

# The Effect of Mistar Shoot Training Method on Free Throw Success in Basketball Extracurriculars

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## ABSTRACT

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Based on the data, the free throw accuracy of the men's basketball team at SMPN 4 Semarang is still low. The aim of this research is to improve free throw accuracy using a shot rule. This research uses a two group pretest and post test design. The sample for this research was 12 students drawn using total sampling techniques who were divided into 2 groups. Group 1 carried out shot ruler treatment with an elevation angle of 45°- 53° and group 2 with an elevation angle of 54°- 60°. Treatment was given in 8 meetings. The test instrument uses the crossbar training method with a validity of 0.86 and a reliability of 0.75. The data analysis technique uses the T test. The results of data analysis obtained 1) The T test for group A has a Sig value. 0.01 so there is a significant difference between the pretest and posttest group 1. 2) The T test for group B has a Sig value. 0.01 so there is a significant difference between the pretest and posttest group 2. 3) Sig value. from the results of the t test post test group a and post test group b, namely 0.181 and 0.182 so there is no significant difference between post test group 1 and post test group 2.

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## INTRODUCTION

Basketball is a sport that is widely favored by various ages. This game is played by two teams and consists of five people who each try to score as many points as possible with the provisions of time that has been set Alamsyah & Nugroho (2022) . Basketball has a way of playing for the ball with teamwork and trying to put the ball into the opponent's basket (Ridwanmas et al., 2019) . The general rules of the basketball game that must be known by the players such as game time, ring height, field area, and rules regarding fouls and violations. Basketball games are not only played by men but also women and until now the development of basketball games is friendly to be played by disabilities. In the game of basketball there are elements and patterns of behavior either quickly or slowly and sometimes look individualistic but still with an attitude of cooperation and support for each other to get points. This is in accordance with the goal of each basketball team, which is to score as many points as possible Suryaputri (2018) . In addition, the purpose of sports team activities is to improve and expand students' knowledge and skills in playing, support interests and talents to be more developed and can

benefit themselves and others. In its development, the game of basketball has entered a prestigious sporting event so that basketball is a growing sport to date. The influence of television shows and various social media platforms in broadcasting basketball games that can be seen by all corners of the world so it is not surprising that basketball games are in great demand (Perdana, 2021) .

The game of basketball is growing rapidly in Indonesia, this is influenced by the achievement and improvement of sports achievements ranging from the achievements of the men's national basketball team which was able to win the Sea Games Hanoi in 2021 and the women's national basketball team which won the Sea Games Cambodia in 2023, as well as the running of basketball leagues such as IBL, LIMA, and DBL. This increase and achievement is inseparable from the role of athletes, coaches, and sports experts. Basketball games in Indonesia are found at various levels of education. Many students, both male and female, are interested in basketball. This makes many of the schools hold extracurricular basketball games for their students. In fact, many levels of education open admissions through basketball achievement pathways such as Semesta Semarang Junior High School, Karangturi High School, and Semarang University. Various schools that provide scholarships to their students through the basketball pathway certainly have adequate facilities and infrastructure for student training, so that efforts made to develop students' interests and talents through basketball must be supported by standard facilities and infrastructure in accordance with the regulations set by the Indonesian Basketball Association (PERBASI). Good facilities and infrastructure are not enough to improve player achievement if a player does not have good mastery of basic techniques. Therefore, in this extracurricular basketball must be taught how the basic techniques of the game of basketball.

