

## Research Article

# The Effects of Twelve Weeks Technical Training to Improve Basic Skills of Basketball

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The main purpose of this study was to examine the effect of 12 weeks technical training to improve basic skills basketball in high school students. Quasi-experimental study was used on conveniently selected 30 male students aged 17-20 years who meet eligibility criteria at Kunzila high school Ethiopia. Participants grouped in to two groups: namely experimental group (15) and control group (15) for comparison. Experimental group were participated in a scheduled selected basketball technical training program and duration was 40-60 minutes and carried out for 12 weeks with three sessions per week. The parameters selected for the study were speed dribble, speed pass, dribble control and accuracy free throw test. Pre and post training test were conducted for all thirty subjects on selected basic skill and basketball performance skill variables and the score were recorded computerized Statistical Package for Social Sciences (SPSS) version 20 paired sample t-test was used to analyse the data. The level of significance was set at  $p \leq 0.05\%$ . The results showed dribbling control (MD=2.03,  $P=0.001$ ), speed dribble (MD=3.43,  $p=0.001$ ), speed pass (MD=1.76,  $p=0.001$ ) and accuracy throw (MD= 2.15,  $p=0.001$ ) were improved significantly following the 12 week technical training in experimental group at ( $p<0.05$ ). Further, a statistically significant change was observed for all measured variables for experimental group. However, there was no a statistically significant change for the controls. Finally, the researcher concluded the use of ball handling drills, speed passing, dribbling control, and accuracy free throw training were a significant effect on students helpful in enhancing the performance skill of basketball, following the twelve-week technical training.

**Keywords:** dribbling; passing; shooting; accuracy throw and ball handling

## Introduction

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 [18] (Robey, 2007). A successful game of basketball needs good physical fitness, a skill like dribbling, passing, and shooting is the core for a player at any level of play. So that developing good conditioning programs based on the specific physiological demands and level of performance of each sport is considered as the key factor for progress [20] (Taylor, 2003). Technical training of basketball has a beneficial effect on the improvement of skill of dribbling, passing and shooting for students developed by knowledge, tactics and abilities in the game of basketball, where students are trained in developing basketball fundamentals, undergo fitness and endurance trainings and learn various basketball skills [2] (Apostolidis *et al.*, 2004). 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 [23] (Wesson, *et al.*, 2005).

Technical training of ball handling, passing and shooting drills were abilities that made an important contribution to efficient movement with and without the ball, thus 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 [8] (Erculj *et al.*, 2010). In basketball practice, skill tests are the most suitable and applicable because they are implemented in conditions similar to those of training or competition [8] (Erculj *et al.*, 2010). Therefore, to attain optimum skill in activities are ball-handling drills are the main factor; the above-mentioned basic skills should be woven together.

The benefits and detriments of participating in technical training of basketball for students have been a topic of debate within the research and policy literature; however, numerous benefits have been identified. Another strong motive of participation is social interaction; Sports can provide peer interaction through both teammates and healthy competition [22] (Weiss *et al.*, 2004).

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 [8] (Erculj *et al.*, 2010). The technique of basketball game represents all the specific moves executed by an athlete while playing the game according to the rules duties imposed by his/her team playing in competition.

Basic skills of technical training for students are measured as the product or outcome of standardized technical training and tasks requiring ball handling, passing and shooting.

However, the reality at most high schools like kunzila high school showed that the value of training in basketball has to know more theoretically rather than practically, it needs references students to have low levels of dribbling, passing and shooting skills. So the main objective of the study is to examine the effect technical training on the improvement basic skills of basketball at Kunzila high school west Gojjam, Ethiopia. The study also attempted to hypothesises that there were significant differences in dribbling, passing, shooting, and rebounding skills after twelve weeks of training intervention using technical training.

