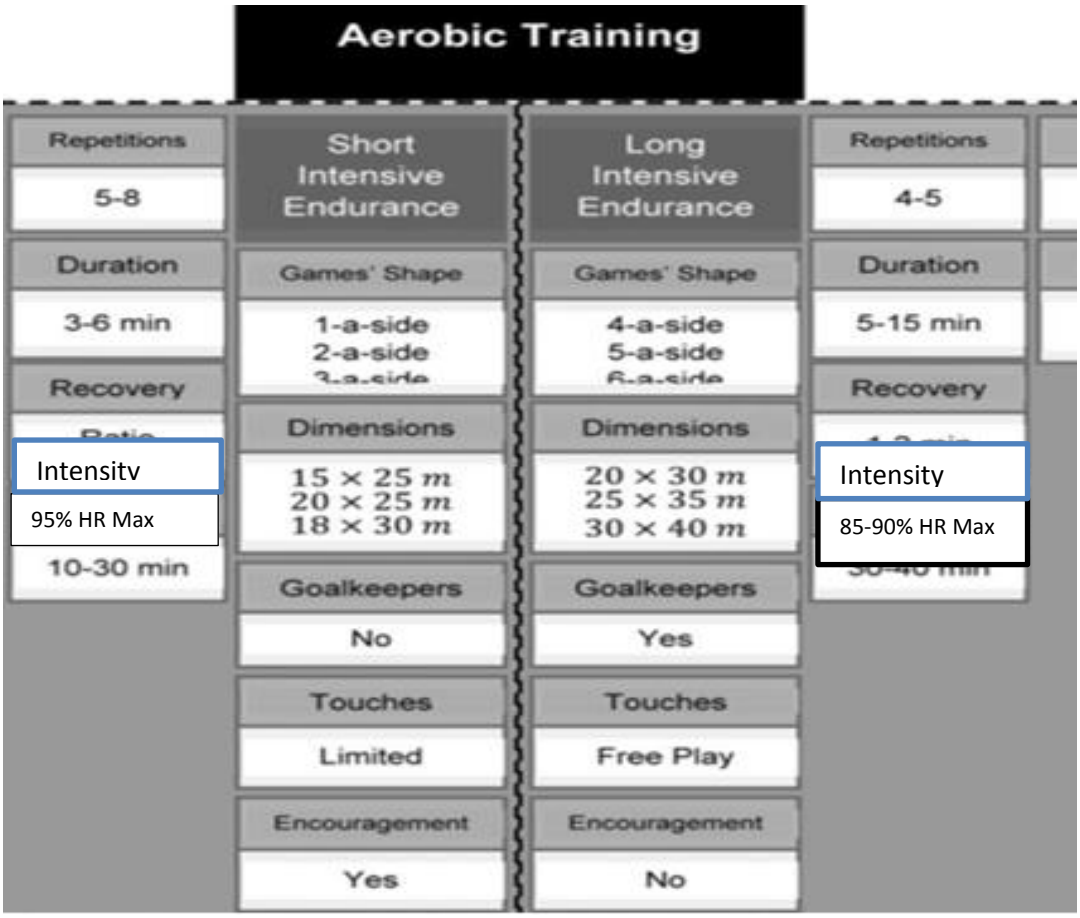



**Figure 2: Organization of small sided game Reilly, (2007).**

Short intensive endurance soccer training has duration between 2 and 8 minutes and can be best achieved by interval workouts at, as a rule, approximately 95% HR max Reilly (2007). In this type of specific training, an increase in the blood lactate value of up to 5–6 m mol/L is acceptable. In terms of intensity, this type of training can be considered the transition point between anaerobic and aerobic training. Commonly, the recovery time is between 4 and 6 minutes and the number of repetitions is between 5 and 8. Small-sided games that ensure a specific heart rate response and blood lactate concentration include the 1- a-side, 2-a-side, and 3-a-side games using task constraints such as consecutive touch limitations, no goalkeepers, and practice on larger fields. Long intensive endurance soccer training can be performed in 8- to 15-minute intervals. The intensity implies a blood lactate concentration of 3–4 m mole/L and heart rate values between 85 and 90% HR max. The recovery period is approximately 5 minutes, and the number of repetitions

varies from 4 to 5. This specific training should be performed without fatigue accumulation from other training sessions. The ideal configuration for this specific training is a 4-a-side, 5-a-side, or 6-aside game played on medium field dimensions, including goalkeepers and without touch limitation. The focus on achieving a higher quality of tactical play by increasing the mental activity needed to synchronize with the rest of the teammates to achieve the main goal. Figure above proposes 2-task examples. The field dimensions can be 20 & 30 m, 25 & 35 m, or 30 & 40 m for the 4-a-side, 5-a-side, and 6-a-side soccer games, respectively.

### 2.7.2 Anaerobic Training

According to Delecluse, (1997) there was significant increase in sprint acceleration speed when strength and sprint training given in different minor game design of training. Running speed is the combination of stride frequency and stride length. Power can have defined as the combination of strength and speed. In many sport, explosive movement is critical for improving performance. It is the ability to generate force and use muscular strength quickly.

Bangesbo, in (1994) stated that the overall aim of anaerobic training in soccer is to increase a player potential to perform high intensity exercise during the game and the specific aim of anaerobic training in soccer had to improve the ability act quickly and produce force rapidly, to improve the capacity, produce power and energy continuously via the anaerobic energy pathways. These aim refers to power and acceleration, speed and speed endurance (production and reputation) respectively, to improve the capacity produce power and energy continuously via the anaerobic energy producing path way. There by player elevates the ability to performer high intensity exercise for longer period during a game.

Most team sport consists of very few movements that occur only in straight line. Nor do those movements occur at affixed pace or for a fixed length of time. However, most team sport requires rapid deceleration and changes direction. Agility and quickness training improvement an athlete's ability to change direction brake suddenly and perform sport specific skills with speed and dexterity.

Reilly & et al. (2000) Agility is the function of nervous system, incorporating proprioception and co-ordination of muscle activity in both lower limbs and upper body for control balance. There has not been comprehensive research investigation of agility training due to the difficulty of identifying the mechanisms of adaptation. A sport specific strength program will first aim to develop basic strength. This is on the premise that a solid base of strength offers greater physical potential to work with when converting it to sport specific strength later on. Basic speed training along with power training maximizes the athlete's ability to move rapidly Baechle & Earle, (2004).

Intensive anaerobic exercises lasting between 30 seconds and 3 minutes activate and exhaust the lactate system to its maximum; thus, the lactate system can be best trained by interval workouts. Usually, it is possible to perform 4–8 repetitions per block with recovery periods of 30 seconds to 3 minutes. The number of blocks can vary between 2 and 4 based on the number of repetitions per block with recovery periods between blocks of 3–5 minutes. Little, (2009) Small-sided games that are appropriate for anaerobic training include 1-a-side and 2-a-side games, without goalkeepers, with touch limitations, smaller field dimensions, and coach's encouragement. It is possible to organize games with more players, but they should also include specific task constraints to develop the anaerobic training.

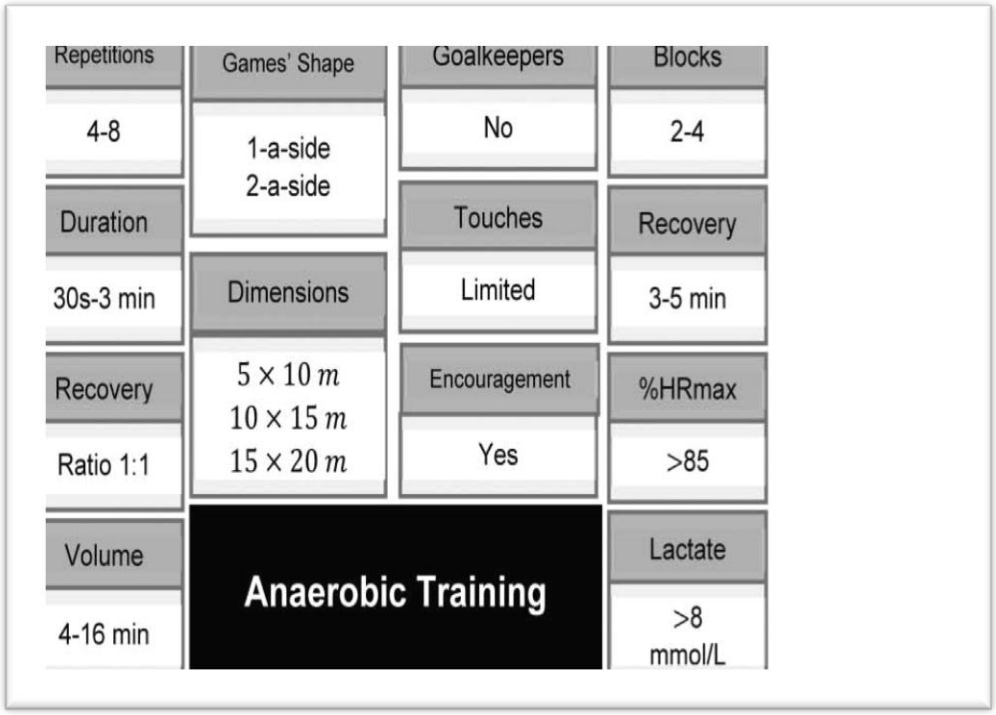



**Figure 3: Small sided games for anaerobic training little, (2009).**

## 2.8 Fundamental Movement skill on Minor-Game

Fundamental movement skills are very important for children physical development. When confident and competent in these skills children can develop sport specific and complex movement skills, it is specific set of skills that involve feet, leg, trunk, head, arms and hands. These skills are the "building blocks" for more complex and specialized skills that kinds will need throughout their lives to competently participate in different game, sport and recreational activities. There is also a relationship between time spend 'practicing fundamental movement skills' and competence in fundamental movement. Research shows that children who are competent in FMS are more likely to enjoy sports and activities and to develop a lifelong commitment to physical activity. Research also suggests that children who do not master the FMS are more likely to drop out of physical activity later in life Australian Sports Commission Alajnaf, (2005). The fundamental movement skill includes balance skill -movements where the body remains in place, but moves around its horizontal and vertical axes. Locomotors skills such as running, jumping, hopping, whereas ball skills such as catching, throwing, striking and shooting

Research shows that children who are competent in fundamental movement skills' are more likely to enjoy sports and activities and to develop a lifelong commitment to physical activity. 'Playing for life' is an approach to coaching that uses games as the focus of development. By concentrating on game-based activities, children are able to: develop skills within a realistic and enjoyable context, rather than practicing them in isolation and from a technical perspective Werner et al. (1996).

## 2.9 Teaching Minor- Game for Understanding

Teaching games for understanding provides students with a more substantive base and clearer frame of reference for learning about critical elements of game play. The TGFU approach to teaching games places the focus of a lesson on the student in a game situation where cognitive skills such as 'tactics, decision-making and problem solving are critical with isolated technique development utilized only when the student recognizes the need for it Light, (2002). Other terminology and variations of TGFU include: 'Play Practice', the 'Games Concept Approach' and more recently, 'Playing for life'. Modifying and adapting games is also an important part of using the TGFU approach.

The concept of 'modification for exaggeration' is used to emphasis particular tactical aspects. Using the game of hockey as an example, it is important that the student first has an understanding the game, that the ball must be moved down field, with the intention of scoring a goal. An appreciation of the game might include a grasp of the concept of moving down the field individually or as a team whilst thwarting the opponent's attempts to take control. One of many examples of tactics is passing to players on the wing to run the ball up field. Whether to have a shot at goals or whether to pass to a player in a better position is where the skill of decision-making is required. Finally skill execution and performance is required to perform a flick shot to score in the top corner of the goals Light, (2002).

