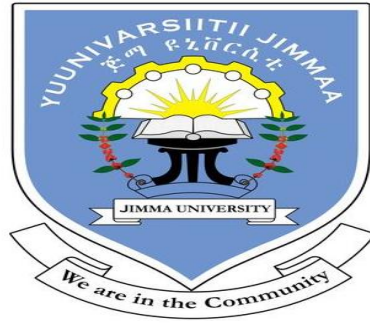




JIMMA UNIVERSITY

SPORT SCIENCE ACADEMY

DEPARTMENT OF SPORT SCIENCE

BY

ABDETA BIRHANU

**TWELVE WEEKS TECHNICAL TRAINING EFFECTS ON
BASIC BASKETBALL SKILLS OF SPORT SCIENCE
STUDENTS IN CASE OF WALLAGA UNIVERSITY SPORT
SCIENCE STUDENTS**

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**A THESIS SUBMITTED TO JIMMA UNIVERSITY SPORT ACADEMY
DEPARTMENT OF SPORT SCIENCE FOR PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE MASTERS DEGREE IN
BASKETBALL COACHING**

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JUNE 2024

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DECLARATION

I Mr. **Abdeta Birhanu** hereby declare and affirm that the thesis entitled **Twelve weeks technical training effects on basic basketball skills of sport science students in case of wallaga university sport science students** is my own work conducted under supervision of Tesfaye Damena (Ass.Pro.).I have followed all ethical principle of scholarship in the preparation, data collection, data analysis, and completion of this thesis .I have adequately cited and referenced all the original sources.

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As a supervisor, Tesfaye Damena (Ass.Pro.) he conducted the research thesis entitled as **Twelve weeks technical training effects on basic basketball skills of sport science students in case of wallaga university sport science students** is faithful record of original research carried out by Abdeta Birhanu under my guidance and supervision. Therefore, I recommend that it be accepted as fulfilling the thesis requirements.

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Name of Advisor

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ACRONYMS

AFAB: African countries founded the Association des Fédérations Africaines de Basketball

ATP-PCr: Adenosine Triphosphate-Phosphocreatine system

BAA: Basketball Association of America

FIBA: Federation of International Basketball Association

FITT: Frequency, Intensity, Time and Type

IOC: International Olympic Committee

IQ: Intelligence Quotient

NBA: National Basketball Associations

Q-Q: Quantile - Quantile

SPSS: Statically Package Software

USA: United States of America

WNBA: Women's National Basketball Association

YMCA: Young Men's Christian Association Training School

BIOGRAPHICAL SKETCH

The author was born in the Oromia Regional State, North Shoa Zone, Wara Jarso Woreda, in August 1996 G.C. He attended primary and secondary school from 2003 to 2016 G.C. at Geba Guba primary School and Gohatsion Secondary School respectively. In 2017, he joined Dilla University and received his first degree in Sport science with a CGPA of 3.75 in 2019 G.C, and he was employed in Wallaga University in 2021 G.C. At present he serve as senior technical assistant at department of sport science, Wallaga University. He enrolled at Jimma University in 2023 G.C. to pursue MSc in basketball coaching.

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ABSTRACT

Technical training of basketball has benefits for the players to develop their skills, like dribbling, passing, shooting and to win in the game of basketball. This study aimed to investigate 12 weeks technical training program effect on basketball basic skills like: speed dribble, speed passing, and throw for accuracy among sport studies students in Wallaga University. Experimental design of quantitative approach was used in this investigation. A total of 40 students were selected from total populations of 72 students using probability, simple random sampling method for the study and their age was 22-25 years old. Those students classified in to 20 experimental group and 20 control group randomly. All players in experimental group participated in 12 weeks technical training which have 3 session per week and control group was not take any intervention. Pre and post –training test was conducted for both experimental and control group. The score were recorded in computerized statistical package for social science (SPSS) version 26 and paired sample T- test and independent sample T-test was used to analyze the data, the levels of significance was set a 0.05%. The results showed that the mean difference between pre and post-test for every variables under experimental group was: speed dribble (2.75 sec.) speed passing (2.40sec.), and throw for accuracy (3.10 points) ($p=0.001$). Those basic skills was improved following 12 weeks technical training at $p<0.05$ and this change was not seen on control group ($p>0.05$). Finally, the researcher concluded that technical training can be an effective training method improving the basic skills of basketball like; speed dribble, speed passing, and throw for accuracy. Further research is needed to fully understand the benefits and limitations of technical training for this populations.

Keywords: Speed Dribbling, Speed Passing, Throw for Accuracy, Ball Handling

CHAPTER ONE

INTRODUCTION

1.1. Back ground of the study

Basketball is a sport that involves short bursts of intense exercise (such as jumping, running, shuffles, and direction changes) repeated over an extended length of time (Abdelkrim *et al.*, 2007). Both adult and youth basketball players must possess high levels of technical proficiency, particularly in relation to movements like dribbling, passing, catching, shooting, and shuffling (Guimarães *et al.*, 2021). Specific skill practices are a crucial aspect of sports training and involve the deliberate and structured repetition of sport-specific movements and techniques to improve proficiency and performance (Joicsy & Jayachitra, 2023).

Sport training is an approach to sports perfection that is grounded in science and pedagogy. Its goal is to help athletes reach their maximum potential by systematically improving their psycho-physical skills and performance preparedness (Jakeman *et al.*, 2016). Technical training of basketball has benefits for the players to develop their skills, like dribbling, passing, shooting and to win in the game of basketball. Technical training of ball handling, passing and shooting drills are abilities that made an important contribution to efficient movement with and without the ball, thus play an important role in basketball technique and tactics (Erculj *et al.*, 2010), (Hussen *et al.*, 2020).

Technique is the rational and economic execution of the type of movement specific to sport branches it includes the specialized system of motor structures established according to the regulation of basketball game obtain the optimum efficiency in competition (Wesson, 1998).

Technical training of ball handling, passing and shooting drills were abilities that made an important contribution to efficient movement with and without the ball. In basketball practice, skill tests are the most suitable and applicable because they are implemented in conditions similar to those of training or competition (Erculj *et al.*, 2010). Basketball is an international sport played by two teams each with five players on the court at one time. It is based on catching throwing, dribbling, and shooting.

Teams can have up to five more players as a substitute and there is no limit on the number of times they can make a substitution (Kamalakaran & Desingurajan, 2023). Technical skill levels have also been favorably correlated with fat-free mass. Age and years of formal training had a beneficial impact on changes in functional performance, but obesity had a detrimental impact. (Sekine *et al.*, 2019), employing a pre-post design to research speed dribble, speed pass, dribble control and accuracy free throw test in 3rd and 4th year sport studies students in wallaga university. "Individual basketball skills should be the starting point for every coach," it is accepted. Players spend a lot of time developing their skills in the club environment, which suggests that the club environment plays a crucial influence (Rees *et al.*, 2016).

Today sports training is mostly based upon the competitive motive. Each nation is trying to achieve top level performance and to win recognition of an achievement in international competitions. Sports training are the basic form of an athlete's training. Coaches and athletes have always searched for training programs which will result in better performance. Acquisition of sports skill is important to enable the sportsman to do the required motor actions during competition without concentrating on the movement execution (K.Tamilchelvan, 2017).

High levels of technical skill are a prerequisite for success in both adult and children's basket- ball, specifically with regards to actions such as catching, passing, dribbling, shooting, and shuffling (Guimarães *et al.*, 2021a). The goal of specific skill practices is to improve an athlete's efficiency, speed, accuracy, and overall performance, helping them to perform at their best during competition (Joicsy & Jayachitra, 2023).

This study was implemented on Wollega University sport science department students of 2023/24. The objective of the study was to find out the effects of twelve weeks technical training on the students basketball skill.

Techniques, tactic and skills of basketball

Technique: is an execution of single movements or fundamental movements, that important to any sport and then basketball sport, based on this definition we can divide it in different parts, like technique with ball and without ball, offensive and defensive techniques, and individual, group and team techniques. Single or fundamental movements with one or more player (Dilla University Unpublished Documents 2024, n.d.).

Tactic: is the art of planned and rational play execution of two or more techniques by single player, a group of players and/or team, adjusted to meet an actual condition in the manner of best suited to achieve maximum results or the demands of the game. Tactic is an art that is pre planned to implement in the game. Tactic implementation is to achieve the maximum results and the demands of the game (*Dilla University Unpublished Documents 2024, n.d.*).

Skill: is an execution of combined activities of techniques and tactics with the highest certainty, with a minimum amount of energy, with in a short period of time to achieve or to gain the maximum results of the game. It is the capacity of a player, a group of players and a team to implement tasks at the right time, at the right place with the highest certainty, with the minimum energy conception and within a short period of time to gain the maximum result or the demands of the game (*Dilla University Unpublished Documents 2024, n.d.*).

1.2. Statement of the problem

Basketball is a popular sport in the world which is given in the form of course for students of sport studies at University level. Sport Studies students at Wallaga University are becoming increasingly interested in improving their basketball skills. There was, however, a lack of knowledge on the precise impacts of a twelve-week technical training program on these youngsters' fundamental basketball skills.

Even though basketball is a well-liked activity with potential advantages for improving physical fitness and skill development, it remains unclear how structured technical training impacts the acquisition and improvement of fundamental basketball skills among Sport Studies students at Wallaga University

This study investigated the effects of twelve week technical training on the basic basketball skills of Wollega University sport science 3rd and 4th year students. The study more concentrated on the specific skill of speed passing, speed dribbling and shooting accuracy.

Previous research conducted by (Mekonnen, 2018) has explored the effects of 12 weeks technical training on basic skills of basketball like; speed dribbling, speed passing, throw for accuracy, and dribble control and conducted at high school level on the population of 17-20 ages while, this research was conducted on at university level on the population of 22-25 ages.

The previous research (Mekonnen, 2018) used only experimental group as a source of data in his study while this study was collected primary data from both experimental and control group through pre-post training test.

It was challenging for Wallaga University sport science students to improve their basic basketball skills due to a number of issues, like; the degree of ability, strategy rule, and basketball game understanding among the students was low; it is not clear for the students that which drills are good for improving particular skills; due to the department has no teachers who specialized with Basketball coaching. In addition to this there was no research done on this problem at that specific location.

1.3. Hypothesis development

At Wollega University sport science students, there were a significant improvement on their speed passing, accurate shooting speed dribbling after twelve weeks technical training intervention.

- 1) There is a statistically significant difference between the mean values of pre-test and post-test of the experimental group speed dribbling skill based on the result of intervention.
- 2) There is a statistically significant difference between the mean values of pre-test and post-test of the experimental group accurate shooting skill based on the result of intervention.
- 3) There is a statistically significant difference between the mean values of pre-test and post-test of the experimental group speed passing skill based on the result of intervention.
- 4) There is no statistically significant difference between the mean values of pre-test and post-test of speed dribbling, accurate shooting and speed passing on the control group.

According to this hypothesis, participants were exhibit measurable gains in speed passing, shooting accuracy, and dribbling speed following the implementation of a 12-week technical training program for basketball skills. The hypothesis was based on the supposition that the students received the required teaching, training, and feedback from the organized training program to improve their fundamental basketball skills.

1.4. Objectives of the study

1.4.1. General objectives

The main objective of the study was to find out how certain technical training affect the fundamental skills of basketball trainers and to evaluate how a 12-week technical training program improved the basic basketball skill of Wollega University sport science students, who were participated on this study.

1.4.2. Specific objectives

The Specific Objectives of the study was:

1. To assess the twelve weeks speed passing training effect on the students speed passing skill.
2. To investigate the twelve weeks speed dribbling training effect on the students speed dribbling skill.
3. To investigate the twelve weeks accurate shooting training effect on the students accurate shooting skill.

1.5. Significance of the study

This study was attempted to identify the effects of selected various exercises to improve the basic skill of basketball trainees.

Academic Contribution: By analyzing the efficiency of a particular technical training program in boosting essential basketball abilities, the study contributes to the field of sports education. It supplements the body of current knowledge with empirical facts and acts as a guide for further study in related settings.

Skill Development: The study provides insights into the efficacy of focused interventions in enhancing speed passing, shooting accuracy, and dribbling speed by evaluating the effects of the twelve-week technical training program. This data may direct the creation of more efficient training plans, which will help Wallaga University students as well as those at other universities looking to improve their sports education curricula.

Career Preparation: The findings of the study may help students studying sport studies get ready for future employment in basketball-related industries. Improved fundamental abilities can make them more marketable and provide them the tools they need to succeed as professional athletes, coaches, trainers, or sports administrators.

Institutional Guidance: Wallaga University and other similar institutions that provide sport studies degrees can benefit greatly from the research findings. The results can help make resource decisions that are well-informed.

Student Satisfaction and Engagement: The study intends to improve student satisfaction and engagement within the sport studies program by addressing the skill gaps in speed passing, shooting accuracy, and dribbling speed. Gaining more proficiency in the sport can increase students' drive, self-assurance, and pleasure of it, making learning more rewarding.

To sum up, the study is important because it can advance the field of sports education, help sport studies students become better basketball players, improve their athletic performance and career opportunities, and raise program satisfaction and student engagement.

1.6. Limitation of the Study

Here are some possible limitations of the study on 12 weeks technical training effects on basic skills of speed dribble, speed passing, and throw for accuracy among wallaga university sport studies students.