In basketball games, basic techniques are very important because teams that do not master basic techniques will lose the ball more often. Conversely, teams that have players who master basic techniques will work together to get more points, so in the match will be more efficient in scoring many points. Absolutely basketball players must master the basic techniques of basketball games to produce skillful and efficient games. In basketball games there are several basic techniques that must be mastered by players in order to develop skills when playing. According to Prabowo (2016) One of the basic techniques of basketball is foot movement (foot movement), shooting (shooting), passing and catching (passing and catching), dribble, rebound, moving with the ball, moving without the ball, and defense. A player will be great if he has mastery of these basic techniques, so to develop the abilities and talents of players requires mastery of good techniques and infrastructure. One technique that is considered important in scoring numbers in basketball is shooting which is useful for obtaining numbers one, two, or three. Because the goal of this game is to score as many points as possible by putting the ball into the opponent's basket, shooting is one of the important techniques that every basketball player must master. The basic shooting technique in basketball games that is considered very important is free throw (Liana, 2019) . This is because free throws are able to provide additional points that can turn

around a team's situation when it is behind in the number of points difference that is not so far away in the final minute of the match. In addition to improving the ability to master basic techniques, a varied and appropriate training model is also needed.

Training in the sport of basketball really requires the role of a coach in a team, and a coach must have the ability to convey basketball game material during training. In the training process, if the right method is used, it will improve the player's ability to make correct movements in basketball games. This is because the game of basketball requires many movements when making shots including leg, body, arm and vertical jump movements upwards. In addition, in the training process, the behavior that often arises is in changing habits and skills. These skills need to be trained to obtain abilities and patterns of behavior that are physically and emotionally designed to achieve the desired results. So that the application of effective and efficient training methods in basketball games is needed to improve athlete skills.

Based on the results of initial observations, the results of free throw shooting taken at SMPN 4 Semarang on January 15, 2024 are presented in the following table.

**Table 1.** Free Throw Shooting Results

No.	Name	Number of Free Throws (10x)	Free Throw Curation (%)
1.	Player 1	0/10	0
2.	Player 2	4/10	40
3.	Player 3	2/10	20
4.	Player 4	1/10	10
5.	Player 5	0/10	0
6.	Player 6	0/10	0
7.	Player 7	2/10	20
8.	Player 8	0/10	0
9.	Player 9	2/10	20
10.	Player 10	2/10	20
11.	Player 11	1/10	10
12.	Player 12	0/10	0
Average		0,116%	11,67 %

From the data obtained, it shows the results of the number of Free Throw from several children are low and there is a need for training to improve the Free Throw ability of students. In the field, researchers found that the SMPN 4 Semarang Men's Basketball Team in 2024 was still lacking in shooting, especially free shots. In several basketball matches and training matches held by the SMP N 4 Semarang Men's Basketball Team, free throw shots made by players are still less accurate. Players often have the opportunity to win matches against teams with the same players, but many players cannot take advantage of opportunities because they lack talent in shooting free throws and do not apply special training methods for free throws in every practice. Players can practice free throws with tools that help them learn to make precise shots and measure elevation angles systematically and repeatedly from *close*

to long distances with almost the same direction of the shot. It is expected that players' habits and skills will change as a result of this training method. The purpose of this training method is for players to be able to shoot in the same direction as a form of discipline and skill in making free shots in basketball. (Suryaputri, 2018) . This study aims to determine the effect produced in free throw by using a bar tool based on different elevation angles in extracurricular activities at SMPN 4 Semarang. Shooting success in a basketball game is very important, According to Susanto (2019) When you hit the ball, your arm must be at the right angle so that the ball can dive, and the ideal throwing angle is approximately  $90^\circ$  . However, the angle of the arm is not the determining factor for success unless it is accompanied by other factors such as the height of the incoming ball and the upward bounce that creates speed. According to Jerry Meyer (2008), the phase between preparation and execution is now approximately  $90^\circ$  when measuring the medial angle of the elbow and the angle of elevation towards the ball is  $45^\circ - 60^\circ$  . Therefore, a more precise and powerful shooting technique is required as the distance of the shot progresses. To make these shots, synchronization between the legs, back, shoulders, elbows, and fingers is required, as well as flexibility of the wrists and fingers. Shooting itself is generally divided into two, shooting in the game and shooting in punishment, Kolbi (2021) . In the basic techniques used in shots, according to Prabowo (2016) namely:

- a. One Handed Shoot
- b. Jump Shoot
- c. Three point shoot
- d. A shot near the basket with 2 foot rhythm steps (Lay up)