Teaching games for understanding is an approach to teaching that makes very effective use of active learning in that the students are learning though playing the games. In addition to this, 'questioning is a powerful method of encouraging players to analyses their actions, both individually, and as a team' Goodman, (2001) Questions will generally relate to a particular tactical aspect. Effective phrasing of questions can also help to guide

the player to an answer, in the event that they are struggling with an activity. Age, experience and ability level of the players will affect the complexity of the questions used. Given the decreased involvement of children in physical activity, TGFU is aimed at encouraging children to become more tactically aware and to make better decisions during the game. As well, it encourages children to begin thinking strategically about game concepts whilst developing skills within a realistic context and most importantly, having fun. Essentially by focusing on the game (not necessarily the 'full' game), players are encouraged to develop a greater understanding of the game being played. Thomas states that the desired effect of this is 'players/students who are more tactically aware and are able to make better decisions during the game, thereby adding to their enjoyment of playing the game' Thomas, (1997) She also gives an account of workshops where participants were asked to identify what they perceived as strengths of TGFU, with the following five major themes emerging. TGFU was found to: Encourage a holistic approach to the teaching of games, Promote enjoyment for participants, Promote player centered learning, Cater for varying abilities, Foster efficiency in aspects of implementation.

TGFU has been shown to result in improved learning outcomes for students. Games are a significant component of the physical education curriculum, with research suggesting that 65 percent or more of the time spent in physical education is allotted to games. Key outcomes of successful physical education are students that have the ability to make successful decisions on the field and have an awareness of both technical and tactical aspects of the game Martin & Gaskin, (2004).

Become maximally engaged in dynamic game-based activities that use a fun approach to developing a range of motor skills' Research Werner et al. (1996) indicates the strengths of the TGFU approach and the desirability of it as one of the major approaches to quality teaching of games Light, (2002). Higher order thinking occurs from questioning and discussion about tactics and strategies and also 'through the intelligent movements of the body during games'. Cognitive development through decision-making and tactical exploration is combined with skill development within modified games to provide meaningful contexts.

# CHAPTER THREE

## RESEARCH METHODS

### 3.1 Description of the Study Area

The study was conducted at Tagel general secondary and preparatory school in Simada woreda. Simada woreda is located in South Gondar Zone of Amhara national Region state (ANRS) about 770 km 11.16 degrees north of Addis Ababa, 205 km 36.5 degree on north east from Bahir Dar city and 105km to the East from Deber tabor city. Simada district is bordered on the south east Bashilo river which separate from Debube wollo, on the South west Misraq Gojjam, on the west by Misraq Este on the north by lay Gayint and on north east Tach Gayint (Simada Woreda Office of Agriculture, (2011).

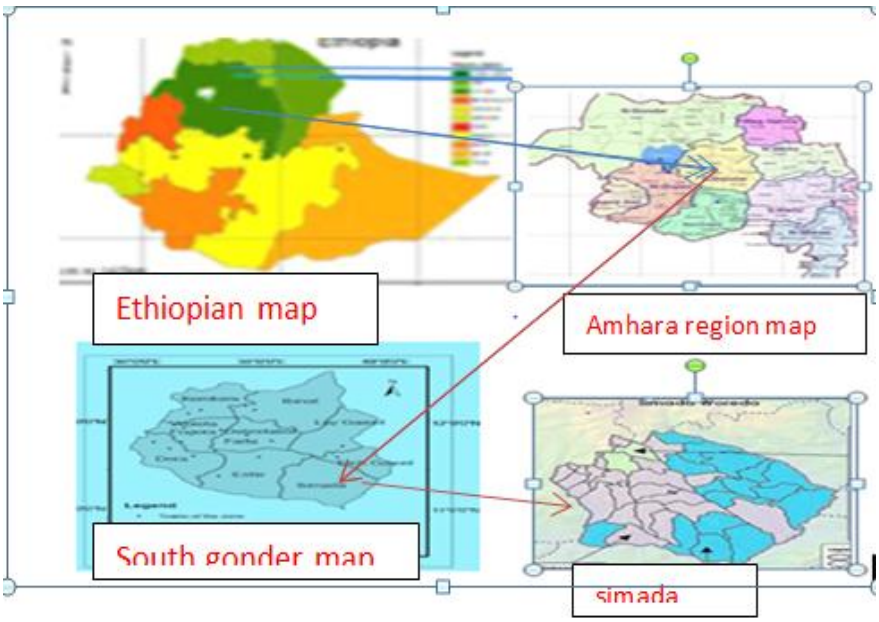


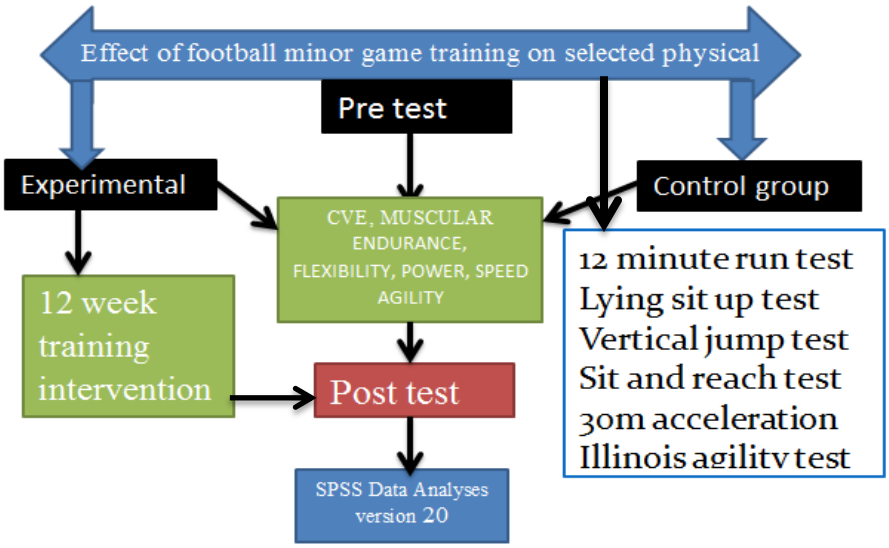

**Figure 43.1: Map of Simada woreda**

### 3.2 Design of the Study

To conduct this study quasi- experimental research design was used. This method was selected because it is help full to identify the student physical fitness levels depending on the nature and appropriateness of occurring group on football minor game training with treatment of conditions for pre-test and post-test measurement. It helps to assess and

evaluate the effect of football minor game training on the dependent variable such as CVE, muscular endurance, flexibility explosive strength, speed and agility. Whereas, the independent variables light to moderate intensity football minor game exercise such as two goal game 2 vs. 2, 3 vs. 3, 4 vs. 4, with two goal game touch limitation 5 vs. 5 and 6vs 6 etc.

Chart follow




## 3.3 Population, Samples and Sampling Techniques

From Tagel general preparatory school grade 12th students were selected by using purposive sampling because of that the researcher thought at this grade level. Total number of the six class's male students 140. Since the researcher were used purposive and simple random sampling technique based on convenient & interest of student to participate in twelve week training program, resident in surrounding of the school properly engaged the training and accessibility of materials get in the school were selected 40 students and simple random sampling technique were used to assign control group consisting of those who are not involved in any sporting activities except for physical education classes (n=20) and an experimental group consisting of those who play in the school football minor- game training in addition to the physical education classes at school(n=20) were used to minimized base, keep training homogenies. All the subjects were selected healthy and residents in the school surrounding. The subject

participates throughout the testing period and cooperated for the success of collection of necessary data.

## 3.4 Inclusion and Exclusion Criteria

Individuals with cardiac condition such as hypertension or uncontrolled diabetes or other conditions like individuals having bone and joint problem that would be contraindicated for exercise program were not admitted to the study by asking physical activity readiness questionnaire, in addition to these individuals that were participate in special training program were not included into the study.

## 3.5 Source of Data and Data Gathering Instrument

The data for this study was follow primary source of quantitative data gathering method as a form of pretest and post test results of selected variables. Regarding to the effect of minor-game training on selected physical fitness, the researcher ware used field test such as pre-test and post-test CVE, muscular endurance, flexibility, power, speed and agility for control and experimental group of individual student separately.

**Table 1Dimensions of Physical Fitness Tests and instruments**

| Dimensions | Variables | Testes to measure |
|---|---|---|
| Personal Descriptive | Weight, height, and age | In kg, m, and year respectively |
| Endurance | CVE(aerobic fitness ) | Twelve minute run test |
| | Muscular endurance | sit up test |
| Strength | Explosive strength (power) | Vertical jump test |
| Flexibility | Flexibility | Sit and reach test (it is easy and quick to test) |
| Agility | Agility | Illinois agility test(10 x 5m) |
| Speed | Running speed | 30m acceleration run test |

## 3.6 Data gathering Procedures

The data for the study would be collect from the result of test conduct from pre and posttest for both control and experimental group of quantitative method. The pre- test conduct for all 40 students on the CVE, muscular endurance and strength, flexibility,

acceleration speed , power and agility before the twelve week minor –game training intervention of (n=40) on all group. The post test is also conduct to determine the minor-game training intervention on those physical fitness tests for experimental group. However, in the control group (n=20), the data collected on given physical fitness with the testes but, did not included the training intervention given to the control group.

## 3.7 Training Protocol

The minor-game training is scheduled for twelve week, and three days pretest week for 40-60 minutes main part 10 -20 minute of warming up, 5-10 minute of cool down per day practiced on Tuesday, Thursday & Saturday starting february16-may16 for experimental group. According to ACSM guidelines, (1995) the recommended intensity of the exercise in percentage 50-85% HR max Impelizzeri, (2006) for 50-70 % light and 70-85% moderate exercise intensity and >85%HRmax high intensity aerobic small sided game. The researcher expressed intensity the exercise give training at low range (60%), for two week & after two week increased by 10 % rule up to 85%of the training intensity for experimental group, the intensity of exercise can be measured by using %HR max and take test can be measured as follow:

First, find the resting heart rate by taking the pulse for one minute when the body is at rest. second find maximum heart rate by substitute age from 220 , Third, maximum heart rate minus resting heart rate to obtain working heart rate(working HR= maximum heart rate-resting HR). finally, calculate target(exercise) heart rate to producing the training effect ,the heart rate must increase 60-85 %working heart rate over and above the resting heart. To measure heart rate of the student during exercise have assistance help to count beats of the student.

The formula used: - Target HR=working HTx0.6+Resting HR at low range and times 0.85 at high range. There are no exercise treatment for control group but, both per and posttest are taken from them.

The second method used to measure intensity take test is not for making several calculations and repeatedly checking your pulse, it in one of the simplest and straightforward ways to measure exercise intensity. All you have to do is figure out how easy it is for you to speak aloud. If you can sing while engaging in an activity, your body

probably is not working hard enough for the activity to qualify as moderately intense exercise. If you can carry on a conversation, you are engaging in moderately intense exercise. Take walking with friends, take as you walk and Take on the phone as you walk. https://m.wikihow.fitness / measure exercise intensity.