Limitation with standardized Facilities and Equipment's: The researcher encountered challenges associated with standardized facilities and equipment. Variability in the quality and availability of equipment may have impacted the consistency and reliability of experimental conditions and comprehensiveness of data collection, and interpretation.

Students interest during training: The level of students interest and engagement during training sessions varied, which could have influenced the effectiveness of the intervention.

Non- randomized design during training: The study was not randomized, there may be confounding variables that could influence the results.

For examples if the participants self-selected in to the training groups, there may be differences between the groups that could impact the results.

These limitations collectively underscore the need for cautious interpretation of the study findings and highlight areas for future research improvement. Despite these challenges, efforts were made mitigate their impact and derive meaningful insights from the data within the constraints of the study design.

External Factors: Factors such as individual motivation levels, prior experience in basketball, and external commitments (academic workload, personal schedule) among participants may have influenced their engagement and performance during the study period.

1.7. Inclusion and Exclusion Criteria

The study was took place at Wallaga University in Ethiopia, which is situated in the Oromia Region, one of the eleven (11) regional states and two (2) city administrations that are found in the country's center regions. It can be located in Nekemte City's east wallaga zone. It is situated in the Oromia Region's East Wallega Zone.

Furthermore, the study was focused on how 12 weeks of inadequate technical training affect basketball fundamentals. The speed dribble, speed pass, shooting accuracy, and dribble control are the study's factors. Even yet, the aforementioned issue could arise in various parts of the nation in colleges, universities, schools, and even projects.

However, the researcher limits the aforementioned variables to the Wallaga University's sport studies department in the Oromia region.

1.8. Definitions of terms

Basketball: - is a team sport where two teams of five players compete on a rectangular court. The goal is to score points by throwing the ball through the opponent's elevated hoop and net, called a basket. People of various ages and ability levels participate in the game, which is much-liked as a competitive sport as well as a leisure pastime (Harley *et al.*, 2018).

Players: - The term "player" designates a person who takes part in the game. Athletes who actively compete and improve their team's performance are called players (Mancha-Triguero *et al.*, 2019).

Player performance: - Refers to the overall display of skills, abilities, and contributions exhibited by a basketball player during a game or over a period of time.

It encompasses various aspects such as scoring, passing, rebounding, defense, ball handling, basketball IQ, and overall impact on team success (Mancha-Triguero *et al.*, 2019).

Passing: -The act of moving the ball from one basketball player to another by throwing it is referred to as passing. Players may distribute the ball, set up scoring opportunities, and support team offense by using their fundamental passing ability. In basketball, passing involves the following crucial elements (Talebi *et al.*, 2016).

Dribbling: - In basketball, dribbling is the ability to move about the court while manipulating the ball with one's fingertips.

To keep possession and get past opponents, it entails frequently bouncing the ball off the floor. It is a basic ability that players use to create space gets past opponents, and start attacking moves (Talebi *et al.*, 2016).

Shooting: - In basketball, shooting is the act of trying to score points by launching the ball into the hoop of the opposition. It is one of the most important abilities in the game and frequently decides how a battle ends. A mix of technique, precision, and decision-making are required when shooting. Here are some essential components of basketball shooting (Talebi *et al.*, 2016).

Speed: - On the court, speed is the ability of a player to move fast and cover ground swiftly. It's a useful quality that might offer many benefits when playing the game (Bayazit, 2015).

Skill: - The ability of a player to carry out the different maneuvers, motions, and actions needed to win a game is referred to as skill (Bayazit, 2015).

Training Methodology: - In basketball, training methodology describes the methods and techniques used to improve players' abilities, physical characteristics, and general performance. The main goals of effective training methods are to maximize player potential, strengthen areas of weakness, and improve overall basketball talents (Schelling & Torres-Ronda, 2013).

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. History of basketball

Dr. James Naismith created the game known as "Basket Ball" in 1891 In order to keep his gym students engaged during the long New England winters. After every "basket" or point scored, he fastened a peach basket onto a 10-foot raised track that kept its bottom and allowed balls to be physically retrieved. In 1906, the game was played with nine players and the baskets were replaced with metal hoops with backboards. On January 20, 1892, a nine-player game was played in Albany, New York. It was the first recognized game. Teams of five became common by 1897–1898. With his colleague C.O. Beamis fielding the first college basketball team, Dr. Naismith played a key role in the establishment of college basketball. Colleges started to support men's sports in 1901. The National Basketball Association (NBA) was formed in 1949 through the merger of the Basketball Association of America (BAA) and the National Basketball League. The BAA was founded in 1946. Men's basketball was a part of the 1932-founded International Basketball Federation (FIBA), which participated in the 1936 Summer Olympics in Berlin (Tony *et al.*, 2015).

2.2. Technical Training of Basketball

"Training technical exercises is the act of increasing knowledge and skills of an employee for doing a particular job," states Edwin B. Flippo”(Johari et al., 2012). Basketball fundamentals are designed to help players move well, quickly, and without getting hurt. Dribbling, shooting, passing, rebounding, blocking, screening, and defense are the core basketball abilities. It is very recommended that new basketball players improve their basic abilities. This foundational ability forms the basis for the athlete's level of achievement. To advance in the sport and attain goals, a student-athlete must possess a strong foundational technique that enables them to play basketball at a high level (Pratama, 2017).

2.2.1. Concepts of technical training

Basketball technical workouts typically involve intense physical activity, the application of complicated physical abilities over a predetermined amount of time, rigorous training, and preparation with the goal of achieving specific outcomes based on one's ability to dribble, pass, and shoot. Any activity, event, or business venture that primarily focuses on fitness, skill, athletics, and leisure activities is considered a technical exercise.

Exercise that focuses on improving human performance and enhancing human growth via the use of specific physical exercises and skills is known as physical exercise. It is not just about the physical skills acquired from engagement in activities; it also involves the development of strategies, information, and mindsets that support lifetime learning and longevity. Through technical physical exercise, participation helps people develop the abilities, health, attitudes, and knowledge necessary for their best possible growth and well-being” as cited in (Mekonnen, 2018).

Basketball players' techniques are crucial components that should be considered when developing their talent, i.e., technical skills should be incorporated into the system of skill development. In line with this, (Alayode *et al.*, 2014) Technical skills have been incorporated into the talent development system in the USA while creating talent identification models. Footwork, arm action, foot strike, trunk position, economy of effort, weight transfer, body extension from ankle to legs to hips to back to chest to arms, and hip rotation are a few of the technical skills possessed by basketball players. Basketball players' training regimens frequently focused on enhancing game strategies. as cited in (Mekonnen, 2018). This study's primary goals are to ascertain the relationship between exercise intensity and basketball technical and tactical proficiency drill performance, as well as the relationship that currently exists between the opponent's opposition and the exercise intensity required for the attacker to overcome it. "Training exercises are the systematic development of the knowledge, skills, and attitudes required by an individual to perform adequately a given task or job," states Michel Armstrong”(Armstrong, 2006).

2.2.2. Basic techniques of Basketball

Passing/throwing-In basketball it is very important to be able to throw the ball to other players with good aim and precision. Being precise and accurate whilst throwing the ball to others helps ensure they catch the ball (Altavilla & Raiola, 2015).

Receiving/catching- Receiving or catching the ball in basketball is very important and can determine what teams score and what team doesn't. Being good at catching and receiving the ball in basketball gives them a higher chance to win the game than a team who is bad at this skill (Altavilla & Raiola, 2015).

Shooting- Shooting in basketball is also very important as scoring decides who wins the game and who doesn't. Being good at this would mean you are more likely to score and win the game as it would be less likely for you to miss (Oliver, 2004).

Movement/turning/intercepting/tackling/footwork/marketing/dodging and creating space- All of these skills and techniques are very important to help win a basketball game, as being good at these things help prevent the other team to get the ball and score points. In addition to this being good at these skills and techniques makes it easier for the team to move with the ball so they are able to score easily (Oliver, 2004) .

2.3. Basic Basketball Tactics

Tactical skills are strategic mental abilities that successful athletes use to win games and competitions. Based on preplanned action, an arts, and its implementation at the right place, at the right time and to get the maximum result of the game. Mastering these skills can help an athlete or team use their techniques effectively. They might involve problem-solving skills and often rely on the athlete's knowledge of their coach's goals.

Offense/attacking-this can have a large impact in a game of basketball as being good at being offensive in the game could make is easier for your team to move around the other team to try and score. However, it could also make it more difficult if you are always being offensive and not defending (McGee, 2007).

Defense-Being able to play defensive in a team is very important as it would help stop the other team from being able to score. However, it could mean that they are not as good at attacking which would make it harder for them to score (McGee, 2007).

Set-plays/Team formation/phases of play- In a basketball game these things are very important as the whole team will need to know what they are supposed to be doing within the game so they do not break any rules. In addition to this different people are good at different parts of the game which also could change how the game concludes (McGee, 2007).

Movement- Movement in this sport is crucial as you have to be agile but strong at the same time to be able to move with the ball swiftly to different parts of the court without being intercepted by the other team (Guillot *et al.*, 2009).

Communication- Communication is one of the most important things to have in a team sport as informing others of what you are doing or what you think the team should do could benefit the team greatly and helps them win if everyone is communicating with one another (Guillot *et al.*, 2009).

In more recent times, positions have changed; nevertheless, position-less basketball, which is being promoted by several elite coaches, notably Mike Krzyzewski, allows big men to dribble and shoot from beyond the court if their skill level permits. Typical job descriptions consist of: Point guard, often known as the "1": The fastest player on the team usually plans the offensive by dictating how the ball is moved and ensuring that it reaches the appropriate person at the appropriate moment (Mekonnen *et al.*, 2018).

Point Guard: The point guard's job is to push the ball up-court and start the offensive. The point guard has the most specialized role out of all other positions and must have degree of passing and ball handling skills. The point guard is an extension of the coach on the floor, they must understand and accept their coach's game plan but also be able to adapt and react to what the defense is doing on the court. Typically, the smallest player on the court (Players *et al.*, n.d., 2015).

Shooting Guard: A shooting guard's primary role is to score points. Known as the team's best perimeter shooter and must be able to score in various ways, and be a good free throw shooter. Shooting guards are good at handling the basket ball and can pass reasonably well. Many shooting guards are strong, athletic can get inside the paint and score and are great at stealing the ball on defense. A shooting guard uses screens set by teammates prepared to shoot, pass, or drive to the basket. Typically, larger than the point guard, smaller than the small forward (Players *et al.*, n.d., 2015).

Small Forward: The all-purpose player and most versatile of all positions on the court is responsible for scoring points and defending. Small forwards are also secondary rebounders behind power forward and center. Small forwards are known to be aggressive and strong; tall enough work in the paint but poised enough to handle the ball and shoot well.

Small forwards must have the ability to score both from the perimeter and from inside the paint. Typically, larger than the shooting guard, smaller than the power forward (Players *et al.*, n.d., 2015).

Power Forward: Must be able to catch passes and hit shots near the basket. Aggressive rebounder, shot blocker, and possess athletic quickness to move around the lane on offense and defense. Typically playing with back towards basket they are expected to score when given the opportunity in the paint, much like a center, but also are known for having a great mid-range jumper; 12 - 18 feet. Most are taller than small forward but smaller than the center (Players *et al.*, n.d.2015).

Center: Typically, the tallest player on the team. With a great deal of strength and body mass center possess the ability to post up offensively receive the ball with his/her back to the basket and use pivot moves to hit a variety of short jumpers, hook shots, bank shots and dunks. Centers are known for protecting their own goal while scoring with high effectiveness. Also, must grab rebounds and pass out to open player (Players *et al.*, n.d. 2015).

2.4. Effects of technical training on the improvement of speed dribbling

Dribbling is the act of bouncing the ball continuously with one hand, and is a requirement for a player to take steps with the ball. To dribble, a player pushes the ball down towards the ground with the fingertips rather than patting it; this ensures greater control. When dribbling past an opponent, the dribbler should dribble with the hand farthest from the opponent, making it more difficult for the defensive player to get to the ball. It is therefore important for a player to be able to dribble competently with both hands (Mack, 2011).

Dribble needs quickness and control to keep the ball under control and make it difficult for it to be lost or stolen. It takes skill to become a proficient dribbler, and players often struggle to accomplish this. A number of things are disregarded or missed when using the method (Afrilliyani *et al.*, 2018).

2.4.1. Effects of Ball Handling Drills on Dribbling Skills

Basketball dribbling is a fundamental talent, and ball handling drills have a big impact on a player's ability to dribble. According to (Meylan *et al.*, 2010), Juvenile basketball players' dribbling abilities improved when they included ball handling workouts into their practice routines. The study discovered that participants' capacity to dribble with both hands and perform intricate dribbling moves was improved by repetitive workouts that emphasize hand-eye coordination and ball control.

In a similar (Dave & within Elite, 2013) investigated the effects of a six-week ball handling drill regimen on collegiate basketball players. Results showed that participants' dribbling confidence, control, and speed had significantly improved. These gains were described by the researchers to the unique drills, which placed an emphasis on rapid hand motions, direction changes, and dribbling under duress.

2.5. Effect of technical training on speed passing

Technical drills can improve a basketball player's passing skills and overall game performance. The major objective of these drills is to enhance fundamental passing skills including as accuracy, speed, timing, and decision-making. By completing these activities, players can hone their passing abilities, which are essential for moving the ball efficiently, creating scoring opportunities, and hanging onto the ball (Bogdanis *et al.*, 2007).