## Materials and Methods

Thirty volunteer high school students selected by using convenient sampling technique. The age group was limited from 17-19 years those who fulfill eligibility criterion were considered as target group. The participants were divided in to two balanced groups experimental and control groups. Quasi-experimental research design study was implemented. Because there were many things, which does the researcher in the subject like diet, weather condition and this not control is the best design that shows the effect of 12 weeks technical training program on the experimental group and control group. The pre-and post-test on skill abilities and physical talent parameters such as accuracy throw, speed dribble, speed pass, and dribbling control are administered for both groups. The experiment consists of different kind of training such as sprint, dribble in a speed, passing in a speed, dribble shoot, control dribbling, accuracy throw, and lay up shoot with moderate intensity (40-60 minutes) for three days (Monday, Wednesday and Friday) per week for 12 consecutive weeks. There was no exercise treatment for the control group but both the pre and post-tests were taken from them. Data on selected participant's basic scheduled basketball technical training was collected before and after training. The privacy of the participants was protected with written consent provided which was approved by Hawassa university. The study conducted during March-May 2017 in kunzila high school Ethiopia.

## Exercise Training Protocol

The training session program was performed 3 days of a week for 12 weeks. The experimental group training was consisted of warm up before main training session and at the end of training session 5 minute cooling down and stretching exercise was performed. Each training session involved in warming up period, main practice session, and cooling down activities followed by 40-60 minutes low to moderate intensity exercises. At the end of training session 10 minute cooling down and stretching exercise was performed. The training program was based on recommendations of intensity and volume from [23] (Davies, 2005) using progressive set, repetitions and distance of exercise. In this schedule the technical training were speed dribbling, controlling dribble, overhead pass, chest pass, bounce pass, accuracy shoot, set shoot and lay up shoot. Days of training were Monday, Wednesday and Friday. Time of training day was morning when participants were in the afternoon shift and training day was afternoon when participants were in morning shift. The following tests were select parameters for technical training and skills. Changes

were recorded especially before training and after the intervention were made.

### Dribbling control test

Speed dribble test is to measure skill in handling the ball while the body is in movement. Standard inflated basketball ten cones with one-meter difference Stopwatch and tape use for marking. An obstacle cones marks by ten cones with one-meter distance were set up in zigzag at Basketball court. If they perform fails to begin at the point in the course where control will lose and the trail was stop and the performer has to return lost and begin again (Cinii, 2000).

### Speed dribble test

Speed dribble test is to evaluate skill in ball handling with obstacles. 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 were start with the signal "go" and will stop as the subject returns to the start-finish line. Watching, signals, balls were used in this test. The score was count as the total number of second from the command "go" until the subject returns to the start-finish line [21] (Varghese *et al.*, 2014).

### Speed passing test

Speed passing test is to measure the ability of passing skill. A line marked on the floor 5 metre from the wall and parallel to it. The subject stands behind the line and rebounds the basketball from the wall as rapidly as possible fifteen times, using the chest pass. Stopwatch, balls, floor, coins and papers are use in this test. The score was registered 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 tests are repeats [14] (Krause *et al.*, 1999).

### Accuracy free throw test

Accuracy test were used to measure the ability of basketball throwing on a wall accurately. Wall, stopwatch, tape and basketball used to arrange the test. [16] (Mazumdar, 2012) also, conduct-throwing basketball to wall accurately will important to develop over arm pass for accurately. The subjects were asked to stand the free throw line and throw the ball to the target. Inner rectangle, middle rectangle and outer rectangle have different scoring. If the ball touches the inner rectangle, the subject got 3 points, for the middle 2 points and for the outer only 1 point. Total ten chances were given to the participant. Altogether, total will count to each subject. Maximum score is 30 and minimum score is zero [16] (Mazumdar, 2012).

## Inclusion and Exclusion Criteria

Subjects who have fulfilled the health history questionnaire and whose age was between 17-20 years were included for this study. Subjects who has any recent physical injury and medical condition restrict by physician and whose age are under 17 and above 20 years were exclude for the study. The study was design in such a way that ethical issues have properly addressed. Privacy of the subjects and confidentiality was strictly observed and maintain throughout the study. The study was conduct under school rules and code of conduct in governing research activities and ethical issues. The written consent/agreement form is given and inform to the concerned bodies.