## 3.8 Test Administration and Procedure

The following fitness tests are use before the intervention training start and after experimental group finishing twelve week minor-game training program. All of the necessary information about the study (purpose, procedures etc.), is explained for the participant primarily, having experts, instrument for measuring purposes, facilities and sufficient warming up exercises. In this study, six testes ware conducted both had taken per and post test to determine the selected training outcome. Sit up test primarily evaluate abdominal muscular strength and endurance. 30-meter acceleration speed test is to determine the ability to cover set distance quickly. Illinois agility run test to determine the ability to accelerate, decelerate, turn in different direction and run at different angel. Explosive leg power test is to determine how high an athlete elevates off the ground from a stand still. Each test would had explained and demonstrate. Before testing subjects give practice to become familiar with the testing procedures. Tests are administered in proper sequences Flexibility, Power, speed, Agility, ME &CVE. Three successful trial are used for a test for each subject except 12 minutes run test and the best value has taken for each test per and post result.

### 3.8.1 Cooper 1 2 minute run test

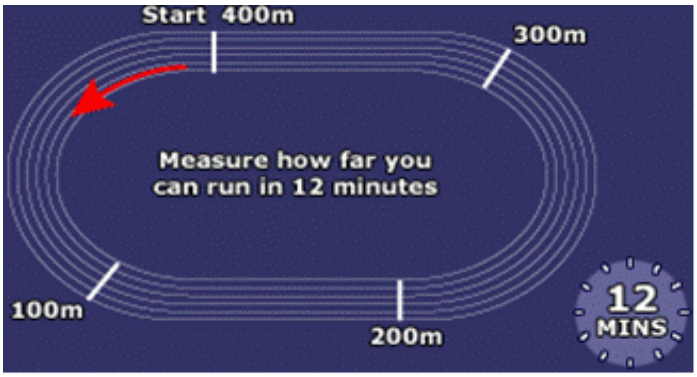



**Figure 53.2 Coopers 12- minute run test of vo2 max**

https://www.com./training delivery cooper 12- minute run test of vo2 max

Cooper, s 12 minute run test cooper (1968), is popular field test used to measuring aerobic fitness. This fitness test was initially used to estimate the VO2 max. Dr. cooper found that there is a very high correlation the distance someone can run in 12 minutes and their vo2 max value, which measure the efficiency with which some one can use oxygen while, exercising. The students were familiar with the 12 minute run test protocol prior to the pre testing data. This is measuring the distance covered in twelve minutes, involves running for twelve minuets around the 400 meter track marked out area and register how far covered in that time with the nearest 50 meters. Adopted from Mackenzie, (1997) the purpose of the distance runs is to measure maximal functional capacity and endurance of the cardio respiratory system. Subjects were instructed to run as fast as possible in twelve minutes. The students do proper warming up for five minutes, and began on the signal" ready" start". After completing the test the distance covered was registered near to 50m.

Required equipment includes stopwatch, wrist watch, 400m track marked every 50m, assistance and data recording forms. The result can be correlated withVO2max) $=\frac{d12-504.9}{44.73}$, d12 is distance in meters covered in 12 minutes. Cooper, (196).

**Table 2: Normative data for twelve minute run test score in (meters) for male.**

| Age | Very good | Good | Average | Bad | V. bad |
|---|---|---|---|---|---|
| 17-19 | >2800 | 2400-2800 | 2200-2399 | 1600-2199 | <1600 |
| Vo2 max Assessment for male (values in ml/kg/min) | | | | | |
| 17-19 | >51.31 | 42.36-51.31 | 37.9-42.35 | 24.48-37.87 | <24.48 |

### 3.8.2 Muscular endurance (sit up)

Muscular endurance is the ability of muscle or muscle group to generate force over and over again, and muscular strength is the ability to generate force for single contraction of muscle group. Although numerous method to evaluate muscular strength and endurance, two simple tests to assess muscular strength and endurance involve the performance of push up and sit up. Push-up test to measure strength and endurance of shoulder, arm, and chest muscles, whereas sit-up primarily evaluates abdominal muscle strength and endurance. Hence, the researcher chooses sit up to measured abdominal muscle strength and endurance.

Sit up test: the bent –knee sit-up test probably the best field test valuable to evaluate abdominal muscular strength and endurance.

Begin by lying on your back with your arms on the back of the neck. Your knee bent at approximately 90 degree angles, with your feet flat on the floor. Bringing your chest up to touch your knees and returning to the original lying position perform the complete sit-up.

Note that although the abdominal muscles are very active during the performance of bent-knee sit-up,

Sit-up test are generally consider to be relatively safe fitness test, but two precautions should be mentioned. First, avoid undue stress on your back during the up phase of exercise. Second, avoid hitting the back of your head on the floor during the down phase of the sit-up.

Select the partner to count the sit-up, to hold your feet on the floor by grasping your ankles, and to assist in the timing of the test (test duration of 60 second ).warming up with few sit-up ,2to 3 minuet recovery period after warming up and prepare to start the test.

On the command go start performing sit-up .the partner count sit-up aloud informs on the amount of time remains in the test period (e.g...15 second interval), remember only those sit-ups that are performed correctly will be counted to word the total.

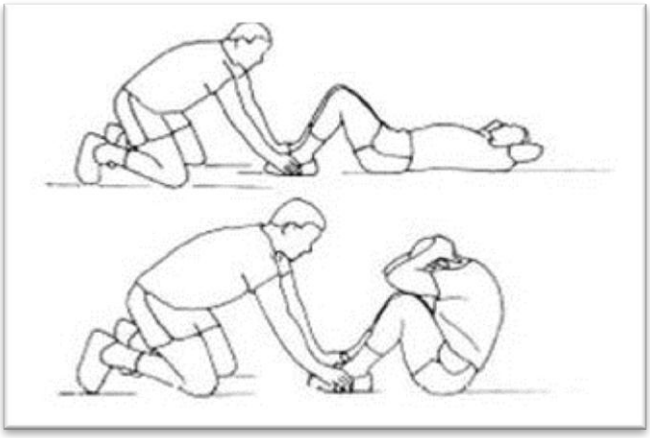


**Figure 3.3: Sit-up test**

**Table 3: Normative data for sit up test for (one minute) in number**

| Age and gender | Excellent | A. Average | Average | Fair | Poor |
|---|---|---|---|---|---|
| Male (17-29) | >48 | 42-47 | 36-41 | 17-35 | <17 |

*https://www.brianmac.co.uk/situptst.htm*

Adapted from: Davis, (2000)

### 3.8.3 Flexibility test (sit and reaches tests)

Flexibility is the ability to move joints freely through their full range of motion. It can decrease over time due to tightening of muscle and tendons. Some athletes such as gymnast require great flexibility than non-athletes to perform complex movement in competition and game. However, some flexibility is required to everyone in order to perform daily living and recreational pursuits. There are testes to measure flexibility of an

individual, such as trunk flexibility (sit and reach) test. Test and measurement are the means of collecting information upon which subsequent performance of evaluations and decisions had made but in the analysis we need to bear in mind the factors that may influences the result Getachew, (1995). This sit and reach test common measure of flexibility, specifically measure the flexibility of lower back and hamstring muscle. This test is important because tightness in this area has implicated in lumbar lordosise, forward pelvic tilt and lower back pain. This test first described and now widely used as the general test of flexibility. The objective of this test is to monitor the development of student lower back and hamstring flexibility. The required material to undertake this test is box, meter ruler, tape, and assistant.

Test procured: sit and reach test had conducted as follows:

The athlete warm-up for 10 minuet and then remove their shoes.

The assistant secures the ruler to the box top with the tape so that the front edge of the box lines up with the 25 cm (6 inches) mark on the ruler and the zone end the ruler points toward the athlete.

The athlete sit on the floor with their leg fully extended with the bottom of their bar feet against the box.

The athlete place the hand on the top of the box, slowly bends forward and reach's along the top of the ruler as far as possible holding the stretch for two seconds.

The assistant record the distance reached by the athlete finger tips (cm).

The athlete performs the test three times, the assistant record and calculate the three distance trials and uses the best value to assess the athletes performance. Figure shawing sit and reach test of flexibility.

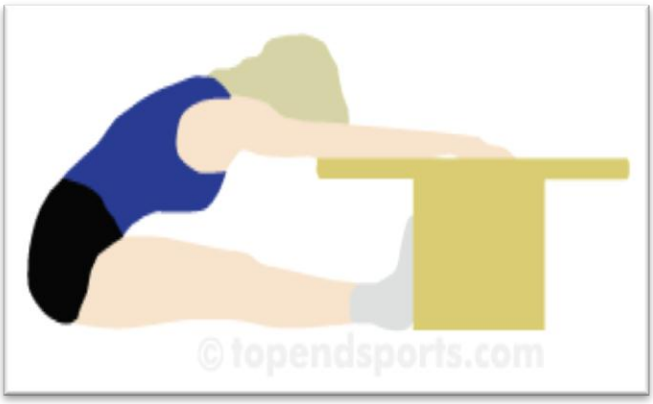



**Figure 3.4: Sit and reach test**

Available from : **https://brianmac.co.uk**

**Table 4Normative dates for flexibility sit and reach test in (cm)**

| Age and gender | Excellent | Above average | Average | Fair | Poor |
|---|---|---|---|---|---|
| Male (16-19) | >14 | 14 -11 | 10.9 – 7 | 6.9-4 | <4 |

Adapted from: Davis & et al. (2000)

### 3.8.4 Explosive leg power (vertical jump) test

The objective of vertical jump test is to monitor the development of the athlete's explosive leg power. To undertake this test the researcher is use well, tape measure, chalk, and assistant. According to Davis & et al (2000) the procedure for vertical jump test was conducted as follows.

The athlete touch powder or chalks the end of her finger tips, the athlete stands side on to a well, keeping both feet remaining on the ground, reaches up as far as possible with one hand and marks the well with the tip of finger (M1), and the athlete from a static position jumps as high as possible and marks the well with the chalk on her figure (M2)

The assistant measures and records the distance between M1 and M2,

The athlete should perform three trials the assistant recording the highest jump from the three trials.


**Figure 3.5: Vertical jump tests** https://www.slide share.net.

**Table 5: Normative data for vertical jump test in (cm)**

| Age and gender | Excellent | Very good | Above average | Average | Below average | Poor | Very poor |
|---|---|---|---|---|---|---|---|
| Male (17-29) | >70 | 61-70 | 51-60 | 41-50 | 31-40 | 21-30 | <21 |

Adapted from: Davis & et al. (2000)

### 3.8.5 Speed (30m -acceleration)

The objective of this test is to monitor the development of the athletes ability effectively builds up acceleration from starting block to maximum speed until end block.

Dick (1987), to undertake this test the researcher is used two cones {start to (0) to (30) m}, stop watch, an assistant. The procedure for conducting 30-meter acceleration tests conducted as follows: The assistant marks out a 30 meter straight section with cone, on a signal of marks –set –go" sprint to the other cone quickly as possible, The athlete starts in their own time and sprints as far as possible over the 30meter s, The assistant starts stop watch on the athlete's first foot strike after starting and stopping the stopwatch as the athlete's torso crosses the finishing line, The test conducts 3 times or performs three trials and takes the best time. It is used to test the basketball, football and tens players Dick, (1987).