Free throw basic movements in basketball games are techniques that researchers focus on in this study in accordance with research problems. Thus the shooting technique is only done in the free throw area. Free throw or free shot is a gift given to the player because the player is fouled by the opponent when he is about to execute the ball to the ring. According to the rules, this free throw is done right behind the free throw line. Free throws are made within 5 seconds after the referee hands the ball to the player who made the throw (Angraini et al., 2020) . Taking free shots or free throws has movements or rules that must be carried out, namely the concept of Body, Elbow, Eyes, Follow Through (BEEF). This BEEF movement is able to provide good shot accuracy and parabolic motion when done correctly (Nugroho, 2023) . Some things that can hinder shot accuracy are the lack of variety of exercises given by the coach. Coaches rarely pay attention to free throw training because it is very important for the victory of a team that plays evenly with its opponent. Players have the opportunity to score points without being guarded by making free throws from a position behind the free throw line in a semicircle, Suryaputri (2018) . Because shooting techniques are very important to determine team victory, every player must master this technique.

According to Liana, (2019) research conducted on "the effect of *wall shooting* training with the concept of BEEF on the results of punishment shots (*free throw*) basketball with the *wall shooting* training method with the concept of BEEF" can improve the results of free shots of female basketball players of SMK 1 Ajibarang, so the authors are interested in using a shooting bar to find out whether the shooting bar can be better than the training method using wall shoot or not. According to research conducted by Angraini (2020) who conducted research on "Profile of Free Throw Shooting Skills in Basketball has the following results from 12 athletes, with details of 8 athletes in the Very Good (SB) category with a percentage of 66.67%. For 4 athletes in the Good Category (B) with a percentage of 33%. Based on the results of the study, it can be concluded that the free throw skills of female basketball players of the FIVE Basketball Club of Jambi city are very good. According to research conducted by Kolbi (2021) Regarding the development of shooting tools using a bar, the results of the development carried out are as follows: (1) The results of expert verification reached 79.58% good and feasible, (2) The results of small-scale experimental data reached 72% which included good and feasible, (3) The results of large-scale data testing showed a percentage of 90.68% which included good and feasible

From the research conducted above, the author wants to use the shoot mistar training method. Mistar shoot is one of the tools used to help athletes train their shots and provide good parabolic motion when doing so. Mistar shoot itself is widely trained to athletes both beginners and seniors because it has good results because the shoot bar is an obstacle used to increase the parabolic angle where the shot ball must be able to pass the bar in front of it when shooting. Mistar shoots generally have a distance of 1.5 meters in front of the player who makes the free throw. Mistar shoot also has several training variations such as differences in elevation angles taken from the results of the analysis of shooting athletes both NBA and IBL (Irwati & Himawan, 2020).

The principle of training using a shooting bar is expected that athletes have better shooting accuracy because it is supported by good parabolic motion as well. Because shooting techniques with training variations have advantages and disadvantages, the author uses the shooting bar training method with elevation angles of  $46^{\circ}$ -  $53^{\circ}$  and  $54^{\circ}$ -  $60^{\circ}$ . Therefore, the author is interested in investigating which type of shooting technique contributes to the improvement of free throw shooting results. This training method has two groups, one using a bar with an elevation angle of (A) $45^{\circ}$ - $53^{\circ}$  and (B) $54^{\circ}$ - $60^{\circ}$  with different bar distances adjusted to the throwing angle. This exercise is done to find out which group has a higher free-throw percentage. By repeating this exercise, we will improve our hand movement and throwing sensation. Through this exercise, the author hopes that the players' free throw performance will improve. In addition to using the bar, there are some researchers who use a training model where the wall shoot can also have a very good effect on the success of the players' free throw shooting.