The development of core passing skills like accuracy, speed, timing, and decision-making is the main goal of these drills. Players can improve their passing skills, which are necessary for moving the ball effectively, setting up scoring opportunities, and holding onto the ball, by performing these drills (Ji *et al.*, 2023).

It is noteworthy that the precise impact of technical workouts on passing might differ based on the player, their ability level, and the caliber and regularity of their training. But adding these drills to your basketball practice regimen can usually result in noticeable gains in passing ability and team cohesion (Alpullu & Bozkurt, 2018).

Among the most crucial coordination abilities in sports, balance is even more crucial in basketball. Research initially noted that having strong balancing abilities reduced the likelihood of injuries (McLeod *et al.*, 2009), usually sustained on the limbs (Stergioulas *et al.*, 2007), and highlighted the advantages of proprioception exercises in both preventing and treating sports injuries.

It is clear that maintaining balance during dribbling, shooting, passing, moving, and other basketball-related actions is likely related to basketball playing abilities.

Furthermore, basketball players who have high balance are better able to regulate their bodies, make less mistakes, avoid falling when changing directions, and move quickly around the court to effectively use technical talents (Mahmoud, 2011).

In order to perform well in basketball, static and dynamic equilibrium are essential. For this reason, they are essential to strength and fitness regimens overall (Santana, 2002). According to (Karlsson & Faxen, 1994), Proprioception is necessary for balance maintenance. Therefore, proprioception development is definitely essential in basketball abilities such as passing, where there is usually a lack of static and dynamic balance, given the unexpected and changing circumstances of each game. While some studies compared basketball players to other athletes, others examined the balance skills of basketball players. (Hahn *et al.*, 1999) discovered that there was a positive association, unrelated of age or gender, between the ability to balance on one foot and the number of years that athlete has played basketball.

To gauge the dynamic balance levels of basketball players in comparison to athletes from other sports, (Bressel *et al.*, 2007) found that the dynamic balance scores of female basketball players were comparable to those of gymnasts and lower than those of football players. The association between balance skill and performance throughout the game was examined in a recent study (Nikolaos *et al.*, 2012).

2.5.1. Effects of Ball Handling Drills on Passing Skills

Basketball players also need to be proficient passers, and improving their passing ability can be achieved through ball handling activities. In a 2019 study, Brown and Davis examined how high school basketball players' decision-making and passing accuracy were affected by ball handling workouts.

The results showed that players who regularly participated in ball handling activities had better passing accuracy and quicker decision-making when distributing the ball.

Furthermore, a comprehensive review by (Palmer *et al.*, 2023) studied a variety of training techniques to improve basketball passing abilities. The analysis showed that adding ball handling exercises that prioritize vision, precision, and decision-making led to notable gains in passing abilities. Through the use of realistic game scenarios, the workouts assisted players in honing their passing mechanics and increasing their passing accuracy overall.

2.6. Effect of technical training on shooting accuracy

Basketball shooting can be significantly improved with technical drills. Players can improve their shooting form, accuracy, consistency, and general shooting skill by participating in targeted drills and workouts. These are a few broad highlights of how technical workouts affect basketball shooting (Ferraz *et al.*, 2021). Shooting in a basketball game plays an important role in achieving the goal of the basketball game. Given that the basketball game tip is to insert the ball into the opponent's basket, therefore a good shooting technique is owned by every player. Efforts to improve basketball shooting skills by using a basketball shooting training (Muzadzi, 2013). Training to improve shooting basketball shooting techniques always through the shooting technique training phases, the fundamental stage, practice and stage (Martens, 2012).

To lessen the ball's impact with the rim, players frequently attempt to give it a consistent backspin. Although there is considerable debate regarding the best shot trajectory, a suitable arc is usually advised. The ball can be redirected into the basket by players using the backboard or by shooting straight into the hoop (Abdelkrim *et al.*, 2007). Basketball players need to square up to the hoop in a number of ways in order to shoot well. The player must stop moving and take up a balanced posture before beginning the shooting action, regardless of whether they use a jump stop or pivot. Taking one or two steps to enter the shot gives you more time, which helps with balance development (Bourgase, 2012).

This gives the athlete far more strength and range and enables them to jump above the defense. It is a traveling infraction to release the ball before the feet touch the ground again as cited in (Mekonnen, 2018).

A lay-up shoot is an attempt to score points by shooting the ball into a basketball hoop or basket using two steps and a leap. A floating shot is another name for a lay-up shot. Each sport has different requirements for physical fitness components based on the unique features of that particular sport (Candra, 2019).

Students are very interested in playing basketball. Basketball training is customized for each training category and consists of a number of components (Sofyan & Budiman, 2022). Nonetheless, the truth is that a lot of pupils still struggle with basketball skills, particularly with layup shooting. This is due to the fact that learning content pertaining to basketball techniques particularly the layup shoot can occasionally present challenges for students.

In addition to offering far more power and range, this enables the player to rise over the defense. It is a traveling infraction to release the ball before the feet touch the ground again (Grieve, 1969).

The "circus shot" is another shot that is increasingly popular. The circus shot is a low-percentage shot in which the shooter is off balance, in the air, falling, or facing away from the basket when they flip, hoist, scoop, or fling the ball at the hoop. A back-shot is a shot made with the player's back to the basket. It can be made with either or both of the dominant hands, but the shot's likelihood of success is extremely low as cited in (Mekonnen *et al.*, 2018).

2.6.1. Effects of Ball Handling Drills on Shooting Skills

Ball handling drills can have an indirect effect on a player's shooting ability, even if their primary concentration is on dribbling and passing. Research by (Maffiuletti *et al.*, 2000) examined the connection between professional basketball players' shooting performance and ball handling training.

Moreover, a study by (Herold *et al.*, 2019) examined the effects of ball handling drills on shooting under pressure situations. The researchers observed that incorporating ball handling drills that simulated game-like scenarios significantly improved players' ability to shoot accurately while being defended or facing time constraints.

Because of these qualities, basketball players need to be extremely agile to outsmart their opponents with dribbles and moves made without the ball. Strength is a component of physical fitness that is crucial for sports since it can enhance abilities like speed, agility, and precision (Pratomo *et al.*, 2019).

According to (Pratomo *et al.*, 2019) Every basketball player, whether they are positioned as a forward, guard, or center, must dribble ahead of time before attacking their opponent's area. Basketball is a unique sport since the ball can dribble both ways, pass past opponents quickly, and end up in the basket.

2.7. Relationship of specific skills

An explosive vertical leap can help with shooting, while the ability to change directions, accelerate, and decelerate is necessary for defense. Young people lacking in these explosive abilities will be used less in competitive settings (Šeparović & Nuhanović, 2008).

Professionals in charge of achieving high levels of basketball performance are particularly focused on creating training plans that maximize player decision-making during play and enhance game strategy. It goes without saying that these training regimens should consider the ideal workload for this specific sport in terms of duration and intensity. They should also include basketball-specific game strategies. In addition, these game-related drills must be carried out at a suitable exercise intensity in order to evaluate a player's tactical aptitude (Roman *et al.*, 2009).

2.8. Preparation and anticipation

Recognizing patterns allows athletes to react faster and appear more agile. Basketball players, for instance, should focus on their opponent's pillar and core when playing defense rather than their feet or the ball. In order to defend the opposition and get an additional agility advantage, offensive players must comprehend typical situations and what is likely to happen. When handling the ball, professional soccer players exhibit improved visual search strategies a skill that would be equally useful for guards as cited in (Mekonnen *et al.*, 2018).

Athletes ought to exercise agility in a reactive environment once they have mastered the expert technique. The creation of task-relevant hints by instructors will help gamers hone their mental training techniques (Holmberg, 2009).

To enable feedback such as: the closest was missed because their player started their short, choppy steps too late and could not regain their control, balance, footwork, and movement abilities must be consistent as cited in (Mekonnen *et al.*, 2018).

Elite athletes may perform better due to superior action perception and execution, anticipation, and decision-making abilities. Research suggests that attaining sports greatness may be associated, at least partially, with the fine-tuning of particular anticipatory "resonant" systems that facilitate a more effective prediction of the outcomes of other people's activities and in comparison to non-athletes and rookie athletes, expert athletes are more adept at identifying and recalling intricate action schemes at which they excel (Abreu *et al.*, 2012).

Starting at the smallest age group, all athletes should focus on improving their balance.

They should next work on improving their agility so they can play the game quickly (Messina,). To enable feedback such as: the closest was missed because their player started their short, choppy steps too late and could not regain their control, balance, footwork, and movement abilities must be consistent as cited in (Mekonnen *et al.*, 2018).

2.9. Aerobic and Anaerobic training to improve basic skills of basketball players

Basketball is an aggressive team sport that is dynamic and sporadic in nature. It is made up of quick movements that cause changes in direction and speed, and jumps are a necessary component of the demands of the game (Zarić *et al.*, 2018). To meet these prerequisites and succeed in basketball, one must be physically fit (Stone & Kilding, 2009). However, the requirements change according on the participants' gender, age, and skill level. This can be accomplished by evaluating physical fitness using a variety of metrics, such as muscular endurance or cardiorespiratory fitness (Zupan *et al.*, 2009).

Anaerobic resistance and aerobic resistance are two categories for cardiorespiratory endurance. The ability to sustain stimulation for an extended length of time is known as aerobic resistance. The athlete adjusts to the exertion (training or competition) as a result. Energy production will eventually decline before the same stimulus, leading to an energy-saving process (Mancha-Triguero *et al.*, 2020). This ability is crucial since it allows the athlete to recover from demanding workouts in a timely manner, which allows them to perform a higher volume of exercises throughout the competition.

Anaerobic resistance, on the other hand, is defined as the energy expenditure that occurs during anaerobic metabolism (without the use of oxygen) and requires a sustained effort lasting less than ninety seconds. The adenosine triphosphate-phosphocreatine system (ATP-PCr) provides energy for anaerobic metabolic operations lasting between 3 and 15 s during maximal activity, depending on the time of day (Hung *et al.*, 2019).

(Tessitore *et al.*, 2006) study Some of the main advantages of aerobic fitness include building strong muscles and tendons, improving cardiovascular capacity, enabling athletes to run steadily without running out of oxygen and becoming exhausted, and enabling athletes to recover quickly from quick sprints, which increases their effectiveness in the game.

2.10. Effects coordination on basketball skill

Basketball skill movements require a high degree of coordination from the player. Basketball technical skills like dribbling, passing, and shooting demand strong bio motor coordination since uncoordinated motions appear stiff and less skillful in their application. The capacity to combine muscular motions into effective motion patterns is known as coordination. The distinction between good and poor performance is coordination (Pathare, 2016). Basketball performance is also influenced by a variety of other variables, such as an athlete's position, anticipation, and eye-hand synchronization (Alberti *et al.*, 2014).

Basketball is known as a sport that calls for a high degree of basketball fitness in addition to a variety of coordination skills like rhythm, movement coordination, and spatial orientation (Kamandulis *et al.*, 2013).

2.11. Effects of agility on basketball skill

Basketball requires speed, dexterity, and agility. While they advance up and down the court, players frequently shift their course. Since agility is a key physiological attribute of elite basketball players, coaches should prioritize any training that enhances this movement skill (Chaouachi *et al.*, 2009). It is essential that all players, especially guards, are nimble in game situations due to the rule changes, particularly Canada's decision to adopt F.I.B.A. rules at all levels (Abdelkrim *et al.*, 2007).

Basketball is a fast-paced sport where there may be a little technical disparity in quickness. One common test of agility is the time shuttle run. Sports teams train their players' agility with zigzag drills (Hoare, 2000).

2.13. Effects of good balance on skills of basket ball

Programs that emphasize proprioceptive and balance training not only help reduce musculoskeletal injuries but also aid in their recuperation; they also appear to be necessary to improve basketball performance (Hrysomallis, 2011).

Basketball players outperform untrained players and possess high levels of balance comparable to those of soccer, gymnastics, and dance competitors (Bressel *et al.*, 2007, Gerbino *et al.*, 2007, Bieć & Kuczyński, 2010).

Additionally, depending on a basketball player's technical ability level, the relationship between balance, mobility, and technical skills may manifest themselves differently. Furthermore, it has been noted that adult basketball players' passing abilities are enhanced by a 12-week proprioceptive and balancing program (Nikolaos *et al.*, 2012).

Body Position: In particular, if they want to coach youth basketball, coaches need to become proficient in the basic principles. Controlling balance helps both young and senior players perform at a better level; they are able to reach and maintain outstanding gains in quickness, explosiveness, and agility. Players should practice dynamic settings, which test their body control, in order to mimic game situations as cited in (Mekonnen *et al.*, 2018).

Ready Position: Because being prepared to move is the first step in any movement, elite basketball players need to have outstanding balance and position (Lemma Hordofa, 2020). With their knees bent, heads up to read the play, and hands up to catch the ball or play defense, athletes should be standing on the balls of their feet. A player who is ready to move will appear quicker than a more athletic competitor who is not prepared.

Injury Prevention: The movement must be performed by the body in a way that prevents injuries. Basketball players that jump and fall off balance, tread on another player's foot, or make a quick direction shift run the risk of suffering from ankle sprains, particularly ankle inversion (Cumps *et al.*, 2007).