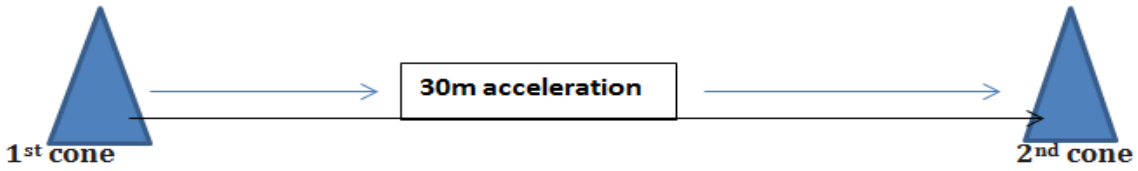



**Figure 3.6:30m Acceleration run test**

**Table 6: Normative data for vertical jump test in (cm)**

| Age and gender | Excellent | Above average | Average | Fair | Poor |
|---|---|---|---|---|---|
| Male (17-29) | <4.0 | 4.2 -4.0 | 4.4-4.5 | 4.6 -4.5 | >4.6 |

Adapted from: Davis B. et al. (2000)

### 3.8.6 Agility test (Illinois agility run)

The objective of Illinois agility run testis to monitor the development of the athletes agility. Illinois agility run test is a fitness test designed to test ones sport agility. It is a simple test, which is easy to administer and required little equipment's to undertake this test the researcher is use flat non-slip surface, measuring tape, 8 cones, stopwatch and assistant. According to Davis & et al. (2000) the length of the course has been use 10 meters and the width (distance between the start and finish point) was 5 meters. On the track participates used 5 meters. Four cones could be used to mark the start, finish and the two turning points. Each cone on the center was space 3.3 meters apart. This test was assessed at the distance from the floor to the individual chine. The procedure for conducting Illinois agility testis conducted as follows:

The athlete warm up 10 minutes

The athlete set up the course as detailed in the diagram.

The athlete lies face down on the floor at the "start" cone,

The assistant gives the command "go" and start the stopwatch,

The athlete jumps to her feet and negotiates the course around the cones following the line route shown in the diagram to "finish" cone, three successful trials were completed, and finally, the assessment uses the fastest recorded time.

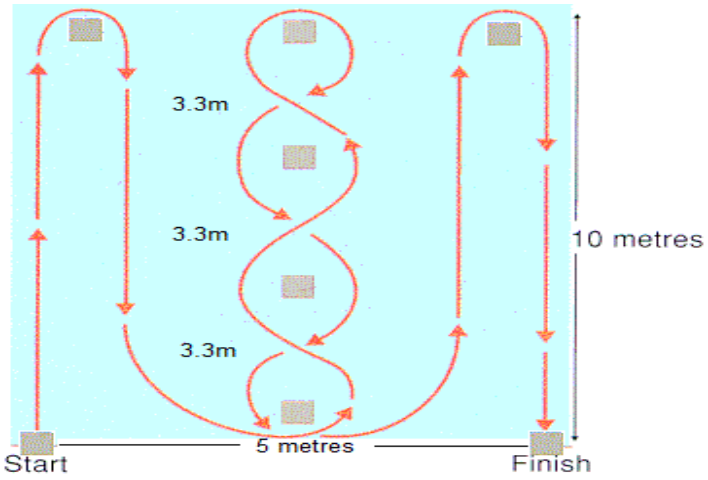



**Figure.7: Illinois agility test** (http://www.topendsports.com/testing**)**

**Table 7: Normative dates for Illinois Agility test in (second)**

| Age and gender | Excellent | Above average | Average | Fair | Poor |
|---|---|---|---|---|---|
| Male (17-29) | <15.2 | 15.2-16.1 | 16.2-18.1 | 18.2-19.3 | >19.3 |

Adapted from: Davis &et al. (2000)

## 3.9 Data Analysis Techniques

The data was gather from the experimental and control group results as in the form of pre-test and post-test method and analyze by using statistical package social science (SPSS) T- test used to analysis the demographic characteristics of the students and paired - t test were used to determine the change between pre & posttest results of control& experimental group members . To analysis the results the method which presents to come up with findings mean, mean difference, standard deviation and significance value (p) of the date were used. Standard significance value $p \leq 0.05$, *t*he result can be presented in text, table and graph.

# CHAPTER FOUR

# RESULTS AND DISCUSSIONS

After collecting the data through experimental method of pretest and posttest for each selected variable the researcher would analyzing, discussing and interpreted it. The purpose of this study was to investigate the effect of 12 week football minor game on selected physical fitness components in Tagel general preparatory school. The physical fitness components selected for this study were cardio respiratory fitness, muscular endurance, flexibility, explosive leg power, speed and agility for experimental and control group member by descriptive statistics and significance of paired difference. The researcher had used the quantitative data analysis by using tabular and graph

**Table 8: Back ground information of respondent**

| Personal information | No | Minimum | Maximum | Mean | SD |
|---|---|---|---|---|---|
| Age of experimental group | 20 | 18 | 20 | 18.3 | 0.657 |
| Age of control group | 20 | 18 | 20 | 18.85 | 0.745 |
| Weight of experimental group | 20 | 47 | 65 | 54.35 | 4.91 |
| Weight of control group | 20 | 49 | 63 | 55.35 | 4.428 |
| Height of experimental group | 20 | 1.53 | 1.86 | 1.668 | 0.0845 |
| Height of control group | 20 | 1.51 | 1.80 | 1.683 | 0.0861 |

The above table 8, reveals that the general characteristic of students regarding with age, weight and height. Mean plus or minus standard deviation of experimental group age, weight and Height were18.3 ± 0.657, 54.35kg ± 4.91 and 1.668m ± 0.0845 respectively. Whereas, Mean plus or minus standard deviation of control group Age, weight and Height was 18.85 ± 0.745, 55.35 ± 4.428 and 1.683±0.0861 respectively. These shows the selected samples of two groups were homogenous in terms of age and height but spread in weight. A total of 40 male students were participated in pre and posttest in both group of the study.

## 4.1 Results of the study

**Table 9: Descriptive statics of both experimental and control group for all selected variables**

| Variable | Group | Test | No | Mean | Std. deviation | Std. Error Mean |
|---|---|---|---|---|---|---|
| CVE (12 minuet run test) | CG | Per test | 20 | 1721.75 | 191.677 | 42.86 |
| | | Posttest | 20 | 1733.5 | 185.594 | 42.86 |
| | EG | Pretest | 20 | 1861.5 | 253.01 | 56.575 |
| | | Posttest | 20 | 1939 | 231.605 | 51.788 |
| Muscular endurance | CG | Per test | 20 | 28.8 | 3.365 | .75254 |
| | | Posttest | 20 | 28.55 | 2.481 | .55476 |
| | EG | Pretest | 20 | 28.45 | 3.561 | .79629 |
| | | Posttest | 20 | 30.95 | 2.4597 | .5500 |
| Flexibility | EG | Per test | 20 | 4.50 | 2.1884 | 0.48936 |
| | | Posttest | 20 | 6.45 | 2.0894 | 0.46721 |
| | CG | Pretest | 20 | 4.15 | 2.2775 | 0.50926 |
| | | Posttest | 20 | 4.05 | 2.21 | 0.49458 |
| Vertical jump test | EG | Per test | 20 | 31.1 | 4.81 | 1.0758 |
| | | Posttest | 20 | 33.55 | 3.72 | 0.83185 |
| | CG | Pretest | 20 | 29.95 | 6.80 | 1.5208 |
| | | Posttest | 20 | 30.4 | 5.58 | 1.2490 |
| 30m acceleration speed | EG | Per test | 20 | 6.18 | 0.95 | 0.2136 |
| | | Posttest | 20 | 5.965 | 0.99 | 0.2228 |
| | CG | Pretest | 20 | 6.0475 | 0.524 | 0.117 |
| | | Posttest | 20 | 6.058 | 0.55 | 0.1238 |
| Illinois agility test | EG | Per test | 20 | 20.666 | 1.2765 | .2854 |
| | | Posttest | 20 | 20.34 | 1.2445 | .2783 |
| | CG | Pretest | 20 | 19.909 | .803 | 0.17944 |
| | | Posttest | 20 | 20.0 | .774 | 0.17305 |

As you can see in above table 9: the mean, standard deviation of the experimental and control group of the of 12 minute run test. The value of 12 minute run test for pretest and posttest results of experimental group were (mean ± SD, 1861.5 ± 253.01 and 1939 ± 231.605) respectively. This reveals that improvements were observed in cardio vascular endurance after the 12week minor game training programs for experimental group. Whereas, the control group of mean value ± SD for 12 minute run test 1721.75 ± 191.677 and 1733.5 ± 185.593 for pretest and posttest respectively. This reveals that there were improvements for control group.

-The result can be correlated with VO2 max by using this formula VO2 max $=\frac{d12-504.9}{44.73}$, based on the mean value of 12 minute run test for pretest and posttest result of experimental group were 1861.5 and 1939 correlated with VO2 max 30.33 and 32.1 respectively. Mean difference value 1.77 from post-pre measurement. Therefore according to mean difference value same improvements were observed for experimental group after minor game training.

Whereas, the mean value of control group for 12 minute run test 1721.75 and 1733.5 pretest and posttest respectively. It can be correlated with VO2 max 27.204 and 27.47 with respect to pre & post measurement. Therefore according to mean difference value same improvements were observed for experimental group after minor game training. In contrary slight improvement of VO2 max value from post to pre measurement for control group. Graphical representation of 12 minute run test for both experimental and control group for pretest and posttest results exhibited in figure 4.1.

The above table 9 shows that muscular endurance laying sit up test mean and standard deviation of EG and CG for per and posttest result. The values of EG laying sit-up for pretest and posttest result were (mean ± SD, 28.45 ± 3.561 and 30.95 ± 2.459). The mean difference between pre and posttest measurement 2.5, this shows an improvement on muscular endurance laying sit up from pretest to posttest after twelve week training program.

Whereas the value of control group (mean ± SD, 28.8 ± 3.365 and 28.55 ± 2.481), for pre and posttest respectively were seen slight reduction of control group from pre to posttest measurement. The graphical representation of mean value of muscular endurance of both groups has been exhibited in chart figure 4.1.