*Statistical Analysis* The data was analyzed using a Statistical Package for Social Sciences (SPSS) version 20.0 for IBM. Descriptive

**Table 1:** Characteristics of the study participants.

Group	N	Age	Height	Weight
		M±SD	M±SD	M±SD
EG	15	18.40±1.12	1.60±0.07	54.22±2.61
CG	15	18.33±0.62	1.62±0.06	53.19±2.88

N= Number Students, EG= Experimental Group, CG= Control Group and SD= Standard Division

statistical measures within experimental and control groups (mean, standard deviation and standard errors) were computed. Further, inferential statistics (paired t-test and confidence interval) was made within both experimental and control groups to compare before and after technical training on effects, Basketball basic skill statistical significance was asset at a level of 5%.

### Results

After collecting the reliable data through experimental methods such as pre and post-test of each variable, the researcher tabulated, analysed and interpreted it. Tabulation is a way of arranging the same data in some kind of concise and logical order.

Descriptive characteristics of 30 study participants mean of age (EG=18.40±1.12, CG=18.33±0.62), height (EG=1.60±0.07, CG=1.62±0.06) and weight (EG=54.22±2.61, CG= 53.19±2.88). Subjects were relatively had the same age, height and weight (Table 1).

The mean and standard deviation of the experimental and control groups of the dribbling control test. The mean values of the dribbling control Pre-test and Post-test results of the experimental groups were 28.93±1.37 and 26.89±1.32. Whereas the mean values of the control group dribbling control test, were 28.95±1.44 and 28.97±1.55. This reveals that improvement was observed in the experimental group dribbling control after the 12 weeks technical training, but improvements were not seen on the control group side. Therefore, these studies show that there is a significance difference in dribbling control test in experimental group participants given relatively compared with control group participants (Table 2).

The mean and standard deviation of the speed dribble test pre and post-test results of both experimental and control groups. The mean values of the experimental group's pre and post-test result speed dribble test were 24.83±0.86 sec and 21.39±1.39 sec, On the other hand, the mean values of the pre and post-test results control group speed dribble test were 24.77±1.32 sec and 24.78±1.352 sec This indicates that there were increments in the mean values of experimental groups speed dribble test results from pre to post-test (Table 3).

The mean and standard deviation of the EG and CG of the Speed passing test. The mean values of the EG Speed pass test pre and the post-test results were 22.20±1.24 and 20.44±1.1, while the standard deviation was 1.23 and 1.14 respectively. On the other hand, the mean values of the CG of Speed pass test pre and the post-test results were 22.24±1.19 and 22.25±1.28. This shows that improvement was seen in the EG Speed pass test from pre to post-test. However, the CG Speed pass test shows a slight reduction from pre to post-test (Table 4).

The mean and standard deviation of the EG and CG of accuracy throw test. The mean values of the EG accuracy throw test pre and

**Table 2:** Paired sample statistics of dribbling control pre and post-test (in sec) results.

Variables	Experimental Group		Control Group	
	M±SD		M±SD	
Dribbling control test	PT	POT	PT	POT
		28.93±1.37	26.89±1.32	28.95±1.44

M= Mean, SD= Standard Division, PT= Pre-Test and POT= Post-Test

**Table 3:** Paired sample statistics of Speed dribble test pre and post-test (in sec) results.

Variables	Experimental Group		Control Group	
	M±SD		M±SD	
Speed dribble test	PT	POT	PT	POT
		24.83±0.86	21.39±1.39	24.77±1.32

M= Mean, SD= Standard Division, PT= Pre-Test and POT= Post-Test

**Table 4:** Paired sample statistics of speed pass test pre and post-test results (in sec).

Variables	Experimental Group		Control Group	
	M±SD		M±SD	
Speed passing test	PT	POT	PT	POT
		22.20±1.24	20.44±1.14	22.24±1.19

M= Mean, SD= Standard Division, PT= Pre-Test and POT= Post-Test

**Table 5:** Paired sample statistics of accuracy throw test pre and post-test results (rep).

Variables	Experimental Group		Control Group	
	M±SD		M±SD	
Accuracy throw test	PT	POT	PT	POT
		16.14±1.01	18.29±1.42	16.07±0.97

M= Mean, SD= Standard Division, PT= Pre-Test and POT= Post-Test

post-test results were 16.14±1.01 and 18.29±1.42. On the other hand, the mean values of the CG of accuracy throw test pre and post-test results were 16.07±0.97 and 16.08±1.01. This shows that improvement was seen in the EG accuracy throw test from pre to post-test (Table 5).