## METHOD

This research uses experimental (quantitative) research methods. The design used in this quantitative research is two group pre-test post-test design. This study has two variables, namely X1 and X2 where X1 is training using a shoot bar with an elevation angle of  $45^{\circ}$  -  $53^{\circ}$  and X2 Exercise using a shoot bar with an elevation angle of  $54^{\circ}$  -  $60^{\circ}$ . The location of this research will be conducted at the SMPN 4 Semarang GOR during the Men's Basketball Team training. According to Sugiyono (2007) The population is less than 100 people, the population will be used as a research sample and therefore the population of this study will be all male basketball players from SMPN 4 Semarang in 2024, totaling 12 people. The sampling method is the total sampling method, which is a sampling method whose sample size matches the population Nanda (2016) . Therefore, the sample taken amounted to 12 basketball players of SMPN 4 Semarang. This study used 1 meeting to conduct a pretest with 8 meetings for training treatment using Mistar Shoot and 1 meeting to conduct a posttest. Data analysis techniques using the T-test The t-test is a statistical method used to test whether there is a significant difference between two groups or populations. The t-test assumes that the data being tested is normally distributed, and indeed has the same variance (Riska Oktaviani & Ruslina Lisda, 2022) . The research tool or equipment used by researchers is Sodikun (1992: 125), namely the shooting penalty test tool. The free shot measurement test has a validity level of 0.86 and a reliability level of 0.75 by firing 10 free shots Evwina (2011).

## RESULTS AND DISCUSSION

**Table 1.** *Pretest and Posttest Results*

45°- 53° angle				54°- 60° angle			
No.	Player Name	Pre	The post	No.	Player Name	Pre	The post
1	Player 1	0	7	7	Player 7	2	7
2	Player 2	4	9	8	Player 8	0	5
3	Player 3	2	7	9	Player 9	2	7
4	Player 4	1	9	10	Player 10	2	8
5	Player 5	0	6	11	Player 11	1	7
6	Player 6	0	6	12	Player 12	0	6

Data from the results of free throw shooting skills used for analysis are the results of pretests and posttests through free throw shooting tests on male basketball extracurricular participants of SMPN 4 Semarang. The data was obtained after giving treatment for 8 meetings using a shoot bar. Mistar shoot itself is a tool that has been used in several previous studies. Mistar Shoot is a training tool that has been used several times and developed by previous researchers (Kolbi, 2021). After obtaining the data from the shooting skills test results, then the normality test, homogeneity test and t-test are carried out. The following is the pretest and posttest data for free throw skills in the table.

**Prerequisite Test**

**Table 1.** Group A Normality Test Results

Group	Kolmogorov-Smirnov			Shapiro-Wilk		
	Stat.	df	Sig.	Stat.	df	Sig.
Pretest B	.302	6	.094	.775	6	.035
Posttest B	.293	6	.117	.915	6	.473

The normality test aims to determine whether each variable is normally distributed or not (Ghozali, 2019) . From the table below, it can be seen that there is a significance value (Sig) before and after testing groups A and B greater than 0.05, so the table can be said to be normal.

**Table 1.1** Group B Normality Test Results

Group	Kolmogorov-Smirnov			Shapiro-Wilk		
	Stat.	Df	Sig.	Stat.	df	Sig.
Pretest A	.267	6	.200*	.809	6	.070
Posttest A	.263	6	.200*	.823	6	.093

**Table 2:** Homogeneity Test Results for Group A

	Levene Statistic	Df1	Df2	Sig.
Based on Mean	.064	1	10	.806
Based on Median	.074	1	10	.792
Based on Median With adjusted df	.074	1	9.204	.792
Based on trimmed mean	.035	1	10	.855

**Table 2.1** Group B Homogeneity Test Results

	Levene Statistic	Df1	Df2	Sig.
Based on Mean	.039	1	10	.847
Based on Median	.179	1	10	.682
Based on Median With adjusted df	.179	1	8.448	.683
Based on trimmed mean	.047	1	10	.833

Homogeneity test is a statistical test used to determine whether the research data groups have the same variance (Arlita et al., 2023) . Based on the results of the t test calculation in tables 2 and 2.1, the sig value of *Based on Mean* can be seen. obtained is greater than groups A and B more than 0.05. So it can be concluded that the results are distributed or homogeneous.