**Graphical presentation of mean for selected variables**

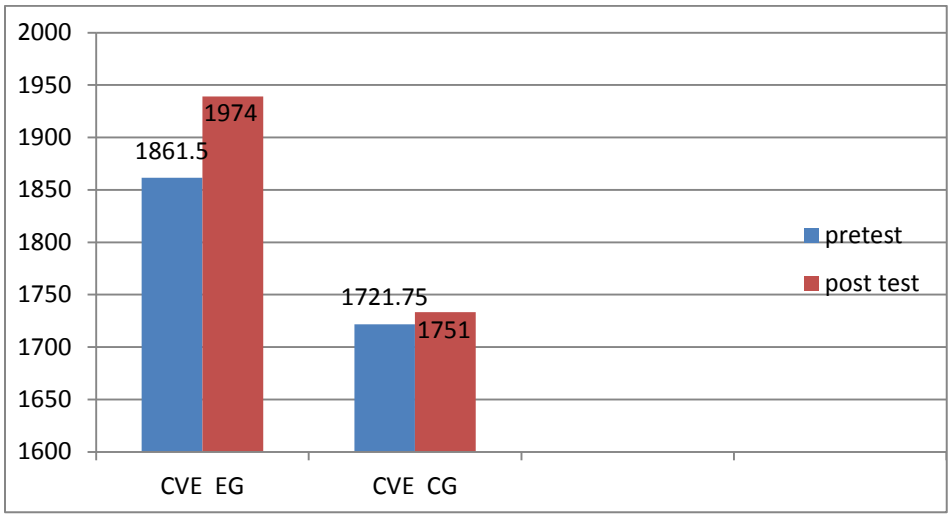



**Figure 4.1 Chart of 12 minute run test for both groups in pre and posttest**

CVE EG= Cardio vascular endurance experimental group. & control group

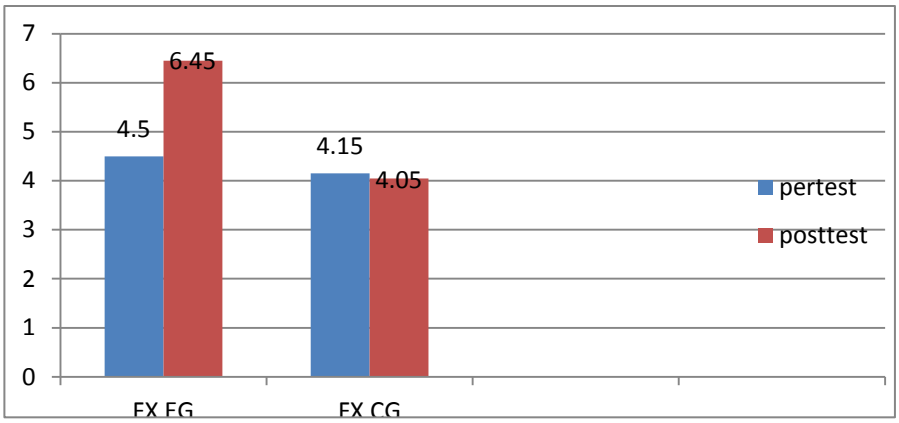



**Figure 4.2: Chart of flexibility for both groups in pre and posttest.**

In the result of flexibility shows that the mean value and standard deviation of EG on sit and reach test result before training 4.5 cm ± 2.1885 and 6.45 ±2.0895 after training respectively, and mean difference (MD= 1.95), while the mean value, standard deviation of control group 4.15 cm ± 2.775 and 4.05 cm ± 2.212 for pre and posttest respectively, mean difference (MD=-0.1). This shows an improvement on the experimental group mean value. To the contrary on the case of CG sit and reach test slight reduction was seen from pre to posttests has been exhibited in figure 4.2.

**Graphical presentation for mean of selected variables**

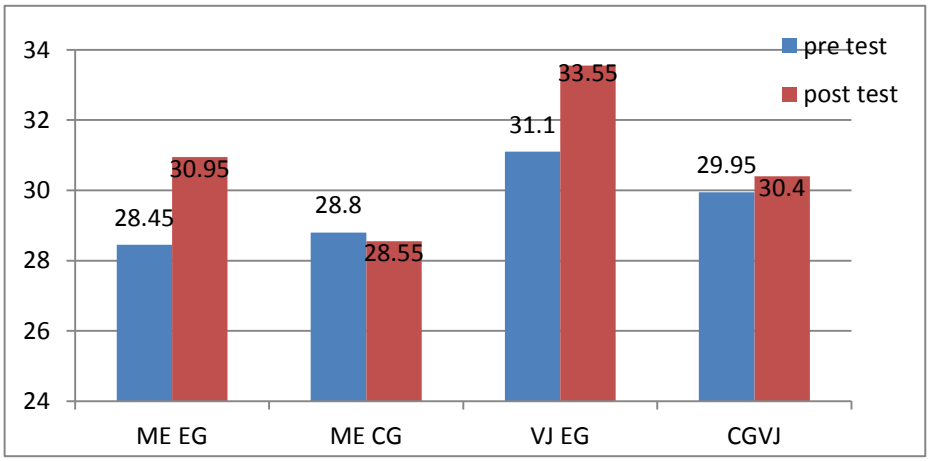



**Figure 4.3: Chart muscular endurance and power for both groups of pre and posttest.**

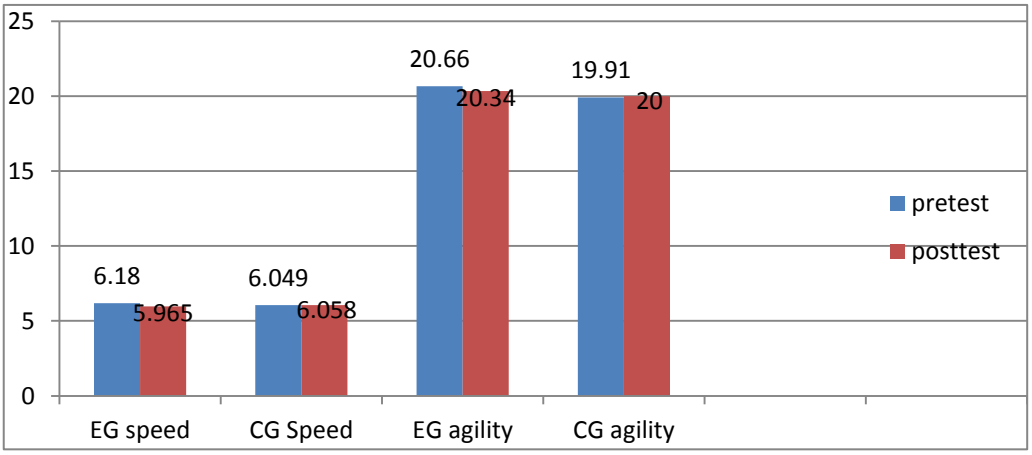



**Figure 4.4: Chart of speed and agility for both groups of pre and posttest.**

The above table 9 also shows vertical jump test to measure explosive leg power for experimental group mean ± SD, before training (31.1 ± 4.81) and after training (33.55 ± 3.72). While the control group explosive leg power vertical jump test mean ± SD, (29.95 ± 6.8) pretest and (30.4 ± 5.585) posttest. Hence, compared with level of improvement for both group on mean difference value (MD for EG =2.45 and CG= 1.35, this indicates the explosive leg power improvement were observed for both experimental and control group. The graphical representation of mean value of explosive leg power of both groups has been exhibited in figure 4.2. As shown table 9 paired sample t-test was conducted to evaluate football minor game training before and after training intervention on speed and agility change measure seconds.

The speed test was conducted 30m acceleration run test for the mean value and standard deviation of experimental group (mean ± SD, 6.18±0.9551 and 5.95± 0.9965) for pre and posttest respectively, and the mean value and standard deviation of control group 6.0475 ±0.536 and 6.058 ± 0.554 for pre and posttest respectively. Mean difference -0.215 for experimental group and .0105 for control group. There was an improvement in speed scores for after football minor game training for experimental group. But there was not improvement observed rather decrement in performance was seen at mean difference value in control group.

The Illinois agility test measure agility of an individual scores in second the mean value and there standard deviation of experimental group was (mean ± SD, 20.666 ±1.276) for pretest and mean ± SD, 20.34±1.2445) for posttest result respectively and mean difference (0.326). This shows that significant improvement after minor game training intervention for experimental group. On the other hand, the mean value and their standard deviation of control groups 19.909 ± 0.8025 and 20.0 ± 0.7739 for pre and posttest respectively and mean difference (= 0.091). This shows that there was no an improvement observed; rather decrement of performance was observed in control group from pretest to posttest measurement. The graphical representation for mean value of experimental and control group in pre and posttest results of speed and agility exhibited in chart figure 4.3.

**Table 10: Paired Samples Test for all variables paired difference values comparisons and significance level of physical fitness variables.**

| Variables | Group | Paired Differences | | | | | Df | t –value | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Standard deviation | Standard Error Mean | 95% confidence interval of the difference | | | | |
| | | | | | Lower | Upper | | | |
| CVE | CG | 11.75 | 34.077 | 7.6198 | -4.198 | 27.698 | 19 | 1.542 | 0.14 |
| | EG | 77.5 | 88.35 | 19.756 | 36.148 | 118.85 | 19 | 3.923 | .001 |
| ME | CG | -.25 | 1.916 | .42843 | -1.146 | .6467 | 19 | -.584 | .566 |
| | EG | 2.5 | 1.638 | .36635 | 1.733 | 3.266 | 19 | 6.824 | .001 |
| Flexibility | CG | -.10 | .9679 | .21643 | -.553 | .3529 | 19 | -.462 | .649 |
| | EG | 1.95 | 1.356 | .30327 | 1.315 | 2.585 | 19 | 6.430 | .001 |
| Vertical Jump | CG | .45 | 1.605 | .35891 | -.3012 | 1.2012 | 19 | 1.254 | .225 |
| | EG | 2.45 | 2.98 | .66679 | 1.054 | 3.8456 | 19 | 3.674 | .002 |
| Speed | CG | .011 | .2755 | .06162 | -.118 | .13946 | 19 | .170 | .866 |
| | EG | -.204 | .210 | .04706 | -.302 | -.105 | 19 | -4.324 | .001 |
| Agility | CG | .091 | .595 | .13308 | -.18754 | .36954 | 19 | .684 | .502 |
| | EG | -.326 | .4418 | .9879 | -.53277 | -.11923 | 19 | -3.30 | .004 |

CG= control group, CVE= cardio vascular endurance, EG= experimental group, ME= muscular endurance, df= degree of freedom

As can be seen the above table reveals that the comparison of both control and experimental group's pre and posttest result of selected physical fitness and it also indicate whether this change /difference was statistically significant or not. According to the result presented in the table above, the experimental group12 minutes run test result shows a statistically significant improvement from pre to post test result paired difference value (MD= 77.5,SD= 88.35 , and t value 3.92 and P -value 0.001). This value indicates that the mean change (improvement) in cardio vascular endurance after 12 week minor game training program. Hence, p (0.001) < 0.05 level of confidence. Whereas, there was

no statistically significant improvement at 0.05 level of confidence in 12 minute run test results of control group(MD=-1.75, T value = -0.219<p value 0.829), hence P >0.05.

In the former table 10 above, shows that the mean value of EG muscular endurance test result before the fitness exercise given was 28.45 and it was increased 30.95(MD= 2.5, t value=6.84, p=0.001) after the fitness exercised were delivered, At 0.05 level of significance were seen p< 0.05 , t> p and the muscular endurance pretest mean value of CG laying sit-up test was 28.8 and it was decreased to 28.55 during posttest result (MD=-.25, t value =0.584, p =0.566) At 0.05 level of significance were seen p> 0.05. Therefore, this implies that a statistically significant change on muscular endurance laying sit up from pretest to posttest after twelve week training program. But, not significant changes were observed in control group laying sit up test.

Table 10 above also displays the significant difference values of the pre and posttest results of sit and reach test both group (EG and CG). According to the data presented in the table above, statically significant improvement were observed in the experimental group sit and reach test result (MD=1.95 SD= 1.356, T = 6.43, P =0.001), This shows an improvement on football minor game training program for experimental group and an alternative hypothesis accepted at 0.05 levels of confidence. Hence, p value < 0.05 and T>P. To the contrary on the case of CG sit and reach test slight reduction were seen from pre to posttests (MD =-0.1, T= 0.462 p= 0.649), this inducted that no significant difference at 0.05 level of confidence on paired sample tests of control group. So an alternative hypothesis was rejecting.

Table 10 above also reveals vertical jump test that the significance differences values of the pre and posttest results of two group (EG and CG). Based on the data presented in the table, statistically significant improvement were observed in both group compared with their level of improvement either in mean difference value (MD for EG =2.45 and CG= 1.35), compared the level of improvement in P value at 0.05 level of confidence. The p value of EG = 0.002 <0.05 level of confidence This shows an improvement on football minor game training program for experimental group and an alternative hypothesis accepted at 0.05 levels of confidence. Whereas, the p value of CG =0.224 > 0.05), this

inducted that no significant difference in control group. So an alternative hypothesis was rejecting.