Even a single sprain of the ankle can lower self-esteem, worsen posture, and increase the chance of further injury. The most frequent basketball injury during a game is an ankle injury (Leanderson *et al.*, 1993).

Balance not only prevents injuries but also aids in their recovery, allowing athletes to move without favoring one side and regaining confidence. Ankle sprain risk can be effectively decreased with balance training without incurring additional expenses or posing a risk of skin irritation (Cumps *et al.*, 2007).

For youth coaches, this is significant because the majority of teenage players do not use ankle supports, and many cannot afford the pricey gear (McGuine *et al.*, 2000).

2.14. Effects of vertical jumping on basketball skills

A new method has evolved in the world of training that is comparable to the way basketball skills are performed by honing the vertical leap ability (Shallaby, 2010). Kassem claims that the ability to jump vertically is a test of strength or explosiveness. With his heels close together, the performer stands with one side close to the wall for this feat. He then extends his arm toward the wall without lifting his heels and leaves a mark on the wall. Next, crouch down and leap up to execute a precise shot and leave another mark.

2.15. Conceptual framework

The research uses two-variable, dependent and independent variables to demonstrate the relationship between the two variables in order to apply experimental research analysis to meet some of the study's objectives.

Independent variable

Twelve-Week Technical
Training Program



Dependent variable

- ✓ Shooting Accuracy
- ✓ Speed passing
- ✓ Speed Dribble

2.15.1. Dependent variable

These are the variables that you are measuring to see how they are affected by the 12 weeks of technical training. You are observing and quantifying changes in speed dribble ability, speed passing ability, and throw accuracy as a result of the training.

Shooting Accuracy: This is the level of strength and skill needed to make a basket in a basketball. It can be measured using the accuracy rate or shooting percentage.

Speed passing: The ability of basketball players to throw the ball to their teammates quickly and accurately is known as "speed passing." It can be measured by calculating the precision and execution time of the passes.

Speed Dribble: Basketball players' speed dribbling demonstrates their ability to move and manage the ball quickly. Dribble control" refers to the skill and poise of basketball players' exhibit when dribbling the ball with their hands during play. Dribble control is the ability of players to maintain possession of the ball while using various dribbling maneuvers.

2.15.2. Independent variable

Twelve-Week Technical Training Program: This is the variable that you are manipulating or controlling in your study and brought change on dependent variables. You are providing 12 weeks of technical training to the participants. The students received this intervention, also known as therapy, which consisted of a structured training program designed to improve their shooting accuracy, passing velocity, dribble control, and dribbling speed. The training program may include a range of drills, exercises, and practice sessions aimed at these specific talents.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Study Area

The study was took place at Wallaga University in Ethiopia, which is situated in the Oromia Region, one of the eleven (11) regional states and two (2) city administrations that are found in the country's center regions. It is located in the Oromia Region's East Wallega Zone.

Nekemte latitude and longitude are 9°5'0"N 36°32'30"E. At 2,088 meters above sea level, it is elevated. Nekemte is located 335 kilometers west of Ethiopia's capital, Addis Ababa. With a population density of 5,288/km², it is home to about 156,004 people. The study was involved third- and fourth-year sport studies department students from Wallaga University's, specifically it can be located in Nekemte City's east wallaga zone.

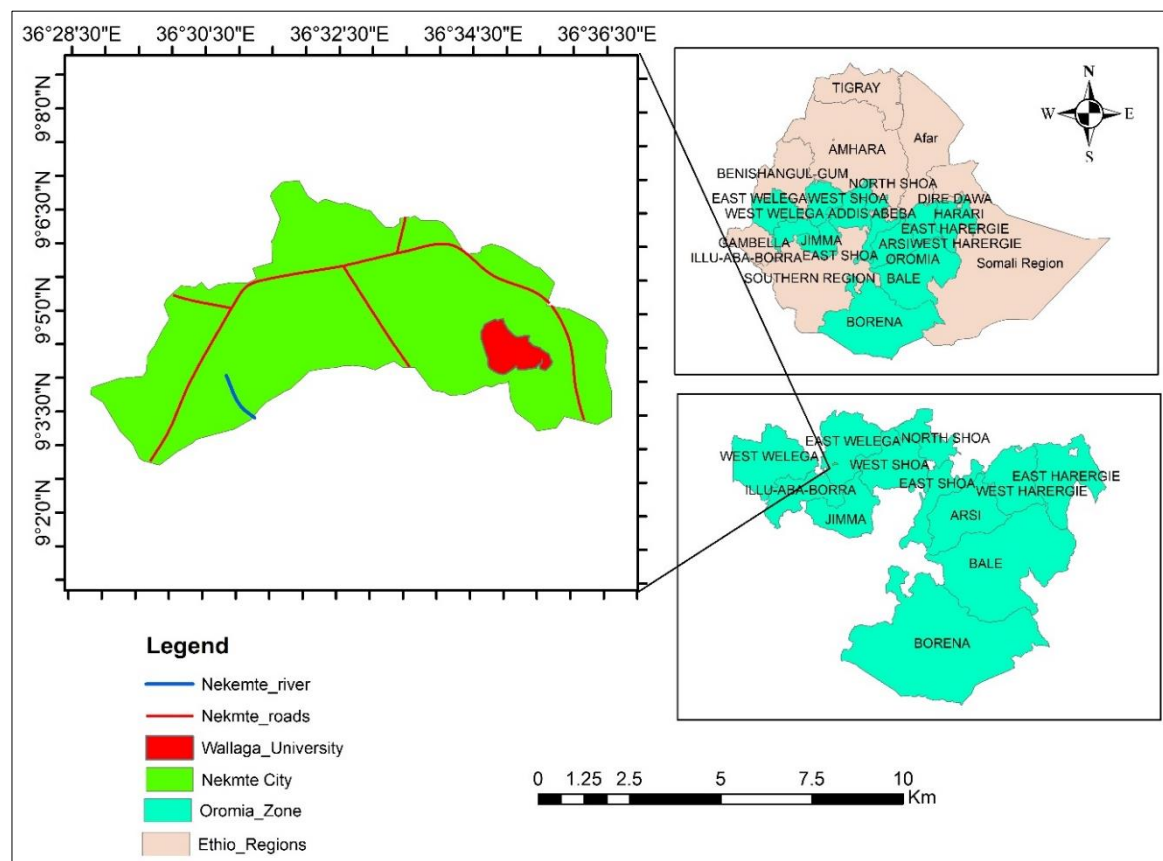


Figure 1.Map of the study area

3.2. Study design

According to (George, 2022), research design is the overall plan for connecting the conceptual research problems with the pertinent (and achievable) empirical research and it is the blue print of research. Therefore, in order to test the hypotheses of this study, experimental design of quantitative approach was used to investigate Twelve weeks technical training effects on basic basketball skills of sport science students in case of wallaga university sport science students. The study was takes place among a selected group from February to May of 2024.

3.3. The population of the study

Population refers to the set or group of all the units on which the findings of the research are to be applied (Shukla, 2020). The population of the study was included all third- and fourth-year sport studies male students at Wallaga University in 2016 E.C. The majority of the study's population were interested in engaging in physical activity, and they do so on a daily basis. The total number of populations found in the study was 72.

3.4. Sample size and sampling technique

Due to the design of this investigation was Experimental design, random sampling method was used in this investigation. For this investigation, the researcher was used probability sampling approaches. Students those interested in participating in the study and who are actively involved were selected by probability sampling technique. In order to choose 40 students as samples for the study, the researcher was employed Simple random sampling method. During pre- test the researcher have one group and after pre- test the researcher was distributed the samples in to two groups, control group and experimental group using Simple random sampling method.

3.5. Source of data

Data can be defined as the quantitative or qualitative values of a variable. Primary sources of data are those, which are collected for the first time, and thus happen to be original in character.

Data is the lowest level of information from which additional measurements and analysis are possible. Data cannot be understood in and of itself; meaning must be inferred from the data through interpretation.

3.5.1. Primary source

The experimental and control groups' pre- and post-test were serve as the main source of data collection. To reach the purpose of this study the researcher was utilize pre-and post-test on basic basketball skills such as accurate shooting, speed dribble, and speed pass was administered for both experimental and control groups.

3.6. Experimental and control group

3.6.1. Experimental groups

The experimental groups are 20 Wollega University sport science 3rd and 4th year students, those were actively participated on the twelve weeks technical basketball training program. Their specific training were speed dribble, speed passing and accurate shooting.

3.6.2. Control group

The control group comprises sport studies at Wallega University who were not receive 12 weeks basketball technical training. Those students were continuing with their regular academic curriculum and they were not undergo any specific basketball training during the study period.

3.7. Experimental materials equipment

The researcher was conducted a training program and field test for the study groups on the Wallaga University basketball court. Tools and equipment used for the research during training and testing included a stopwatch (for timing), pen (for recording values), whistle (for conveying commands), paper (for recording values), pump (for pumping balls), score sheet, tape, jumping rope, cones, basketball, and basketball facilities.

3.8. Eligibility Criteria

3.8.1. Inclusion criteria

The study was included individuals who complete the health history questionnaire and fall within the age range of 22 to 25.

Included students were those in good physical health and have no limitations that prevent them from participating fully. Participation in the study is contingent upon providing informed consent.

3.8.2. Exclusion criteria

Nevertheless, individuals who are younger than 22 or older than 25 (to get homogenous group), have recently experienced a physical injury, or whose medical condition has been restricted by a doctor was not eligible to take part in this study. Long-time basketball players and trainers was not be permitted to take part. Because he has experience than others and his experience affect homogeneity characteristics of study population.

3.9. Measurement tools and applications

Independent variables were used to measure the factors (speed dribble, speed pass, and throw for accuracy) that raise the dependent variables. Speed passing, speed dribbling and Throw for accuracy with a cone are among the drills. Quantitative data was produced by test measures such the accuracy throw tests, speed pass test, and speed dribble test. The exams on the following list was selected as a technical practice and skill criterion.

3.9.1. Speed dribble test

- ✓ **Goal:** The ball handling ability and agility level of the players.
- ✓ **Procedure:** With the signal “go” the subject picks up the ball and dribbles forward and back through the line of hurdles put on half of the given 50m distance. The watch was started with the signal “go” and was stopped as the subject returned to the start–finish line.
- ✓ **Equipment:** Basketballs, tape measure, cones, whistle, stop watch and pen and paper.
- ✓ **Scoring:** The score was counted as the total number of second from the command “go” until the subject returns to the start-finish line (Robert Knox, 1947).

3.9.2. Speed passing test

- ✓ **Goal:** To assess the proficiency of passing skill.
- ✓ **Procedure:** The student’s passed the ball using chest pass against the wall. The ball must be thrown and received from behind the restraining line which is 5 meter away from the wall.

- ✓ **Equipment:** This test was used a stop watch, basketball, the floor, a line on the floor parallel to and 5 meter from the wall, and papers.
- ✓ **Scoring:** The score was registered as the number of seconds from the signal “go” until the ball hits the wall the fifteen time. If any rebound requires the subject to take more than one-step recovery, the test was repeated The better score of two 30-second trials is counted (Krause *et al.*, 1999).

3.9.3. Basketball Shooting Accuracy

- ✓ **Goal:** To evaluate shooting accuracy of players. This test item measures the shoulder strength and the ability of consistent accurate throws.
- ✓ **Procedures:** In this test a rectangular target was placed on a wall. That was installed 14 inches above the ground. The players were placed 40 feet away from the target and were asked to hit the ball in the center. The player can use the hook pass or overhand pass method to hit the target with the ball. It was crucial to practice accurate basketball tossing against walls in order to improve one's overarm pass
- ✓ **Equipment:** To set up the test, we need a wall, stopwatch, tape measure, pen, paper and basketball.
- ✓ **Scoring:** Total ten chances were given to the participant. Altogether, total was count to each subject. Maximum score was 30 and minimum score was zero. Points are awarded as according to the ball on the target: -
 - ❖ 3 Points for each hitting in the inner rectangle or its line.
 - ❖ 2 Points for each hitting in the middle rectangle or its line.
 - ❖ 1 Point for each hitting in the outer rectangle and the line (Johnson, 1934, Mazumdar, 2012).

3.10. Normality of data

Normal data are data that are drawn (come from) a population that has a normal distribution. This distribution is inarguably the most important and the most frequently used distribution in both the theory and application of statistics.

In this study the researcher was used Shapiro-wilk, normal Q-Q plot, and Histogram to check whether the data was normally distributed or not.

3.11. Reliability of instruments

Test-Retest Reliability: Before the program conducted, the researcher examined twice the performance of the experimental group and control group participants. This allowed you to conduct a test-retest reliability research. Analyze how consistent the outcomes are. This contributes to the stability of the measurements over time.

3.12. Data quality control

To ensure data quality, only standardized Basketball basic skill tests was used. To minimize mistakes made when collecting data, the assistant skill test recorders was need to receive instruction on how to collect the required information. The only tests that need to be done to ensure data quality is the standardization tests. To further confirm the test protocol, all of the previously described tests was also be captured on camera. Ultimately, the data was coded twice, by two different people, and fed into the software twice, to avoid data feeding problems.