### Data Analysis Test

Paired sample t-test is used to determine if there is a difference between before and after training. Paired sample t-test is used to test the mean difference between two groups of paired data. In this study, a *paired sample t-test* was conducted to test the difference in learning outcomes before and after treatment (Erlangga, 2022) . The results of this test can be ascertained from the before and after tests.

**Table 3.** Group A T Test Results

	Mean	Std. Deviation	Std. error Mean	t	df	Significance	
						One-Side p	Two-Side p
Pre Test - Post Test	-6.16667	1.16905	.47726	-12.921	5	<,001	<,001

**Table 3. 1** Group B T-test results

	Mean	Std. Deviation	Std. error Mean	t	df	Significance	
						One-Side p	Two-Side p
Pre Test - Post Test	-5.50000	.54772	.22361	-24.597	5	<,001	<,001

Based on the data above, it can be concluded that the results of both group A and B t tests have a value of 0.001 less than 0.05, meaning that *shoot bar* training affects the accuracy of free throw shots.

**Table 3.2** T Test Results of Group A Post Test and Group B Post Test

	Significate							
	F	Sig.	t	df	One-side p	Two-side p	Mean Difference	Std. Error Difference
Equal variances assumed	.918	.360	.953	10	.181	.363	.667	.699
Equal variance not assumed			.953	9.308	.182	.364	.667	.699

From the results of the T test table of group A post test data and group B post test data, it can be seen that there is no significant difference between the two groups.

### DISCUSSION

Based on previous research on the effect of training using the Mistar Shoot method shows that this exercise can give positive results on shot accuracy. The training conducted in the previous study



used an elevation angle on the bar of 45 °-60 ° and gave positive results and gave the effect that the results of training using the crossbar shoot method could improve *Free throw* accuracy. Then in the research conducted by the author has an update on the elevation angle. In the training method carried out by the author has a new innovation by providing 2 elevation angles, namely 45 °-52 ° and 53 °-60 ° elevation angles which are used to determine whether there is a significant effect or not on the two training methods. Research with a training method using a *shooting bar* shows that the results of the t test are used to test the results of the data taken on extracurricular basketball at SMPN 4 Semarang.

Based on the results of the Pre-test and Post-test, if the results of the analysis show a significant difference, then training using the shooting bar method has an influence on the accuracy of shooting free throws on the basketball extracurricular men's team at SMPN 4 Semarang. Based on the results of the analysis in the table above, the result reads "there is an effect of crossbar shoot training on shooting free throw accuracy on extracurricular basketball at SMPN 4 Semarang". This means that crossbar shoot training has a significant effect on improving accuracy. Giving training treatment using a crossbar shoot for 8 meetings with 50 shooting attempts per child at each meeting has an effect on increasing accuracy. The t-test results show that there is a significant effect on the training method using a crossbar shoot with two different elevation angles. The comparison between the *crossbar shoot* and *wall shoot* training methods has almost the same results on the effect of *free throw* accuracy in basketball. The limitations in this study are the small number of basketball extracurricular participants and existing infrastructure such as fields and balls so that researchers must use existing infrastructure and must maximize this. Suggestions from the author for further research are to increase the number of athletes and provide a greater number of treatments, or in further research can be applied to male and female teams.

## **CONCLUSION**

Based on the results of the research and discussion that has been described, it can be concluded that there is a significant effect of training using the *crossbar* performed by SMPN 4 Semarang basketball players. The increase in accuracy occurred due to the training carried out nine times a meeting with eight treatments, with an attempt to make *free throws* using a *crossbarshoot* 50 times each player at each meeting. The author's suggestion to the reader is that the reader can increase the number of respondents and the number of meetings or treatments so as to Maximize Training. Then besides that this research can also be applied in various kinds of shooting such as midrange shoot or jump shoot and even three point shoot. Exercises using the shoot bar in addition to being used by the men's basketball team can also be applied in the training program of the women's basketball team.

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