In the former table 10 above, shows that the mean difference value of EG speed test result -0.2035 and P value= 0.00 < 0.05. Therefore, this implies that a statistically significant change were observed on 30 m running speed from pretest to posttest after twelve week minor game training program for experimental group. But, the mean difference value CG of speed test 0.0105< P value 0.866 >0.05. Hence, not significant change was observed on 30 m running speed from pretest to posttest for control group.

The Illinois agility test measure agility of an individual in second the mean difference value experimental group was (post-pre=-0.326), T value -3.30, and P=0.004 (P< 0.05). This shows that significant improvement after minor game training intervention for experimental group. On the other hand, the mean difference value of control groups (post-pre= 0.091), T value 0.684 p=0.502, hence, p value >0.05, T>P. This shows that there was no significant improvement. Therefore, diminished performance was observed in control group from pretest to posttest measurement.

## 4.2 Discussions

The primary aim of this study was to evaluate the effect of twelve week football minor game training program on the student fitness level of grade twelve male students at Simada preparatory school. The main finding from the investigation shows that cooper twelve minute run for CVE, laying sit-up for muscular endurance, sit and reach test for flexibility, vertical jump test for explosive leg power, 30m acceleration run for speed and Illinois agility test for Agility in twelve week minor game training program for both control and experimental group. Llttal, (2009) However, the realization of these advantages is dependent on game design. Finally, SSGs are considered to be more time efficient, as physical fitness and performance, technical skills and tactical awareness can be developed concurrently.

As you can see table 10: above paired sample t-test was conducted to evaluated cardio vascular endurance result suggested that the main value of EG on twelve minuet run test result before training 1861.5 m and 1939 after training and mean difference (MD= 77.5),

T value= 3.923>p (0.001), while the mean value of control group 1721.75 and 1733.5 for pre and posttest respectively, mean difference (MD=11.75) T value = 1.542. This shows statistical significant improvement on football minor game training program for experimental group and an alternative hypothesis accepted at 0.05 levels of confidence. Because P < (0.05). To the contrary on the case of CG slight reduction were seen from pre to posttests (MD =11.75, t value= 1.542 & p=0.14) these inducted that has no significant difference at 0.05 level of confidence on paired sample tests of control group. Because, p>0.05. So an alternative hypothesis was rejecting. Aerobic training is developed to improve the oxygen transport system Rampinini & et al. (2007) the oxygen transport system is best trained by endurance workouts, that is, exercises of relatively long duration at submaximal level. Jangsbo, (1996) this specific training improves the ability to continue exercising for a prolonged period and the ability to quickly recover from high-intensity exercises). Aerobic training is developed to improve the oxygen transport system Rampinini & et al. (2007). The oxygen transport system is best trained by endurance workouts, that is, exercises of relatively long duration at submaximal level. Little, (2009) Although fitness development based on running methods is well supported by using small-sided soccer games, because greater methodological development for small-sided games in soccer training is needed to optimize the training periodization and help coaches systematize the sessions. This review aims to propose guidelines for soccer training based on minor- game.

As you can see above table 10: paired sample t-test was conducted to evaluated muscular endurance result suggested that the main value of EG on lying sit up test result before training 28.45 and 30.95 after training and mean difference (MD= 2.50), p=0.00 T value= 6.824,) Therefore, these results suggest that the experimental groups shows statistically significant improvement on football minor game training program for muscular endurance and an alternative hypothesis accepted at 0.05 levels of confidence. Because T > P <0.05. While the mean value of control group 28.80 and 28.55 for pre and posttest respectively, mean difference (MD=-0.25, p=0.556 T value = 0.584. These shows slight reduction were seen from pre to posttests and has not significant difference at 0.05 level of confidence on paired sample tests of control group. So an alternative hypothesis was rejecting. Jangsbo, (1996) the specific training improves the ability to continue

exercising for a prolonged period and the ability to quickly recover from high-intensity exercises.

Former table 10: paired sample t-test was conducted to evaluated flexibility result suggested that the main value of EG on sit and reach test result before training 4.5cm and 6.45 after training and mean difference (MD= 1.95), P =0.001<0.05. while the mean value of control group 4.15 cm and 4.05cm for pre and posttest respectively, mean difference (MD=-0.10) P(0.649)>0.05. Therefore the experimental group shows statistically significant improvement on football minor game training program for flexibility. So, the formulating alternative hypothesis was accepted at 0.05 levels of confidence. To the contrary on the case of CG slight reduction were seen from pre to posttests (MD =-0.10) and p value 0.649>0.05 inducted that no significant difference at 0.05 level of confidence on paired sample tests of flexibility. So the formulating alternative hypothesis was rejecting. According to Hill-Haas, (2010) SSGs in football, effective a training tool for developing physical fitness, technical and tactical skills in football players. It also appears that similar fitness and performance gains can be made with SSGs as is achieved with traditional interval training methods.

Former table 10: Paired sample t-test was conducted to evaluated explosive strength result suggested that the main value of EG on vertical jump test result before training 31.1 and 33.55 after training and mean difference (MD= 2.45), P =0.002 <0.05. Therefore, the experimental groups were shows statistical significant improvement on football minor game training program for explosive strength and an alternative hypothesis accepted at 0.05 levels of confidence. Because P (0.001) <0.05. To same way the mean value of control group 29.95 and 30.4 for pre and posttest respectively, mean difference (MD= 0.45) shows slight improvement were seen from pre to posttest (MD =0.45). But, has not statistical significant difference at 0.05 level of confidence on paired sample tests of control group p (0.225)>0.05 and T value 1.254 was greater than 0.225. So the formulating alternative hypothesis was rejecting. The study of Singh, (2007) also support the result of study he conclude in his study that players of trained were found significantly better on all physical fitness variables i.e. endurance, strength, speed, power, flexibility and agility that of non-trained one. He revealed that players of higher group

and has significantly better on all physical fitness components as compared to lower group players.

Former table 10: paired sample t-test was conducted to evaluated speed result suggested that the main value of EG on 30m acceleration run test result before training 6.175 sec and 5.972 sec after training and mean difference (MD= -0.2035), T value= 4.324 >P =0.001 < 0.05. While the mean value of control group 6.0475 and 6.058 for pre and posttest respectively, mean difference (MD= 0.0105) T value = 0.17, p=0.866>0.05. These shows statistical significant improvement speed on football minor game training program for experimental group and an alternative hypothesis accepted null hypothesis reject & at 0.05 levels of confidence.

To contract slight decrement of speed for CG from pre to posttests (MD =0.0105) and T value 0.17 was less than 0.866 inducted that has no statistical significant difference at 0.05 level of confidence on paired sample tests. So an alternative hypothesis was rejected. According to Delecluse, (1997) there was significant increase in sprint acceleration speed when strength and sprint training given in different minor game design of training. Running speed is the combination of stride frequency and stride length. Coaching manual, (1973) recognizes that football game is a physical demanding sport characterized by explosive activity such as speed explosive leg power, agility, flexibility, in addition to high intensity running and sprints over relatively short distance.

As you can see the above table 10: paired sample t test was conducted to examine agility result suggested that the main value of EG on Illinois agility test result before training 20.67 sec and 20.18 sec after training and mean difference (MD= -0.326), T value= -3.30 >P =0.004 < 0.05. While the mean value of control group 19.9 and 20.0 for pre and posttest respectively, mean difference (MD= 0.10) T value = 0.684 <p=0.502 > 0.05. Therefore the experimental groups were highest on average P value and mean value. These also shows statistical significant difference on football minor game training program for experimental group and an alternative hypothesis accepted & null hypothesis reject at 0.05 levels of confidence, Hence P (0.004)>0.05. To same way on the case of CG slight decrement were seen from pre to posttests (MD =0.091) and T value 0.684 was greater than 0.502 inducted that has not significant difference at 0.05 level of

confidence on paired sample tests of control group. So an alternative hypothesis was accepted & null hypothesis reject.

In general to the recent literature review, The study of Singh, (2007) also support the result of study he conclude in his study that players of trained were found significantly better on all physical fitness variables i.e. endurance, strength, speed, power, flexibility and agility that of non-trained one. He also revealed that players of higher group and has significantly better on all physical fitness components as compared to lower group players. Reilly & White, (2004) compared the effectiveness of 6 weeks of aerobic interval training and game-based training on improvements in muscular power, agility, skill, anaerobic capacity, and maximal aerobic power in professional academy soccer players. There were no significant differences between groups for any of the performance tests following training, leading the authors to conclude that game-based training offered an acceptable substitute for aerobic interval training to maintain fitness during the competitive season. According to Cooper, (1967) and Davis, (2000) stated normative data of different fitness components such as CVE for twelve minuet run test, muscular endurance sit up for supine position, sit and reach test for flexibility, explosive leg power for vertical jump test, 30m acceleration speed, and Illinois agility test and the result confirmed that training has significant effect on the selected physical fitness performance. The fitness of CVE has been improved from1861.5 to 1939 pre to posttest for experimental group. According to the Cooper, (1967) normative data level of CVF 1800-2099m average rating level. According to Davis, (2000) in muscular endurance test has been improved 28.45 for fair rating level to 30.95 the same rating level. In relation to flexibility the provision of training has bought change from below average level of 4.5 to 6.45 with the same below average level. In explosive leg power, the training has bought improvement from31.1 to 33.55 which is fair rating. Regarding to the speed change from pre to posttest result 6.175 sec and 5.972 sec has been poor rating. And agility change from pre to posttest 20.66 sec and 20.34 sec which is apposition of average level. This shows the general standards of the tests.

# CHAPTER FIVE

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary

The main objective of the study was to investigate the effect of football minor game training on the development of selected physical fitness of student particularly on Tagel general secondary and preparatory school. For this purpose the researcher reviewed the available review literature in order to decide the focus of the study and methodologies. The researcher used quasi- experimental research design help full to identify physical fitness of the student in pretest and posttest measurement. In order to attain the general objective of the study, the following specific objectives were formulated.

- To find out the effect of using football minor game training in improving CVE
- To assessing the effect of using football minor game training in improving endurance
- To find out the effect of using football minor game training in improving flexibility
- To investigate the effect of using football minor game training in improving explosive strength
- To investigate the effect of using football minor game training in improving speed
- To investigate the effect of using football minor game training in improving agility.

Based on the above specific objective, the hypotheses were formulated. The study was design to investigate the effect of twelve week football minor game training program 3 day per week for 40-60 minutes session per a day for experimental group.

The data was gathered the experimental and control group results in the form of in the pretest and posttest method of 12 minute run test, laying sit up test, sit and reach test, explosive leg power, 30m acceleration speed and Illinois agility *test* had been organized using appropriate and relevant statistical method of analysis like SPSS (version 20) paired sample t-test method were used to determine the changes between pretest and post test results of experimental and control group. The level of significant at P= 0.05 level of confidence the following finding were obtained.

Generally, the following findings were investigating through paired t- test the data was analyzed. The finding of the study on football minor game training for experimental group reveals that statistically significant improvement on the cardio respiratory fitness at MD = 77.5 & p=0.001, muscular endurance MD= 2.5 & 0.00, and flexibility MD= 1.95 & P= 0.00, explosive leg power MD= 2.45 & 0.02, speed MD =-0.203 & P= 0.001 and agility MD =0.815 &P= 0.001 compared at 0.05 level of confidence. The study of Singh (2007) also support the result of study that players of trained were found significantly better on all physical fitness variables i.e. endurance, strength, speed, power, flexibility and agility that of non-trained one. Therefore the minor game training program for experimental group was conductive, effective and had a positive influence in improvement of physical fitness skills. But, the control group was not in the intervention training program they could not have significant improve their performance during posttest.