3.13. Methods of data analysis

The gathered data was analyzed by the statistical tool, mean, standard deviation, paired sample T- test, independent T-test and interpreted the data that was used to compare the mean of speed dribble, speed passing and throw for accuracy of the two measurements of subjects with a significance level ($p < 0.05$). SPSS software version 26.0 was used for data analysis. The data was first tested using a descriptive test to determine the distribution and concentration of the data.

3.14. Ethical issue and code of conduct

The researcher stated that all volunteers were give their informed consent after being fully informed about the objectives, procedures, risks, and benefits of the study. Participants were informed that participation is completely voluntarily. It was made apparent that choosing to participate or not won't have an impact on their grades or other advantages.

The collected information was stored using the proper security measures, such as lockable storage for hard copy documents and password-protected electronic files.

The securely stored data was only be accessible to authorized personnel. Before any recordings are produced, saved, or used for research purposes, participants' consent was gathered if video recordings are to be made. Participants' confidentiality was maintained, among other things.

The study teams were evaluated and reduce any possible health hazards related to the training regimen. The training exercises will be created with safety and skill level appropriateness in mind. To reduce the risk of injuries, there will be enough monitoring and training.

3.15. Training schedule

The experiment included a variety of training exercises, such as, dribbling at a speed, passing at a speed, and accuracy throw. For a total of twelve weeks, the workout was done three days a week (Monday, Wednesday, and Friday) at a moderate to high intensity for 40 to 60 minutes. Both control and Experimental group was included in the pre- and post-test results even if control group will not get any training.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION, AND DISCUSSION

4.1. Characteristics of the Study Group

Total population of 72 males from sport studies students were recruited for this study. The result of data analysis of respondents' characteristics are shown as follows.

Statistical measures within control and experimental group (mean, standard deviation and standard errors) were computed. Although inferential statistics (paired sample T test and Independent sample T-test) was made for both control and experimental to compare pre and post-test of participants and the effects of 12 weeks technical training on basic skills of students on basketball. Basketball basic skill statistical significance was asset at a level of 5%.

Descriptive characteristics of 40 study participants mean of age (EG=24.05±1.05, CG=22.95±0.83), height (EG=1.7±0.08, CG=1.1.68±0.67) and weight (EG=55.05±4.11, CG= 56.22±3.50). The mean of age, height and weight of participants in both groups was similar. In order to ensure that any differences in the dependent variables can be attributed to the intervention (12 weeks technical training program) rather than baseline differences participant characteristics, it appears from this table that the characteristics of participants in both groups were relatively balanced (Table 1).

Table 1. Characteristics of the study participants

Group	N	Age	Height		Weight
		M±SD	M±SD		M±SD
CG	20	22.95±0.83	1.68±0.67		56.22±3.50
EG	20	23.05±1.05	1.70±0.08		55.05±4.11

N=Number of students, CG=Control Group, EG=Experimental Group, M=Mean, and SD=Standard Deviation.

Normality of data

Table 2. Tests of Normality for speed dribbling test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df.	Sig.	Statistic	df.	Sig.
Speed dribble EG pre-test	0.183	20	0.077	0.963	20	0.604
Speed dribble EG post-test	0.192	20	0.051	0.923	20	0.113
Speed dribble CG pre-test	0.141	20	0.200*	0.942	20	0.261
Speed dribble CG post-test	0.154	20	0.200*	0.961	20	0.554

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

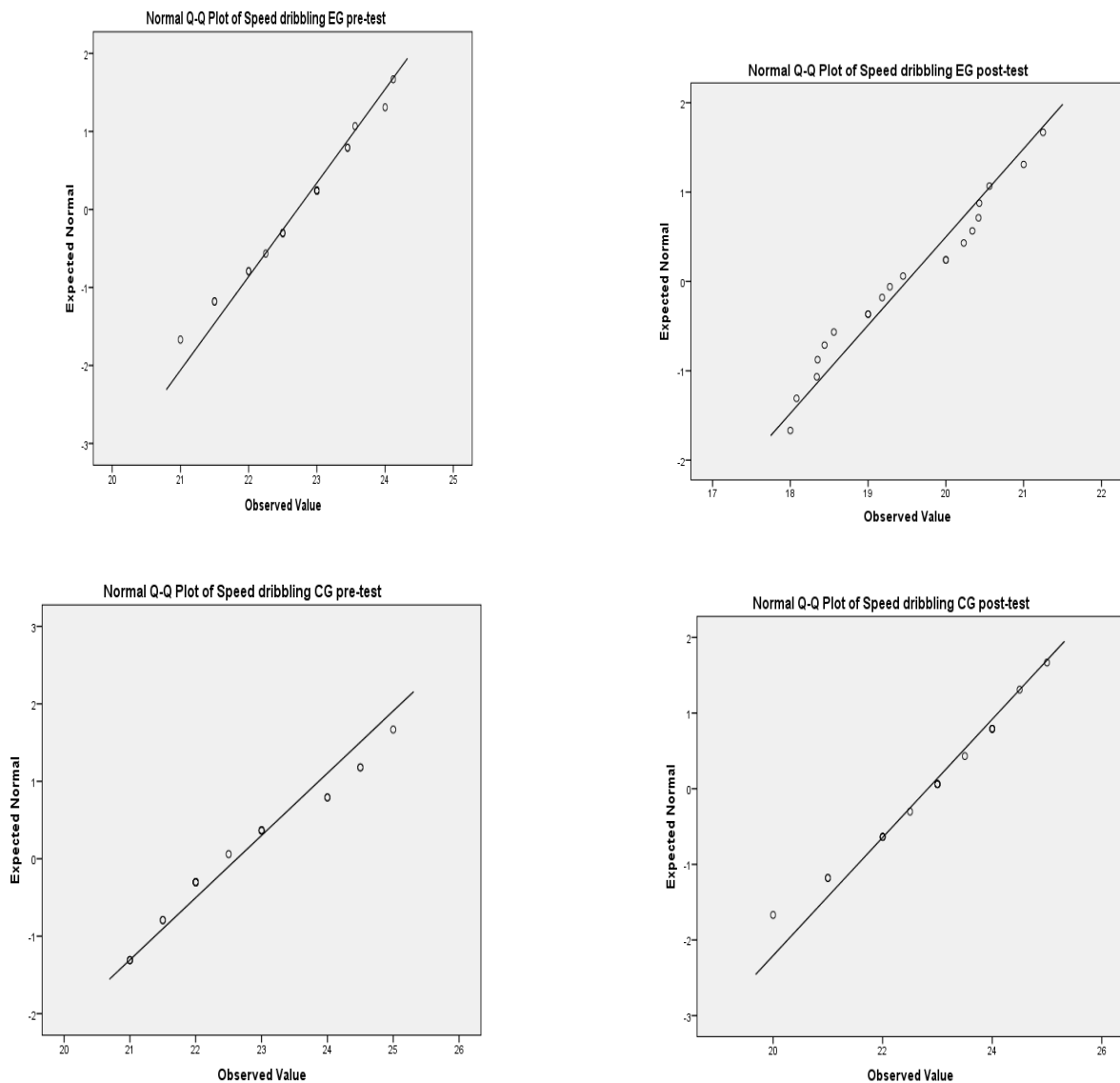


Figure 2. Q-Q plot Tests of Normality for speed dribbling test

Table 3 Tests of Normality for speed passing test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df.	Sig.	Statistic	df.	Sig.
Speed passing EG pre-test	0.219	20	0.013	0.923	20	0.114
Speed passing EG post-test	0.171	20	0.127	0.923	20	0.111
Speed passing CG pre-test	0.209	20	0.023	0.940	20	0.236
Speed passing CG post-test	0.197	20	0.041	0.935	20	0.192

a. Lilliefors Significance Correction

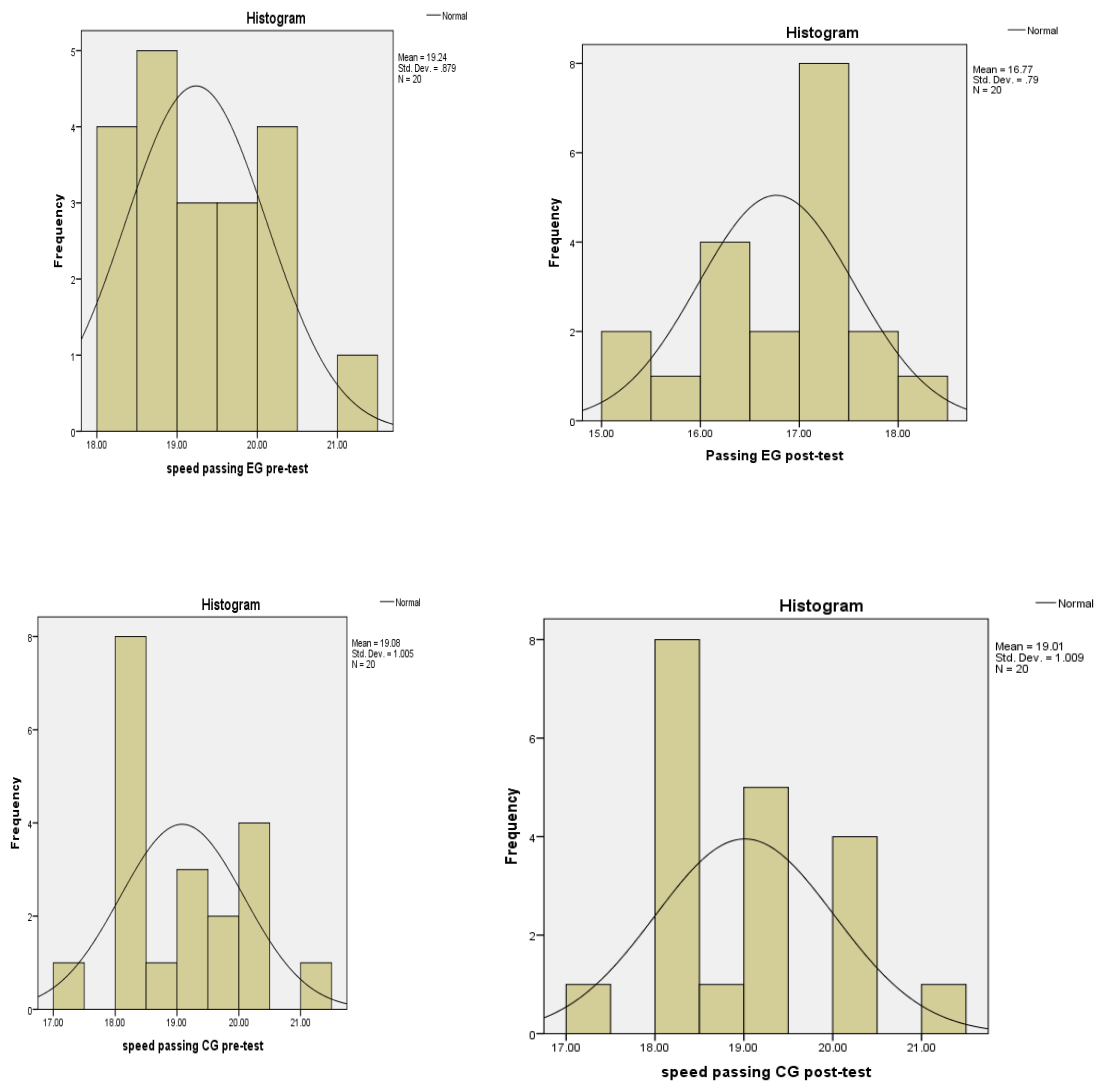


Figure 3. Tests of Normality for speed passing using Histogram

Table 4. Tests of Normality for Throw for accuracy test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df.	Sig.	Statistic	df.	Sig.
Throw for accuracy EG pre-test	0.154	20	0.200*	0.949	20	0.347
Throw for accuracy EG post-test	0.147	20	0.200*	0.951	20	0.384
Throw for accuracy CG pre-test	0.128	20	0.200*	0.944	20	0.284
Throw for accuracy CG post-test	0.162	20	0.175	0.949	20	0.346

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

4.2. Results of speed Dribbling test

The results of speed dribbling test was organized as follows for both EG & CG in table 5 below.

The mean, p- value, and standard deviation of experimental and control groups of speed dribbling-The mean of speed dribbles time significantly decreased from pretest ($M \pm SD = 22.72 \pm 0.83$) to post test ($M \pm SD = 19.50 \pm 1.01$) in the Experimental group (p-value= 0.001) which has $P < 0.05$. This substantial improvement in speed dribbling skills is supported by a relatively low standard deviation, indicating consistency among participants. The experimental group's speed dribbling abilities improved statistically, significantly as a result of 12 weeks technical training program.

After finishing the training session, participants showed faster speed dribble times, proving that the intervention was successful in improving this particular skill (Table 5).

In contrast, there was no significant change in speed dribble time from pre-test ($M \pm SD = 22.62 \pm 1.24$) to post-test ($M \pm SD = 22.82 \pm 1.28$) in the control group (p-value=0.408) which has $P > 0.05$. The higher standard deviation suggests greater variability in performance within the control group. From the pre-test to the post-test, there was no discernible improvement in the speed dribbling abilities of the participants in the control group. This conclusion implies that the control group participants' performance in this particular ability may have been influenced by variables other than the training program (Table 5).