The EG dribble control test result shows a statistically significant improvement from pre to post-test result (MD = 2.04±0.70, p=0.001) when exposed to 12 weeks of technical training. However, there was no statistically significant improvement in the dribble control test result of the CG (MD=0.03±0.18, p=0.573), hence p>0.05. This value indicates that statistically significant improvements were seen from pre to post-tests results in the dribble control test of EG, but statistically significant improvements were not observed in the CG (Table 6).

According to the data presented in the table, statistically, significant improvement was observed in the EG in speed dribble test result (MD= 3.43±0.89, p=0.001) when exposed to 12 weeks technical training. Nevertheless, there were no statistically significant improvement in the CG (MD= -0.016±0.109, p=0.581), hence (p > 0.05). 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).

Similarly, the above table 6 also indicates that the statistical significance difference values of the pre and post-test speed passing tests of the two groups (EG and CG). According to the result presented in the table, the EG shows statistically significant improvement in

**Table 6:** Mean difference values comparisons and Significance level of variables and results.

Variables	Subjects		Paired difference				
			MD±SD	95% confidence interval		T	Sig.(2-tailed)
				Lower	Upper		
Dribble control test	EG	PT-POT	2.04±0.70	1.37741	2.4053	7.893	0.001
	CG	PT-POT	0.03±0.18	-0.1257	0.0724	-0.577	0.573
Speed dribble test	EG	PT-POT	3.44±0.89	2.94438	3.933	14.921	0.001
	CG	PT-POT	0.02±0.11	-0.0703	0.0516	-0.565	0.581
Speed passing test	EG	PT-POT	1.77±0.79	1.3256	2.2077	8.591	0.001
	CG	PT-POT	0.01±0.11	-0.0703	0.0516	-0.329	0.747
Accuracy throw test	EG	PT-POT	2.16±0.57	0.14867	2.4755	-14.51	0.001
	CG	PT-POT	0.02±0.13	-0.0832	0.0552	-0.434	0.671

PT=Pre-Test, POT=Post-Test, EG=Experimental Group, CO=Control Group, MD=Mean difference and SD=standard deviation

speed passing tests from pre to post-test results (MD= 1.76±0.79,  $p=0.001$ ) when exposed to 12 weeks technical training. However, no significant differences were found between pre and post-test results of speed passing test in the CG (MD= -0.009±0.11,  $p=0.747$ ), since  $p > 0.05$ . These indicates that the speed passing test/passing skills of the EG shows statistically significant improvement from pre to post test result.

According to the result presented in the table EG shows statistically significant improvement in accuracy throw test results (MD= 2.15±0.57,  $p=0.001$ ) when exposed to 12 weeks technical training, since  $P < 0.05$ . However, no statistically significant difference were found between pre and post test results of the CG in accuracy throw test (MD= -0.014±0.124,  $p=0.671$ ), hence  $p > 0.05$ .

## Discussion

The purpose of the study examine the effect of technical training to improve basketball basic skills on 17-20 ages of male students of secondary schools. Training is essentially a preparation of an individual's athlete so that he can withstand competition stress when encounters and performs to maximum effectiveness. A high level of basketball skill demand is required to match play, which involves dribbling, shooting and passing [8] (Erculj *et al.*, 2010). It is basic that a good ground of technical training to improve the basic skills of basketball. In the present study, technical training had a positive impact on basic skills of basketball variables of dribbling, passing, shooting and rebounding.