## 5.2 Conclusions

The main focus of the study was to evaluate the effect of minor game training program on fitness development. Small sided game training program had an effect on the development of trainee's physical fitness performance on CVF, Muscular endurance, flexibility, explosive leg power, speed and agility. Depending up on the finding of the study the following conclusions was drowning:

- Twelve week minor game training has statistically significant effect on student physical fitness for experimental group from pre to post test results. Therefore the training for the experimental group was conducive, effective and had a positive influence in improvement of fitness level.
- No statistically significant changes were found in the control group physical fitness levels from pre to post results, and the control group less/no significant than experimental group on player performance. So the finding clearly indicated that there was difference between the pre and post test result of experimental group and control group players.
- According to the results of the study, it has been observed that football minor training, applied to high school age individuals had a positive effect as a student physical features as their CVE, body-muscle endurance, explosive leg strength, elasticity, speed and agility. Football minor game training can be applied to students together with the physical education and sports lessons on account of it easily being applicable, for fitness and all life skills.
- Generally, from the result of the study football minor game make it is possible to address many variables at the same time.

## 5.3 Recommendation

Depending up on the result of findings the researcher recommended the following main points to the stake holders who seek to improve student's physical fitness.

- The researcher recommended that Physical education teachers would be taking into account the value of minor game training for the improvement of physical fitness.
- Football minor game training can be applied to students together with the physical education and sports lessons on account of it easily being applicable, for fitness and all life skills. It is possible to apply the minor- games related to football program in other sports which contain life skills and basic mobility variables.
- The researcher recommended that physical education teacher had better familiar with the basic principles and processes of minor game training, so they can evaluate training programs and their adequacy in maintaining student physical fitness development. Finally, minor games are considered to be more time efficient, as physical performance, technical skills and tactical awareness, can be developed concurrently.

The farther research scopes of minor game are had better to search in the area:-

- For the finding of this study only physical fitness kills were used, it is possible to conduct similar studies in collective games while using minor - games program that contains social skills, performance skill and life skills.
- For the finding of this study only field tests were used, therefore it is better if the future research used laboratory test.

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# APPENDIX'S

BAHIR DAR UNIVERSITY

SPORT ACADEMY

SPORT SCIENCE DEPARTMENT

**Appendix A**: **physical readiness questionnaire prepared for the students.**

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Common sense is your best guide when you answer these questions. The following questions are prepared and distributed to the students regarding to their health states for the participation of designed football minor-game training.

1. Do you feel pain in the chest when you do physical activity?

2. In the past month, have you had chest pain when you were not doing physical activity?

3. Do you lose your balance because of dizziness or do you ever lose consciousness?

4. Do you have a bone or joint problem that could be made worse by a change in your physical activity?

5. Is your doctor currently prescribing drugs for your blood pressure or heart condition?

6. Do you know of any other reason why you should not do physical activity?

7. Has your doctor ever side that you have a heart condition and that you should only do physical activity recommended by a doctor?

I certify that the above statements are true and correct. I understand that a Doctor not may be requested. If a note is requested, I should not proceed with this program until the note is received.

## Appendix B: Personal profiles of participants for experimental and control group

| Experimental group | | | | | | Control group | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| No | Student code | Grade 12th | Age | Height | Weight | Student code | Grade 12th | Age | Height | Weight |
| 1 | 1DA | D | 18 | 1.64 | 52 | C1HG | A | 19 | 1.60 | 55 |
| 2 | 2AW | D | 18 | 1.73 | 53 | C2DH | C | 18 | 1.64 | 49 |
| 3 | 3HG | A | 18 | 1.61 | 55 | C3YG | E | 18 | 1.75 | 58 |
| 4 | 4WD | A | 18 | 1.60 | 55 | C4AG | E | 20 | 1.75 | 63 |
| 5 | 5DS | F | 18 | 1.73 | 50 | C5GY | B | 20 | 1.72 | 60 |
| 6 | 6DF | F | 18 | 1.68 | 56 | C6GL | B | 20 | 1.73 | 58 |
| 7 | 7DB | A | 18 | 1.65 | 57 | C7MM | C | 19 | 1.69 | 50 |
| 8 | 8DM | D | 18 | 1.73 | 60 | C8BW | C | 19 | 1.69 | 54 |
| 9 | 9FM | D | 18 | 1.60 | 48 | C9FC | B | 19 | 1.76 | 61 |
| 10 | 10TM | D | 18 | 1.70 | 55 | C10DA | C | 20 | 1.67 | 55 |
| 11 | 11TN | D | 20 | 1.68 | 60 | C11GD | C | 19 | 1.69 | 58 |
| 12 | 12AA | B | 19 | 1.68 | 52 | C12MA | E | 19 | 1.71 | 59 |
| 13 | 13FD | A | 18 | 1.58 | 48 | C13TE | E | 18 | 1.80 | 59 |
| 14 | 14TA | E | 18 | 1.67 | 56 | C14MA | E | 19 | 1.65 | 51 |
| 15 | 15DD | B | 19 | 1.69 | 55 | C15GG | D | 18 | 1.59 | 50 |
| 16 | 16MB | A | 18 | 1.84 | 65 | C16SY | D | 18 | 1.72 | 60 |
| 17 | 17AG | A | 18 | 1.53 | 53 | C17MA | C | 18 | 1.62 | 50 |
| 18 | 18WM | E | 20 | 1.86 | 62 | C18YW | C | 18 | 1.66 | 54 |
| 19 | 19GT | A | 18 | 1.58 | 47 | C19AA | C | 19 | 1.51 | 49 |
| 20 | 20FD | A | 18 | 1.58 | 48 | C20MW | B | 19 | 1.71 | 54 |

Appendix C: Experimental group of selected physical fitness parameters for pretest and posttest.

| No | Student code | 12th | VJ test | | Flexibility | | Speed | | Sit up | | Agility | | 12 minuet run test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| 1 | 1DA | D | 32 | 34 | 2 | 7 | 5.6 | 5.4 | 32 | 32 | 23 | 23.1 | 2130 | 2330 |
| 2 | 2AW | D | 28 | 31 | 6 | 9 | 5.4 | 5.2 | 27 | 30 | 21.1 | 21.3 | 2100 | 2140 |
| 3 | 3HG | A | 24 | 27 | 8 | 10 | 7.4 | 7.0 | 36 | 37 | 19.9 | 19.5 | 2210 | 2270 |
| 4 | 4WD | A | 28 | 32 | 6 | 8 | 6.5 | 6.4 | 28 | 29 | 21.65 | 21.5 | 2230 | 2280 |
| 5 | 5DS | F | 35 | 37 | 7 | 8 | 4.8 | 4.2 | 27 | 32 | 20.22 | 19.5 | 1910 | 1980 |
| 6 | 6DF | F | 39 | 40 | 5 | 8 | 5.6 | 5.5 | 29 | 30 | 19.52 | 19.3 | 1930 | 1920 |
| 7 | 7DB | A | 35 | 38 | 3 | 4 | 5.9 | 5.5 | 31 | 33 | 18.6 | 18.5 | 2000 | 1940 |
| 8 | 8DM | D | 27 | 32 | 2 | 5 | 5.2 | 5.1 | 32 | 33 | 21.8 | 21.5 | 1830 | 1850 |
| 9 | 9FM | D | 33 | 37 | 1 | 3 | 7.8 | 7.4 | 28 | 30 | 19.7 | 19.4 | 1580 | 1800 |
| 10 | 10TM | D | 25 | 29 | 2 | 4 | 7.4 | 7.0 | 20 | 25 | 20.1 | 21.1 | 1580 | 1700 |
| 11 | 11TN | D | 34 | 36 | 4 | 5 | 7.3 | 7.2 | 30 | 31 | 21.7 | 20.3 | 1550 | 1830 |
| 12 | 12AA | B | 28 | 30 | 5 | 6 | 6.4 | 6.2 | 25 | 29 | 19.4 | 19.3 | 1565 | 1620 |
| 13 | 13FD | A | 35 | 37 | 3 | 7 | 7.1 | 7.3 | 28 | 30 | 22.92 | 22.6 | 1630 | 1730 |
| 14 | 14TA | E | 26 | 30 | 2 | 4 | 5.4 | 5.3 | 29 | 31 | 19.36 | 19.4 | 1680 | 1720 |
| 15 | 15DD | B | 27 | 29 | 5 | 7 | 6.3 | 6.3 | 33 | 34 | 19.4 | 19.5 | 1660 | 1640 |
| 16 | 16MB | A | 31 | 35 | 4 | 3 | 7.2 | 7.1 | 26 | 31 | 21.1 | 20.3 | 2200 | 2230 |
| 17 | 17AG | A | 34 | 34 | 8 | 8 | 6.8 | 6.5 | 27 | 30 | 20.95 | 21 | 2150 | 2200 |
| 18 | 18WM | E | 37 | 39 | 8 | 9 | 5.2 | 5.1 | 23 | 28 | 21.51 | 20.2 | 2015 | 2050 |
| 19 | 19GT | A | 39 | 31 | 5 | 7 | 5.4 | 5.2 | 28 | 32 | 19.31 | 19 | 1720 | 1770 |
| 20 | 20FD | A | 25 | 33 | 4 | 7 | 4.9 | 4.4 | 30 | 32 | 22 | 21.5 | 1560 | 1780 |