Table 5. Paired sample statistics of speed dribble pre and posttest value in second and standard deviation results

Variables	Experimental Group				Control Group			
	M±SD		P-value	N	M±SD		P-value	N
	PT	POT			PT	POT		
Speed Dribbling	22.72±0.83	19.50±1.01	0.001	20	22.62±1.24	22.82±1.28	0.408	20

N=number of students, M=mean, and SD=standard deviation, PT=pretest, POT= post test

Group statistics of speed dribble post experimental and post control

The mean of speed dribbling time in the experimental group after completing the training program was significantly lower ($M \pm SD = 19.50 \pm 1.01$) in sec. compared to the control group ($M \pm SD = 22.83 \pm 1.28$) in seconds ($p\text{-value} = 0.001$) which has $P < 0.005$. This significant difference suggests that participants in the experimental group, who underwent the technical training program, exhibited faster speed dribble times compared to those in the control group, who did not receive intervention. Also this finding suggests that the training program had a positive impact on enhancing speed dribbling skills among participants (Table 6).

Table 6. Group statistics of speed dribble post experimental and post control

Variables	Post Experimental group		Post Control group	
	M±SD	N	M±SD	N
Speed Dribbling	19.50 ±1.01	20	22.83±1.28	20

N=number of students, M=mean, and SD=standard deviation

Independent sample T-test statistics of speed dribble post experimental and post control

The test resulted in p-value of 0.51, which indicates the assumption of equal variances was met (since $p\text{-value} > 0.05$).

With equal variance assumed, the t-test resulted in a t-statistics of 9.12 with 38 degree of freedom and a p-value < 0.001. The 95% confidence interval for the difference in means ranges from 2.59 to 4.07. Generally, the treatment applied to experimental groups have had an impact on their speed dribbling skills (Table 7).

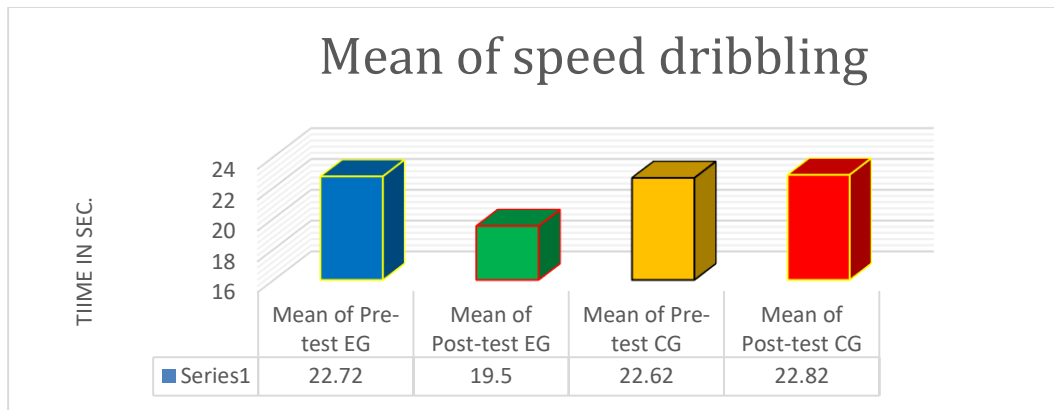
Table 7. Independent sample T-test statistics of speed dribble post experimental and post control

		Levene's Test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig.(2 - tailed	MD	SED	95% confidence interval of diff.	
									Lower	Upper
Speed dribbling POT EG&CG	Equal variance assumed	0.45	0.51	9.12	38	0.001	3.33	0.36	2.59	4.07
	Equal variance not assumed			9.12	36. 08	0.001	3.33	0.36	2.59	4.07

N=Number of students, M=Mean, and SD=Standard Deviation, PT=Pre-test, POT= Post-test, EG=Experimental Group, CG=Control Group, SED=Standard Error Difference

Graphical presentation of speed dribble test

As indicated on the graph below, the time taken to complete speed dribble test decreased from pre-pre-test (22.72) to post-test (19.50) at $p < 0.05$ in case of experimental group and 22.62sec to 22.82sec in case of control group ($p > 0.05$). This suggests that the training program had a positive impact on enhancing speed dribbling skills among participants.



EG- Experimental group, and CG- Control group

Figure 4. Graphical presentation of speed dribble test

4.3. Results of speed passing test

The results of speed passing test was organized as follows for both EG & CG in table 8 below.

The mean of speed dribbles time significantly decreased from pretest ($M \pm SD = 19.24 \pm 0.88$) seconds to post test ($M \pm SD = 16.77 \pm 0.79$) seconds in the Experimental group ($p\text{-value} = 0.001$) which has $P < 0.05$). This indicates that there was improvement in speed passing after completing 12 weeks technical training in Experimental group. The relatively higher standard deviation in the post-test scores suggests some variability in performance among participants after the training (Table 8).

Technical training program resulted in a statistically significant improvements in speed passing skills within the experimental group. Participants demonstrated faster speed passing times after completing the training program, indicating the effectiveness of the intervention in enhancing this specific skills.

The mean of speed passing time in the control group did not show a significant change from the pre-test ($M \pm SD = 19.08 \pm 1.00$) to the post –test ($M \pm SD = 19.01 \pm 1.01$) ($p\text{-value} = 0.58$) $P > 0.05$).

This lack of significant change suggests that there was no notable improvements in speed passing skills among participants in the control group over the duration of the study. The consistency in standard deviation between the pre-test and post-test scores indicates relatively stable performance levels within the control group over time.

The finding suggests that factors other than the training program may have influenced the performance of the control group participants in this specific skills (Table 8).

Table 8. Paired sample statistics of speed passing pre and posttest value in second and standard deviation results

Variables	Experimental Group				Control Group			
	M±SD		P-value	N	M±SD		P-value	N
	PT	POT			PT	POT		
Speed Passing	19.24±0.88	16.77±0.79	0.001	20	19.08±1	19.01±1.01	0.58	20

N=number of students, M=mean, and SD=standard deviation, PT=pretest, POT= post test

Group statistics of speed passing post experimental and post control

The mean of speed passing time in experimental group after completing the training program was significantly lower ($M \pm SD = 16.77 \pm 0.80$) compared to the control group ($M \pm SD = 19.01 \pm 1.01$) ($p\text{-value} = 0.001$) which has $P < 0.05$.

This significant difference suggests that participants in the experimental group, who under went the technical training program, exhibited faster speed passing times compared to those in the control group, who did not receive intervention. This finding suggests that the training program had a positive impact on enhancing speed passing skills among participants (Table 9).

Table 9. Group statistics of speed passing post experimental and post control

Variables	Post Experimental group		Post Control group	
	M±SD	N	M±SD	N
Speed Passing	16.77±0.80	20	19.01±1.01	20

N=number of students, M=mean, and SD=standard deviation

Independent sample T-test statistics of speed passing post experimental and post control

The test resulted in p-value of 0.164, which indicates the assumption of equal variances was met (since $p\text{-value} > 0.05$). With equal variance assumed, the t-test resulted in a t-statistics of 7.83 with 38 degree of freedom and a p-value < 0.001 . The 95% confidence interval for the difference in means ranges from 1.66 to 2.82. Generally, the treatment applied to experimental groups have had an impact on their speed passing skills (Table 10).

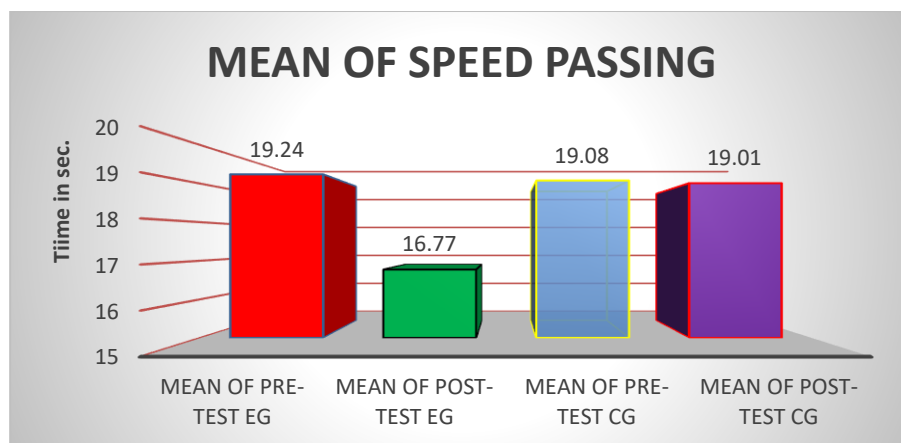
Table 10. Independent sample T-test statistics of speed passing post experimental and post control

		Levene's Test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig.(2 - tailed	MD	SED	95% confidence interval of diff.	
									Lower	Upper
Speed Passing POT	Equal variance assumed	2.012	0.164	7.83	38	0.001	2.24	0.29	1.66	2.82
EG&CG	Equal variance not assumed			7.83	35. 94	0.001	2.24	0.29	1.66	2.83

N=Number of students, M=Mean, and SD=Standard Deviation, PT=Pre-test, POT= Post-test, EG=Experimental Group, CG=Control Group, SED=Standard Error Difference

Graphical presentation of speed passing test

As indicated on the above graph, the time taken to complete speed passing test decreased from pre-test (19.24sec) to post-test (16.77sec) at $p < 0.05$ in case of experimental group and from 19.08sec to 19.01sec in case of control group ($p > 0.05$). This suggests that the training program had a positive impact on enhancing speed passing skills among participants.



EG- Experimental group, and CG- Control group

Figure 5. Graphical presentation of speed passing test

4.4. Results of throw for accuracy test

The results of throw for accuracy test was organized as follows for both EG & CG in table 11 below.

The mean points gained from throw for accuracy in the experimental group significantly increased from the pre-test ($M \pm SD = 18.10 \pm 1.68$) points to the post-test ($M \pm SD = 21.65 \pm 1.73$) points ($p\text{-value} = 0.001$) which has $P < 0.05$.

This indicates that, 12 weeks technical training program led to a statistically significant improvement in throw for accuracy among participants in the experimental group from pre-test to post-test. Participants demonstrated higher accuracy in their throws after completing the training program, indicating the effectiveness of the intervention in enhancing this specific skills (Table 11).

There was no significant change in the mean points gained from throw for accuracy from pre-test ($M \pm SD = 18.00 \pm 1.72$) points to post-test ($M \pm SD = 17.80 \pm 1.91$) points in the control group ($p\text{-value} = 0.428$) $P > 0.005$.

There is no significant change and notable improvement in throw for accuracy skills among participants in control group over the duration of the study. This finding suggest that factors other than the training program may have influenced the performance of the control group participants in this specific skills (Table 11).

Table 11. Paired sample statistics of Throw for Accuracy pre and posttest value in second and standard deviation results

Variables	Experimental Group				Control Group			
	M±SD		P-value	N	M±SD		P-value	N
	PT	POT			PT	POT		
Throw for Accuracy	18.10±1.68	21.65±1.73	0.001	20	18.00±1.72	17.80±1.91	0.428	20

N=number of students, M=mean, and SD=standard deviation, PT=pretest, POT= post test

Group statistics of Throw for accuracy post experimental and post control

The mean point gained from throw for accuracy in the experimental group after completing the training program was significantly higher ($M \pm SD = 21.65 \pm 1.73$) points compared to the control group ($M \pm SD = 17.80 \pm 1.91$) points ($p\text{-value} = 0.001$) which has $P < 0.005$. This significant difference indicates that participants in the experimental group, who underwent the 12 weeks technical training program, demonstrated greater accuracy in their throws compared to those in the control group, who did not receive the intervention (Table 12).

Table 12. Group statistics of Throw for accuracy post experimental and post control

Variables	Post Experimental group		Post Control group	
	M±SD	N	M±SD	N
Throw or Accuracy	21.65±1.73	20	17.8±1.91	20

N=number of students, M=mean, and SD=standard deviation

Independent sample T-test statistics of Throw for accuracy post experimental and post control

The Levene's test for equality of variances resulted in $p\text{-value}$ of 0.88, which indicates the assumption of equal variances was met (since $p\text{-value} > 0.05$).

With equal variance assumed, the t-test resulted in a t-statistics of 6.69 with 38 degree of freedom and a p-value < 0.001. The 95% confidence interval for the difference in means ranges from 2.69 to 5.01. Generally, the treatment applied to experimental groups have had an impact on their Throw for accuracy skills ((Table 13).