The finding of the study indicates that experimental group statistical significant improvement was observed from pre-test to post-test after the intervention of 12-week technical training, but was not seen, control group. Therefore, there was a significant difference is observed alternative hypothesis was accepted. [10] Cinii, (2000) used the experimental approach which resulted in the most important results show that the technical training leads to improve the basic skill of talent while adapting the technical training with the direction of dribbling control skills leads to the improvement of the ball-handling rate. The previous study supportive by [3] (Meeuseen *et al.*, (2006) investigates the effect of training on basketball skill and anaerobic performance and improved the basketball skill. [12] (Kassem, 2010) also conducted that the training program which contains technical training for the development of ball handling drills

lead to the improvement of skill full performance of the players and increasing dribble control.

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. The supportive study by [11] Kalidasan, (2015) investigates the effect of training on dribbling performance and had a significant improvement in speed dribbling. The other study conducted by [10] Jose *et al.*, (2000) different types of technical training as dribbling with maximum speed is enhanced when the players run the fast -break until they reach the other side. The supportive study by [11] Kalidasan, (2015) investigates the effect of training on dribbling performance and had a significant performance on dribbling speed. In addition, [3] Meeuseen *et al.*, (2006) investigates the effect of training on basketball skill and anaerobic performance and improved the performance of basketball skill.

Based on the results of data analysis, in case of passing skills, statistically significant improvement was observed in the experimental group from pre to post-test after the intervention of 12-week technical training was given, but no observed in the control group. 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 that there are significant difference was observed, the alternative hypothesis was accepted. According to Krause & Meyer, (2008) Techniques of the pass, training is used to develop the passing skill of an athlete. Passing is considered a method of moving the ball between players. The researcher also stressed that the combination of dribbling and speed pass training is important to increase the skill levels especially the speed pass of athletes [5] (Bompa & Carrera, 2005). Similarly, this finding was also consistent with the finding of [15] Lyons *et al.*, (2006) that conducted the study on the impact of moderate and high-intensity total body fatigue on passing accuracy in expert and novice basketball players.

In the case of shooting accuracy, the finding of the study showed that significant improvement was observed in the experimental

group from pre to post-test after 12-week technical training, but no significant improvement in the control group from pre to post-test.

Therefore, this study showed that there was a significant difference in shooting accuracy in experimental group participants given compared with the control group participants so that there is significant difference was observed, the alternative hypothesis was accepted. The previous study by [16] Mazumdar *et al.*, (2012) used the experimental approach, which resulted in the most important results show that shooting accuracy training leads to improve the ability of the shooting skills while adapting the technical training with the direction of shooting skills leads to the improvement of the shooting rate. And also [3] Balciunas *et al.*, (2006) carried out a study on 15-16-year-old male basketball players, the pre-test group participated in the study performed shooting test, the shooting attempt measured values respectively lasting for 2 minutes, similar results were found. Furthermore, the former researcher on the title the effect of skill practice and mental training on free-throw shooting basketball [19] (Singh & Nihgh, 2015) was implemented and founded that basketball skill improvement on free throw shooting. The previous study supported by [9] Hendra, (2017) his study the effectiveness of basketball shooting training model on improving capabilities of basketball players he stated that training by combining technical and physical exercises effectively improves the shooting ability of basketball players. [6] Denisa and Lumber (2012) similar findings on the research efficiency of shooting programs for basketball players and the finding were significantly better results. Therefore, regular technical physical training programs can have significant benefits for the development of basketball skills [1] (Abdulkrim *et al.*, 2007).

## Conclusion

The focus of the study was to conclude that technical training had a significant effect to improve basic skills of basketball, and depending upon the findings of the study the following conclusion was drawn:

- Technical training has shown significant improvement in dribbling, passing, shooting and rebounding of basketball skills and performance of the participants.
- Twelve weeks of technical training had a statistically significant effect on student's basketball skills of the experimental group compared to the control group and post-test exercise intervention.

In general, after three months of technical training, statistically significant improvement and change were observed in dribbling, passing and shooting skills on the experimental group when compared control group post-test to pre-training test.

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