**Appendix D: Control group parameters of selected physical fitness variables pretest and posttest**

| No | Student code | 12th | VJ test | | Flexibility | | Speed | | Sit up | | Agility | | 12 minuet run test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| 1 | 1HG | A | 24 | 26 | 2 | 2 | 6.3 | 6.3 | 23 | 24 | 19.4 | 19.0 | 1470 | 1480 |
| 2 | 2DH | C | 22 | 22 | -1 | 0 | 5.8 | 6.9 | 28 | 28 | 20.0 | 19.6 | 1660 | 1630 |
| 3 | 3YG | E | 26 | 27 | 6 | 7 | 5.7 | 5.72 | 30 | 29 | 20.3 | 20.1 | 1980 | 1970 |
| 4 | 4AG | E | 40 | 38 | 8 | 8 | 6.1 | 6 | 21 | 23 | 19.53 | 19.4 | 1900 | 1920 |
| 5 | 5GY | B | 26 | 28 | 7 | 6 | 5.63 | 5.6 | 26 | 24 | 20..4 | 20.0 | 1640 | 1660 |
| 6 | 6GL | B | 31 | 29 | 5 | 5 | 5.6 | 5.5 | 29 | 29 | 19.48 | 19.5 | 1890 | 1830 |
| 7 | 7MM | C | 40 | 38 | 4 | 5 | 5.4 | 5.5 | 30 | 28 | 20.5 | 20.6 | 1500 | 1570 |
| 8 | 8BW | C | 26 | 28 | 2 | 1 | 5.5 | 5.5 | 31 | 30 | 19. | 21.1 | 1530 | 1540 |
| 9 | 9FC | B | 49 | 46 | 3 | 2 | 6.4 | 6.3 | 32 | 30 | 21.0 | 20.8 | 1930 | 1900 |
| 10 | 10DA | C | 22 | 23 | 2 | 1 | 6.1 | 5.8 | 29 | 31 | 20.04 | 19.9 | 1900 | 1910 |
| 11 | 11GD | C | 28 | 29 | 5 | 5 | 6.2 | 6.0 | 30 | 31 | 20.01 | 21.1 | 1720 | 1750 |
| 12 | 12MA | E | 28 | 30 | 5 | 6 | 5.7 | 5.6 | 28 | 30 | 19.1 | 19.4 | 1810 | 1880 |
| 13 | 13TE | E | 27 | 28 | 3 | 4 | 6.3 | 6.4 | 30 | 29 | 22.48 | 22.1 | 1940 | 1970 |
| 14 | 14MA | E | 36 | 36 | 2 | 2 | 6.2 | 6.21 | 35 | 33 | 19.5 | 20.0 | 1850 | 1830 |
| 15 | 15GG | D | 26 | 28 | 5 | 4 | 7.22 | 7.0 | 28 | 28 | 20.02 | 19.8 | 2000 | 2020 |
| 16 | 16SY | D | 30 | 31 | 4 | 3 | 7.3 | 7.3 | 30 | 28 | 19.32 | 19.6 | 1680 | 1700 |
| 17 | 17MA | C | 34 | 33 | 5 | 6 | 5.47 | 5.5 | 32 | 30 | 19.56 | 19.6 | 1550 | 1600 |
| 18 | 18YW | C | 30 | 31 | 2 | 3 | 5.47 | 5.4 | 30 | 28 | 19.49 | 19.4 | 1520 | 1500 |
| 19 | 19AA | C | 26 | 27 | 7 | 5 | 6.2 | 6.23 | 23 | 28 | 20.01 | 19.8 | 1465 | 1460 |
| 20 | 20MW | B | 28 | 30 | 7 | 6 | 6.4 | 6.4 | 31 | 30 | 19.04 | 19.2 | 1500 | 1550 |

Appendix E: Description of the twelve week minor-game training program on football.

Objective: To improve the physical fitness of student by using football minor game training program the ability to pass, receive and possess the soccer ball in minor game form.

| Week | The name of the game | Game design | Frequency | Intensity | Performance skill and Motor Skills | organization | Coaching pts. and sit up rule |
|---|---|---|---|---|---|---|---|
| The first week one | Dutch square two goal game<br>-rotate position<br>-any goal keeper | 4 vs. 4<br>5 vs. 5<br>6 vs. 6 | 3 | Light intensity | Passing ,receiving Possession when the attack | In a 20x30m grid, 2 m goals are spread out throughout the grid. The teams score by passing and receiving through any of the goals to a teammate.<br>3 Players need to be in a triangle4×3for 15minuet & 5 minute break. | passing and receiving Players in good supporting position Pace and accuracy of the pass, Clear communication coach pass ball into the pitch, player take pass<br>Good team shape based on game ,no offside |
| The Week two | Triangle passing &moving 2 goal game any goal keeper | 3 vs. 3<br>4 vs. 4<br>5 vs. 5<br>6 vs. 6 | 3 | Moderate | Passing ,receiving Possession when the attack | In a 30x40m. Grid with two small 3 feet cone goals on each of the 40 meter lines, at center. Each team defends and attacks two goals. If playing with 4 players, the attacking shape should be a diamond. 3×20 minute 5 minuet break. | Possess the ball to look for an opportunity to score Players in good supporting positions, decision making, safety versus risk ,Communication<br>Good team shape no offside , player roll, pas &dribble in long in length short width pitch on goal zone |
| the third week | Scrimmage | 4 vs. 4<br>5 vs. 5<br>6 vs. 6 | 3 | Moderate - high rang | Passing ,receiving Possession when the attack | Play in pitch dimension of 25x30m, 40x30 & 45x60 m field respectively, from game If with Goalkeeper and encourage them to communicate with Teammates. | -All of the above(2x15, 2x20, 2x30, minute) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| The four week | Four goal game: must score in each game | 4 vs. 4<br>5 vs. 5<br>6 vs. 6 | 3 | Moderate | Explosive strength, agility &speed | 4v4, 5v5 or 6v6 +GK's to Four Goals:<br>In a 40x50 meter grid, two teams of 5 or 6 players and a GK each play to score and defend two goals. The goals are set on the 40m line. The GK on each team can help the<br>Possession by playing with his/her feet. | Supporting shape and balance for team in possession, the coach pass new ball into the pitch player pass, roll & dribble four goal and keeper, score in four goal and one keeper, first declare the winner |
| The fifth week | Two goal game with [interval] | 5 vs. 5<br>6 vs. 6<br>10 vs.10 | 3 | Moderate | Long intensive endurance (interval) | Dimension of pitch 20x30 m,<br>25x35m &30x40m with 4,5,&6 for a sided respectively 4-5rpt. With5-15 min duration .[30-40 min volume]4-5 min recovery (1-2 each) | with goal keeper ,no touch limitation, no coach encouragement<br>two against teams, no offside ,coach pass new ball into pitch player take the ball ,pass and dribble |
| week Six | Scrimmage | 5 vs. 5<br>6 vs. 6<br>10 vs.10 | 3 | High | Passing ,receiving Possession when the attack | Play in pitch dimension of 40 x60, 50x70 m field respectively, from game If with Goalkeeper and encourage them to communicate with Teammates. | -All of the above |
| Seve nth week | Two goal game with two touch [interval] | 2 vs. 2<br>3 vs. 3<br>4 vs. 4 | 3 | Moderate intensity | Short intensive endurance (interval) | Dimension of pitch15x25m,<br>20x25m &18x30m with 2,3,&4 for a sided respectively 4-6 rpt. With3-6 duration.[10-30 ' volume],5-6,recovery | No goal keeper, touch limitation, with coach encouragement<br>two against teams, no offside ,coach pass new ball into pitch player take the ball &pass |
| Eight week | Two goal game with two touch [continence] | 2 vs. 2<br>3 vs. 3<br>4 vs. 4 | 3 | Moderate- High | Short intensive endurance continence) Explosive strength, agility &speed | Dimension of pitch15x25m,<br>20x25m &18x30m with 2, 3, &4 for a sided respectively. (10-30 min volume) | with goal keeper ,no touch limitation, no coach encouragement<br>two against teams, no offside ,coach pass new ball into pitch player take the ball ,pass and dribble |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ninth week | Two goal game with [continence] | 4 vs. 4<br>5 vs. 5<br>6 vs. 6 | 3 | Moderate | Long intensive endurance (continence | Dimension of pitch 20x30 m,<br>25x35m &30x40m with 4, 5, &6 for a sided respectively. [30-40 min volume) 70 %HR max | With goal keeper ,no touch limitation, no coach encouragement<br>two against teams, no offside ,coach pass new ball into pitch player take the ball ,pass and dribble |
| Tenth week | Two goal game with goal keeper | 4 vs. 4<br>5 vs. 5<br>6 vs. 6 | 3 | Moderate | Speed, Agility and Endurance | 4 x 2 10 s/90-s rest Interval ,<br>3 x4 min/2-min rest Interval,]<br>3x 6 min/90-s rest Interval,<br>3x 8 min/90-s rest Interval, with 85-90%HRmax respectively from game design | With goal keeper, option close and far, players in good supporting position<br>Player take roll in ,throw in, make pass& dribble |
| Eleventh week | Two goal game | 4 vs. 4<br>5 vs. 5<br>6 vs. 6 | 3 | | Passing ,receiving Possession when the attack to improve aerobics fitness | If 4v4, 5v5 & 6v6 play in pitch dimension play in 25x30m, 40x30 & 45x60 m field respectively. If with Goalkeeper. fair play (2x30) | Possess the ball to look for an opportunity to score Players in good supporting, positions,<br>decision making, safety versus risk, Communication Good team shape no offside coach pass ball, &player roll, pas &dribble in long in length short width pitch on 3 zone |
| Twelve week | Two goal game with &without goal keeper | 4 vs. 4<br>5 vs. 5<br>6 vs. 6 | 3 | Moderate | Both speed and endurance | 1x40 min continence | With goal keeper, option close and far, players in good supporting position<br>Player take roll in ,throw in, make pass& dribble |

Appendix F: **Description of 1st daily training session plan for minor-game training on football**

| Parts | Content | organization | Coaching point & organization |
|---|---|---|---|
| Technical warm-up (15 minuet ) | Walking<br>Jogging<br>Pair to pair passing | Make the student in 4 line<br>Walk and jog in d/f leg movement<br>Pair to pair passing with setting cone | Pass and run to outside<br>Placement of non-kicking foot and good balance<br>Keep ankle of receiving foot locked and body behind the ball, eye on the ball at instant of receiving. |
| Main part (2x 25 minuet) | 4 vs. 4<br>ball game<br>5 vs. 5 | Two goal game<br>Touch restriction,<br>with goal keeper,<br>Set- up 20mx40m playing area<br>Change the group 25 minute interval | The starting position of play student play 4 vs. 4 for 25 minuet change 5 vs. 5<br>After 3 minute recovery.<br>Split the player listed game & arrange changed group |
| Cooling down(10 minuet) | Rehydrate, light body movement with breathing meditation like walking with different relaxation action & static stretching at the end | Make the student in 4 line for waking<br>Check the student response to training<br>Make the student half circle for stretching | Split the player listed game & arrange observe rotation<br>Student relax and loose<br>Hold stretch for 6-10 seconds |

Appendix G: **Heart rate of student to manage exercise intensity**

| No | Student code | Age | RHR per minute | MHR | HRR | THR for 60%-85% intensity |
|---|---|---|---|---|---|---|
| 1 | 1DA | 18 | 72 | 202 | 130 | 150-182.5 |
| 2 | 2AW | 18 | 74 | 202 | 128 | 150.8-182.8 |
| 3 | 3HG | 18 | 67 | 202 | 135 | 148-181.75 |
| 4 | 4WD | 18 | 68 | 202 | 134 | 148.4-181.9 |
| 5 | 5DS | 18 | 69 | 202 | 133 | 148.8-182.05 |
| 6 | 6DF | 18 | 74 | 202 | 128 | 150.8-182.8 |
| 7 | 7DB | 18 | 71 | 202 | 131 | 149.6-182.35 |
| 8 | 8DM | 18 | 75 | 202 | 127 | 151.2-182.95 |
| 9 | 9FM | 18 | 69 | 202 | 133 | 148.8-182.05 |
| 10 | 10TM | 18 | 73 | 202 | 129 | 150.4-182.65 |
| 11 | 11TN | 20 | 71 | 200 | 131 | 149.6-182.35 |
| 12 | 12AA | 19 | 74 | 201 | 128 | 150.8-182.8 |
| 13 | 13FD | 18 | 68 | 202 | 134 | 148.4-181.9 |
| 14 | 14TA | 18 | 73 | 202 | 129 | 150.4-182.65 |
| 15 | 15DD | 19 | 75 | 201 | 127 | 151.2-182.95 |
| 16 | 16MB | 18 | 69 | 202 | 133 | 148.8-182.05 |
| 17 | 17AG | 18 | 74 | 202 | 128 | 150.8-182.8 |
| 18 | 18WM | 20 | 71 | 200 | 131 | 149.6-182.35 |
| 19 | 19GT | 18 | 69 | 202 | 133 | 148.8-182.05 |
| 20 | 20FD | 18 | 76 | 202 | 126 | 151.6-183.1 |

## Appendix H: Pictures of football minor gam

Source: photographer