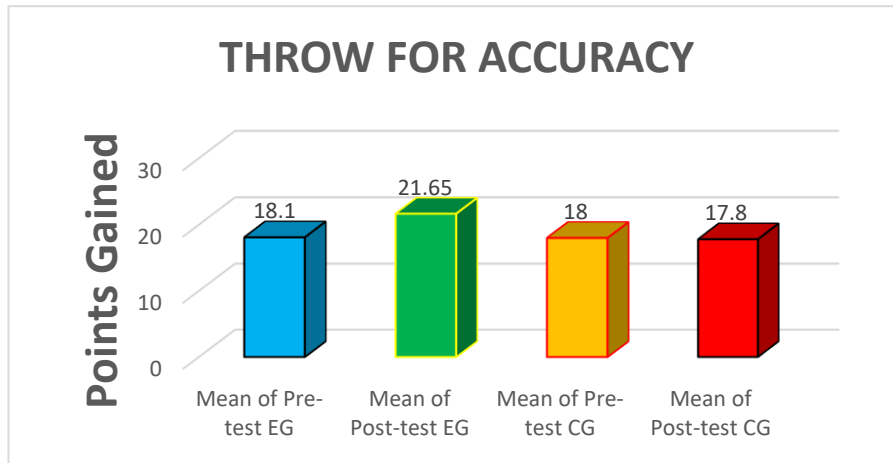
Table 13. Independent sample T-test statistics of Throw for accuracy post experimental and post control

		Levene's Test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig.(2-tailed)	MD	SED	95% confidence interval of diff.	
									Lower	Upper
Throw for Accuracy POT EG&CG	Equal variance assumed	0.25	0.88	6.69	38	0.001	3.85	0.58	2.69	5.01
	Equal variance not assumed			6.69	37.62	0.001	3.85	0.58	2.69	5.01

N=Number of students, M=Mean, and SD=Standard Deviation, PT=Pre-test, POT= Post-test, EG=Experimental Group, CG=Control Group, SED=Standard Error Difference

Graphical presentation of throw for accuracy

As indicated on the above graph, the time taken to complete Throw for accuracy test increased from pre-test (18.10 point) to post-test (21.65 point) at $p < 0.05$ in case of experimental group and from 18.00 point to 17.80 in case of control group ($p > 0.05$). This suggests that the training program had a positive impact on enhancing accuracy of shooting skills among participants.



EG- Experimental group, and CG- Control group

Figure 6 .Graphical presentation of throw for accuracy

4.5. Results of Paired difference in mean, standard deviation and significance level of variables

The results of paired difference in the mean, standard deviation ,and significance level of variables was organized as follows for both EG & CG in table 14 below.

According to the data presented in the table 14, statistically, significant improvement was observed in the EG in speed dribble test result ($MD \pm SD = 3.22 \pm 1.51$) in seconds and 95 % confidence interval for the mean difference ranges from 2.51 to 3.92 seconds.

The paired t-test yielded a statistically significant result ($P < 0.001$), indicating that there was a significant improvement in speed dribble performance from pre-test to post- test in the experimental group when exposed to 12 weeks technical training (Table 14).

Nevertheless there were no statistically significant improvement in CG ($MD \pm SD = -0.20 \pm 1.06$) in seconds and 95 % confidence interval for the mean difference ranges from -0.69 to 0.29 seconds. The paired-test result was not statistically significant ($p = 0.408$), suggesting no significant change in speed dribble performance from pre-test to post-test in the control group. This value indicates that the speed dribble of the EG shows a statistically significant improvement from pre to post-test results ($p < 0.05$), but not in CG ($p > 0.05$) (Table 14).

Additionally, this table indicates that the statistical significance difference values of the pre and post-test speed passing test of the two groups (EG and CG). According to the data presented in the table, statistically, significant improvement was observed in the EG in speed passing test result ($MD \pm SD = 2.47 \pm 1.15$) in seconds and 95 % confidence interval for the mean difference ranges from 1.93 to 3.01 seconds. The EG shows statistically significant improvement in speed passing test from pre to post-test results ($p = 0.001$) when exposed to 12 weeks technical training (Table 14).

Whereas, there is no statistically significant change in CG ($MD \pm SD = -0.14 \pm 1.09$) seconds, 95 % confidence interval for the mean difference ranges from -0.65 to -0.35 seconds and p -value = 0.58, Since p -value > 0.05 (Table 14).

Finally, the above table also indicates the statistical significance difference of pre and post-test of throw for accuracy test of EG and CG. According to data in the table significant improvement was observed in the EG throw for accuracy result ($MD \pm SD = 3.55 \pm 1.05$) points and 95 % confidence interval for the mean difference ranges from 2.50 to 4.50 points. The EG shows statistically significant improvement in speed passing test from pre to post-test results ($p = 0.001$) when exposed to 12 weeks technical training (Table 14).

But there is no statistically significant change in CG ($MD \pm SD = -0.20 \pm 1.11$) points, 95 % confidence interval for the mean difference ranges from -0.72 to 0.32 points and p -value = 0.58, since p -value > 0.05 (Table 14).

Table 14. Mean difference value comparisons and significance level of variables and results

Paired Difference							
Variables	Subjects		MD±SD	95% Confidence interval		T	Sig.(2-tailed)
				Lower	Upper		
Speed	EG	PT - POT	3.22±1.51	2.51	3.92	9.55	0.001
Dribble	CG	PT - POT	-0.20±1.06	-0.69	0.29	-0.885	0.408
Speed	EG	PT - POT	2.47±1.15	1.93	3.01	9.57	0.001
Passing	CG	PT - POT	-0.14±1.09	-0.65	-0.35	-0.62	0.58
Throw for	EG	POT - PT	3.55±1.05	3.06	4.04	15.12	0.001
Accuracy	CG	POT - PT	-0.20±1.11	-0.72	0.32	-0.81	0.428

PT=Pre-test, POT=Post-test, EG= Experimental group, CG= Control group, MD= Mean difference, SD=Standard deviation.

4.6. Discussions

This study carried out to investigate twelve weeks technical training effects to improve basic skills of basketball (speed dribble, speed passing and throw for accuracy) on 40 Wallaga University sport science male students (20- CG and 20- EG), between the age of 22-25 took part in the study voluntarily. Results of the study showed that there was a significant difference in mean of pre-test score and pot-test score of experimental group ($p < 0.05$) in which alternative hypothesis accepted and null hypothesis rejected and no significant difference between pre-test score and post-test scores of control group ($p > 0.05$) in which null hypothesis accepted and alternative hypothesis rejected.

The study found significant improvement in speed dribble and throw for accuracy in the experimental group after 12-week technical training, indicating that regular participation in training can enhance basic basketball skills.

Supportive study published on International journal for research trend and innovations by (Biswas & Mukherjee, 2022) investigated the effects of neuromuscular training on basketball playing ability. A total of twelve (12) male basketball players aged 19-25 participated at least in the inter-district Basketball competition selected for the study. They have divided into Experimental Group (EG) and Control Group (CG), consisting of six (06) subjects in each group through purposive random sampling technique. During training, two (02) participants of EG got injured and could not continue the training after two weeks, so they did not consider for post-test. In CG also, two participants did not give the post-test for personal reasons. Finally, they considered a total of eight (08) participants for the analysis of the final result of the study. The primary outcome measure for this study was basketball playing ability and they measured basketball playing ability by the Johnson Basketball skill test. There is a clear indication of improvement in speed dribble and throw for accuracy in mean score of EG due to the six weeks Basketball technical training, but not in CG. The authors concluded that training has significantly affected and improved the basketball skill in EG as compared to CG.

The supportive study by (Dave & within Elite, 2013) investigated the effects of a six-week ball handling drill regimen on collegiate basketball players. Results showed that participants' dribbling confidence, control, and speed had significantly improved. The study by (Herold *et al.*, 2019) examined the effects of technical training and ball handling drills on shooting under pressure situations.

The researchers observed that incorporating ball handling drills that simulated game-like scenarios significantly improved players' ability to shoot accurately while being defended or facing time constraints.

Another study published on European journal of physical education and sport science by (Şahiner & Koca, 2021) examined The effect of 8 weeks core training program on free shooting and vertical jump performance in basketball players aged 16-18. The study included 22 basketball players (11CG and 11EG). Statistically significant difference was found between pretest and posttest in terms of Experimental group free throw test values ($P < 0.05$) and not in control group ($P > 0.05$).

The finding of the study showed that in the case of speed dribble, the experimental group's significance improvement was observed after the intervention of 12-week technical training, but there was no significant improvement in the control group. So that there are significant differences was observed, the alternative hypothesis was accepted.

The results clearly showed that regular participation in speed dribbling training could improve basketball skills. Comprehensive review by (Palmer *et al.*, 2023) studied a variety of training techniques to improve basketball passing abilities. The analysis showed that adding ball handling exercises that prioritize vision, precision, and decision-making led to notable gains in passing abilities. The result of this finding was consistent with the finding of, (Robert Knox, 1947) who conducted the study on the effects of technical exercise use on the skillful performance of basketball trainees. His study results revealed that twelve weeks technical exercises program could significantly improve the basic skill of basketball.

Supportive study by (Mekonnen, 2018), Investigated the effects of 12 weeks technical training on basic skills of basketball. Results show that the mean value of speed dribble test of study units were increased from pre to post test, in pretest the skill was 26.36 sec but after 12 weeks training it was recorded as 20.46sec. The rationale behind the improvement in dribbling skill was due to the exercise that they took in the training schedule. The authors concluded that training has significantly affected and improved the basketball skill in EG as compared to CG.

Another studies published on Annals of yoga and physical therapy by (Hussen *et al.*, 2020) analyzed The effects of 12 weeks technical training to improve basic skills of basketball. The study included 30 male students (15-EG AND 15-CG), aged from 17-20 those participated in the study based on their interest.

The results showed mean difference and significance threshold for experimental group (MD=1.77, P=0.001) and for control group, (MD=0.01, P=474). Therefore, this study showed that there was a significant difference in passing skills in experimental group participants given relatively compared with the control group participants so, significant difference was observed, the alternative hypothesis was accepted.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Summary

The title Twelve weeks technical training effects on basic basketball skills of sport science students in case of Wallaga University sport science students highlights an important hypothesis in the field of sport science. This study tried and assessed how to investigate how certain technical training affect the basic skills of basketball trainers and to evaluate how a 12-week technical training program improved the participating students' basic basketball abilities at Wallaga University's sport studies students who have been chosen for the training.

Experimental design of quantitative approach, random sampling method was used in this investigation. For this investigation, the researcher was used probability, simple random sampling method to select 40 students from total population of 72. The study focus on three key variables speed dribble, speed passing, and throw for accuracy. The training schedule was arranged for three days per week (Monday, Wednesday, and Friday) out of their regular class. The intensity of training was from low to moderate, moderate to high throughout 12 weeks. Data was analyzed using SPSS version 26 of paired sample T-test and independent sample T-test. The level of significance was set at 0.05%.

The results showed that the mean difference between pre and post-test for every variables under experimental group was: speed dribble (2.75 sec.) speed passing (2.40sec.), and throw for accuracy (3.10 points) ($p=0.001$). Those basic skills was improved following 12 weeks technical training at $p<0.05$ and this change was not seen on control group ($p>0.05$). Other studies by (Mekonnen, 2018) on the title of Effects technical training on basic skills of basketball shows that there were statistically significant improvement on experimental group after intervention. Also another study by (Hussen *et al.*, 2020) showed that the improvement was seen after 12 weeks technical training on experimental group and no change was seen on control group.

5.2. Recommendations

Here are some recommendations based on the analysis of the researcher:

- ❖ Include a control group to the study after taking both pre and post-test to check whether the observed changes are the results of technical training or if there are other factor.
- ❖ Consider expanding study duration to know a long term effects of technical training.
- ❖ Consider individual difference in response to technical training, it may be helpful to examine individual difference in responses to technical training as some athletes may respond differently from others due to factors like fitness level.
- ❖ Since the training have significant impact on basketball basic skills of students, Coaches, teachers and students who support this study should include it in training.
- ❖ Conduct the same studies in different areas and the results may not the same with this study because of different things factors like air condition, nutrition, and sport facilities.
- ❖ I also recommend to conduct the same study at the same area on different samples in terms of age and gender.
- ❖ Those in the same condition and age level with the experimental group of the study can improve their basic skills of basketball as he participate in 12 weeks technical training following the whole procedure.

5.3. Conclusions

- Regular participation in technical training had significant effect on enhancement and improvement physical skills and performance.
- The study found that 12 weeks technical training had significantly improved speed dribbling, speed passing, and throw for accuracy on experimental group ($p < 0.05$) and not significant on control group ($p > 0.05$).
- The performance and the technique of speed dribbling, Passing, rebounding and shooting exercises in the direction of the work of skill leads to improvement in the level of skillful performance.
- Generally, after three months technical training statistically significant improvement and changes were observed in Wallaga university sport studies students dribbling, passing, and shooting.
- The finding suggests that technical training can be an effective training method for improving basic skills of students.

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7. APPENDICES

Appendix A

Investigator name: Abdetu Birhanu Asfaw

Supervisor name: Tesfaye Damena Ass.pro)

Co-Advisor Name: Jaleta Sileshi (MSc)

Thesis title:-Effect of twelve weeks technical Training on basic skills of Basketball among sport studies students in Wallaga University

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

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

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

Purpose of the Study

The purpose of this research project was to investigate the effects of technical training on improving basic skills of basketball trainees of the students. The findings of this study could have a paramount importance for learning how to dribble, pass, and shoot the ball with appropriate technical exercises, helped to provide popularity of the game, increase awareness and produce skillful and knowledgeable student in Wallaga University.

Moreover, the aim of this study was to write a thesis as a partial requirement for the fulfillment of master's program in Basketball coaching for principal investigator.

Time duration of participation

The experiment of the study period was taken 3 months. This study would take 40 subjects (20 EG and 20 CG) from Wallaga University Sport studies students. The trainees were participate in moderate intensity training 3 days per week for 12 weeks. Participation in the study was not exceeded fifty minutes per session. Subjects also participated in basic technical skill test in two phases, at the beginning and the final test at the end of 12 week training. Your trainees were received all the current standard care for their health.

Risks and the Safeguards

If physical activity would performed during abnormal physiological condition, it would result in pain, eventually it would result death. Therefore, trainees would not perform physical activity, if they show one of the following signs: abnormal heart rate; too fast or too slow breathing rate; coughing etc. In case if they face injury or pain, I would give them first aid. If it were severe, I would cover every cost for their recovery.

Benefits

There might be no personal benefit for participating in this study. However, it was hoped that, in the future the society would be beneficial from this study by improving the

techniques and skills of basketball game and selection of future elite athletes through physical trainings.

Confidentiality

Their test results and other related personal information would be kept confidential. There would be no information that would identify your trainees in particular. The findings of the study would be general for the study community and would not reflect anything particular of individual persons. The data/test results would be coded to exclude showing names. No reference would be made in oral or written reports that could link participants to the research.

Rights

The student and institution had the right to declare them to participate or not in this study. If the institution decided not to participate, your trainees had the right to withdraw from the training at any time and this would not label your trainees for any loss of benefits, which they otherwise are entitled but it was not advisable.

Contact address

If there were any questions or enquires anytime about the study or the procedures please contact:

Abdeta Birhanu Asfaw +251926334248 Email, abdetabirhanu22@gmail.com

Declaration of informed Voluntary consent:

We read the participant information sheet. We clearly understood the purpose of the research, the Procedures, the risks and benefits, issues of confidentiality, the right of the trainees on participating and the contact address for any queries. We informed as our trainees had the right to withdraw from the training at any time.

7.1. Appendix Table

Appendix Table 1. Basic skill test data records sheet

Participant code no _____

Age_____

Sex_____

height_____

Weight_____

No	Type of skill test	Units	Variables to measure	Data collect during Experimental period			
				Experimental group		Control group	
				Pre - training	post - training	Pre - training	post - training
1	Speed dribble test with hurdle	second	Ball handling skill				
2	Speed pass	second	Passing skill				
3	Accuracy free throw test	Point basket	shooting skill				

Training schedule

Essential Components of Planning a Basketball Training Session Each training session needs to contain the same essential elements. The amount of time spent on each element will depend on the goal of the training session, the time of season, and the amount of time available for a particular session. The final step in planning a training session is designing what the athlete is actually going to do. Remember when creating a training session to allow for a gradual buildup of physical activity. Easy to difficult, slow to fast, Known to unknown, General to specific, and Start to finish (Program & Planning, n.d., 2023).

According to Special Olympics Basketball Coaching Guide, Teaching Basketball Skills (2007), the training program for basketball players the intensity was maintaining moderate (65% of maximum heart rate. (Brain E. Colman, 1978), given more emphasis on below listed exercises to develop basic techniques of dribbling, passing, shooting and pivoting skills of beginner basketball players. All of these would be perform with the appropriate movement patterns for the correct skill acquisition. Therefore, the following training schedule would be to improve basic skill of sport studies students' at Wallaga University.

Appendix Table 2. Session plan for twelve weeks (three months of experimental study)

Intensity_____ frequency _____Duration _____

Goals: To create psycho motor and basic skill adaptation to technical exercise

weeks	Days	Type of exercise	Dose				objectives
			Repetition	Time (min)	Intensity	duration	
1-3	Monday	Warming up	-	5	Light intensity	40min	✓ To improve general fitness, ball handling and dribbling
		Conditioning Exercise	-	10			
		Ball handling technique	2	10			
		Right Left hand dribble	2	10			

	Stretching/cooling	-	5			
Wednesday	Warming up	-	5	Light intensity	40 min	✓ To improve dribbling skill
	High dribbling	3	10			
	Low dribbling	2	10			
	Cross over dribbling	2	10			
	Starching cooling down	-	5			
Friday	Warming up and stretching	-	5	Light intensity	45 min	✓ To improve strength, endurance and passing skills
	Aerobic exercise	-	5			
	Chest pass	3	10			
	Push up and Pull up	2	10			
	Overhead passing	2	10			
	Cooling down	-	5			

4-6	Monday	Warming up, jogging	-	5	Moderate intensity	50min	✓ To improve passing and dribbling skill
		Baseball pass	2	10			
		Pass with partner	3	15			
		Back dribbling	2	15			
		Cooling down	-	5			
	Wednesday	Warming up	-	5	Moderate intensity	50 min	✓ To improve endurance, strength and passing skill
		Strength exercises	-	10			
		Bounce pass	3	10			
		Chest pass	2	10			

		Back pass	3	10			
		Stretching cooling	-	5			
	Friday	Warming up	-	5	Moderate intensity	50 min	✓ To improve dribbling and passing skill
		Low dribble	2	10			
		High dribble	2	10			
		Speed dribbling	2	10			
		Speed pass	3	10			
		Stretching and cooling down	-	5			
7-9	Monday	Warming up	-	5	Moderate intensity	55 min	✓ To improve dribbling and passing skill
		Running on spot	2	10			
		Dribbling control	-	15			
		Chest pass	2	10			
		Overhead pass	3	10			
		Stretching, cooling down	-	5			
	Wednesday	Warming up	-	5	Moderate intensity	50	✓ To improve pivoting -and shooting - skill
		Pivoting	2	10			
		Two hand set shoot	2	10			
		One hand set shoot	2	10			
		Jump shoot	2	10			
		Stretching and Cooling down	-	5			
	Friday	Warming up	-	5		55	

10-12		Speed dribble	3	10	Moderate intensity		✓ To improve dribbling, passing and shooting skill
		Speed pass	3	15			
		Free throw challenge	3	10			
		Pass and shoot	2	10			
		Cooling down and Stretching	-	5			
	Monday	Warming up	-	5	Heavy intensity	60 min	✓ To improve dribbling and passing skill
		Wall pass to the targets	3	10			
		Throw from spots	2	10			
		Free throw	2	10			
		High Dribbling	2	10			
		Low dribble	2	10			
		Stretching, cooling down	-	5			
	Wednesday	Warming up	-	5	Heavy intensity	60min	✓ To improve shooting accuracy, pivoting and passing skill
		Set shoot	2	15			
		Layup shoot	2	10			
		Throw the ball to the targets	2	10			
		Speed passing	2	15			
		Cooling down	-	5			
	Friday	Warming up	-	5	Heavy intensity	60 min	✓ To improve accuracy and shooting skill
		Set shoot	2	20			
		Throw from the spot	3	20			
		Throw from movements	2	10			
		Cooling down	-	5			

Appendix Table 3. Paired sample T-test results

Test	Study group	Training	Mean	SD	N	St. error mean	Sig.
Speed dribble test	Experimental group	PT	26.36	2.483	40	0.469	
		PoT			40		
	Control group	PT	20.46	1.732	40	0.327	
		PoT			40		
Speed pass test	Experimental group	PT	21.64	2.147	40	0.406	
		PoT			40		
	Control group	PT	19.11	1.663	40	0.314	
		PoT			40		
Accuracy throw for accuracytest	Experimental group	PT	16.36	3.186	40	0.602	
		PoT			40		
	Control group	PT	20.00	2.177	40	0.411	
		PoT			40		

Test protocols and Norms

Appendix Table 4. Parameters used to speed dribble test for males

Ranges	Duration in seconds
Excellent	<15
Good	15-19
Average	19-23
Poor	>23

Source: (Robert D.Knox, 1947) .

Appendix Table 5. Parameters used to speed pass test

Ranges	Duration in seconds
Excellent	<16
Good	16-19
Average	19-22
Poor	>22

Source: (Krause *et al.*, 1999).

Appendix Table 6. Parameters used to throw for accuracy

Ranges	Duration in seconds
Excellent	>25
Good	20-25
Average	15-20
Poor	<15

Source: (Johnson, 1934).

Appendix Table 7.Code of Participants

No.	Code of Participants	
	Experimental Group	Control Group
1	EG01	CG01
2	EG02	CG02
3	EG03	CG03
4	EG04	CG04
5	EG05	CG05
6	EG06	CG06
7	EG07	CG07
8	EG08	CG08
9	EG09	CG09
10	EG10	CG10
11	EG11	CG111
12	EG12	CG12
13	EG13	CG13
14	EG14	CG14
15	EG15	CG15
16	EG16	CG16
17	EG17	CG17
18	EG18	CG18
19	EG19	CG19
20	EG20	CG20

Appendix Table 8. Attendance sheet

No	Subjects	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day7	Day8	Day9	Day10
1	EG01	√	√	√	√	√	√	√	√	√	√
2	EG02	√	√	√	√	√	√	√	√	√	√
3	EG03	√	√	√	√	√	√	√	√	√	√
4	EG04	√	√	√	√	√	√	√	√	√	√
5	EG05	√	√	√	√	√	√	√	√	√	√
6	EG06	√	√	√	√	√	√	√	√	√	√
7	EG07	√	√	√	√	√	√	√	√	√	√
8	EG08	√	√	√	√	√	√	√	√	√	√
9	EG09	√	√	√	√	√	√	√	√	√	√
10	EG10	√	√	√	√	√	√	√	√	√	√
11	EG11	√	√	√	√	√	√	√	√	√	√
12	EG12	√	√	√	√	√	√	√	√	√	√
13	EG13	√	√	√	√	√	√	√	√	√	√
14	EG14	√	√	√	√	√	√	√	√	√	√
15	EG15	√	√	√	√	√	√	√	√	√	√
16	EG16	√	√	√	√	√	√	√	√	√	√
17	EG17	√	√	√	√	√	√	√	√	√	√
18	EG18	√	√	√	√	√	√	√	√	√	√
19	EG19	√	√	√	√	√	√	√	√	√	√
20	EG20	√	√	√	√	√	√	√	√	√	√

Attendance sheet

No	Subjects	Day 11	Day 12	Day 13	Day 14	Day15	Day 16	Day17	Day18	Day19	Day20
1	EG01	√	√	√	√	√	√	√	√	√	√
2	EG02	√	√	√	√	√	√	√	√	√	√
3	EG03	√	√	√	√	√	√	√	√	√	√
4	EG04	√	√	√	√	√	√	√	√	√	√
5	EG05	√	√	√	√	√	√	√	√	√	√
6	EG06	√	√	√	√	√	√	√	√	√	√
7	EG07	√	√	√	√	√	√	√	√	√	√
8	EG08	√	√	√	√	√	√	√	√	√	√
9	EG09	√	√	√	√	√	√	√	√	√	√
10	EG10	√	√	√	√	√	√	√	√	√	√
11	EG11	√	√	√	√	√	√	√	√	√	√
12	EG12	√	√	√	√	√	√	√	√	√	√
13	EG13	√	√	√	√	√	√	√	√	√	√
14	EG14	√	√	√	√	√	√	√	√	√	√
15	EG15	√	√	√	√	√	√	√	√	√	√
16	EG16	√	√	√	√	√	√	√	√	√	√
17	EG17	√	√	√	√	√	√	√	√	√	√
18	EG18	√	√	√	√	√	√	√	√	√	√
19	EG19	√	√	√	√	√	√	√	√	√	√
20	EG20	√	√	√	√	√	√	√	√	√	√

Attendance sheet

No	Subjects	Day 21	Day 22	Day 23	Day24	Day2 5	Day2 6	Day27	Day28	Day29	Day30
1	EG01	√	√	√	√	√	√	√	√	√	√
2	EG02	√	√	√	√	√	√	√	√	√	√
3	EG03	√	√	√	√	√	√	√	√	√	√
4	EG04	√	√	√	√	√	√	√	√	√	√
5	EG05	√	√	√	√	√	√	√	√	√	√
6	EG06	√	√	√	√	√	√	√	√	√	√
7	EG07	√	√	√	√	√	√	√	√	√	√
8	EG08	√	√	√	√	√	√	√	√	√	√
9	EG09	√	√	√	√	√	√	√	√	√	√
10	EG10	√	√	√	√	√	√	√	√	√	√
11	EG11	√	√	√	√	√	√	√	√	√	√
12	EG12	√	√	√	√	√	√	√	√	√	√
13	EG13	√	√	√	√	√	√	√	√	√	√
14	EG14	√	√	√	√	√	√	√	√	√	√
15	EG15	√	√	√	√	√	√	√	√	√	√
16	EG16	√	√	√	√	√	√	√	√	√	√
17	EG17	√	√	√	√	√	√	√	√	√	√
18	EG18	√	√	√	√	√	√	√	√	√	√
19	EG19	√	√	√	√	√	√	√	√	√	√
20	EG20	√	√	√	√	√	√	√	√	√	√

Attendance sheet

No	Subjects	Day 31	Day 32	Day 33	Day 34	Day 35	Day3 6
1	EG01	√	√	√	√	√	√
2	EG02	√	√	√	√	√	√
3	EG03	√	√	√	√	√	√
4	EG04	√	√	√	√	√	√
5	EG05	√	√	√	√	√	√
6	EG06	√	√	√	√	√	√
7	EG07	√	√	√	√	√	√
8	EG08	√	√	√	√	√	√
9	EG09	√	√	√	√	√	√
10	EG10	√	√	√	√	√	√
11	EG11	√	√	√	√	√	√
12	EG12	√	√	√	√	√	√
13	EG13	√	√	√	√	√	√
14	EG14	√	√	√	√	√	√
15	EG15	√	√	√	√	√	√
16	EG16	√	√	√	√	√	√
17	EG17	√	√	√	√	√	√
18	EG18	√	√	√	√	√	√
19	EG19	√	√	√	√	√	√
20	EG20	√	√	√	√	√	√

7.2. Appendix Figure

Appendix Figure 1. Images with study group



