

## The Effect of Wall Shooting Training Based on the BEEF Concept on Basketball Free-Throw Performance Among Students of SMAN 1 Sakra in the 2022/2023 Academic Year

<sup>1</sup>Lalu Muhammad Razif Johan Azhari, <sup>1</sup>Dadang CWK\*, <sup>1</sup>Sri Erny Muliyani

\*Corresponding Author: Dadang CWK, e-mail: [dadang@undikma.ac.id](mailto:dadang@undikma.ac.id)

<sup>1</sup>Physical Education and Health Study Program, Faculty of Sport, Health, and Community Sciences, Universitas Pendidikan Mandalika, Mataram, Indonesia

### Abstract

**Objectives:** This study was conducted based on observations during the 2022 SMANDA Cup basketball competition among senior high schools and vocational schools across East Lombok, where many male players from SMAN 1 Sakra failed to score from free-throw opportunities due to poor shooting accuracy and limited concentration. The study aimed to determine whether wall shooting training based on the BEEF concept had an effect on the free-throw performance of students participating in the basketball extracurricular program at SMAN 1 Sakra.

**Materials and Methods:** This study employed an experimental method using a one-group pretest–posttest design. The sample consisted of 15 male students from SMAN 1 Sakra who participated in the basketball extracurricular program. The participants were selected using purposive sampling. Free-throw performance was measured before and after the intervention, and the data were analyzed using the t-test to determine the significance of the training effect.

**Results:** The results showed that wall shooting training based on the BEEF concept had a significant effect on students' free-throw performance. This was indicated by the t-value, which was higher than the t-table value ( $8.986 > 1.761$ ), and by the significance value of  $p = 0.000$ , which was lower than 0.05. These findings indicate a significant difference between the pretest and posttest scores. In addition, the mean score increased from 2.3333 in the pretest to 5.1333 in the posttest.

**Conclusions:** The findings demonstrate that wall shooting training based on the BEEF concept had a positive and statistically significant effect on the free-throw performance of students participating in the basketball extracurricular program at SMAN 1 Sakra in the 2022/2023 academic year.

**Keywords:** Wall Shooting Training, BEEF Concept, Free-Throw Performance, Basketball, Extracurricular Students

### Introduction

Basketball is a team sport played by two teams of five players, with the primary objective of scoring points by shooting the ball into the opponent's basket while preventing the opposing team from doing the same (Hidayat et al., 2024; Irawati & Aziz, 2025). As a competitive sport, basketball requires players to master a range of fundamental technical skills, including passing, catching, dribbling, and shooting (Abarghoueinejad et al., 2021; Al Meslamani, 2023). Among these basic techniques, shooting is one of the most decisive because it directly determines scoring outcomes



and, ultimately, match results.

In basketball, shooting can generally be classified into field goals and free throws. A field goal refers to any attempt to score during live play, whereas a free throw is awarded following a foul and is taken from a designated position behind the free-throw line under standardized conditions (Pino-Ortega et al., 2021). Although free throws are performed without direct defensive pressure, successful execution still depends heavily on technical precision, concentration, and movement consistency. For this reason, free throws are often considered a crucial component of performance, as they can significantly influence the outcome of a game (Abdul Jabbar & Felicia, 2015; Adipat et al., 2021).

Accurate free-throw shooting requires coordinated body mechanics involving the lower limbs, trunk, shoulders, elbows, wrists, and fingers (Abarghouejad et al., 2021; Anatca & Yilmaz, 2019). Proper shooting performance also depends on body balance, controlled movement execution, and an effective follow-through. If these biomechanical elements are not properly integrated, shooting accuracy may decrease. Therefore, free-throw proficiency cannot be separated from systematic and well-structured training. Players need repeated and focused practice to develop accuracy, consistency, and confidence in shooting performance.

Observations conducted during the 2022 SMANDA Cup competition among senior high schools and vocational schools in East Lombok revealed that many male basketball players from SMAN 1 Sakra failed to convert free-throw opportunities into points. Several problems were identified, including poor shooting accuracy, limited concentration, and technical errors across the preparation, execution, and follow-through phases. In addition, free-throw practice was reportedly given little emphasis during training sessions and was often placed only as a minor component at the end of practice. This condition suggests that the players had not yet received a specific and structured training method designed to improve free-throw performance.

One training method that may address this issue is wall shooting practice combined with the BEEF concept (Ambardi et al., 2023; Pino-Ortega et al., 2021). Wall shooting is a drill that emphasizes hand placement behind the ball, elbow positioning, release mechanics, follow-through, and receiving the ball back in a proper shooting position. Meanwhile, the BEEF concept—Balance, Eyes, Elbow, and Follow-Through—provides a clear and practical framework for teaching correct shooting mechanics. The integration of wall shooting with the BEEF concept may therefore offer a simple, efficient, and focused approach to improving free-throw technique, concentration, and shooting accuracy through repeated and progressive practice.

Despite its potential, this training approach had not previously been implemented in the boys' basketball extracurricular program at SMAN 1 Sakra. Given the observed performance problems and the lack of specialized free-throw training, it is important to examine whether this method can effectively improve students' free-throw outcomes. Therefore, this study was conducted to investigate the effect of wall shooting training based on the BEEF concept on the free-throw performance of students participating in the basketball extracurricular program at SMAN 1 Sakra in the 2022/2023 academic year.



## Materials And Methods

### Study Design

This study employed an experimental research design. Experimental research is used to examine a cause-and-effect relationship between variables through the application of a specific treatment under controlled conditions. In this study, the research design applied was a one-group pretest–posttest design. This design did not involve a control group, and the subjects were not randomly assigned. However, the use of both pretest and posttest measurements made it possible to identify changes in performance following the treatment.

### Study Participants

The sample in this study consisted of 15 male students who participated in the basketball extracurricular program at SMAN 1 Sakra. The participants were selected using purposive sampling (Sugiyono, 2012). The inclusion criteria were as follows: (1) being an active participant in the basketball extracurricular program at SMAN 1 Sakra, and (2) being male.

### Study Organization

The study was conducted by administering an initial measurement (pretest) before the treatment and a final measurement (posttest) after the treatment. The intervention consisted of wall shooting training based on the BEEF concept, which was designed to improve students' free-throw performance. The BEEF concept emphasizes four main components of shooting technique, namely Balance, Eyes, Elbow, and Follow-Through. Through this training method, students were expected to develop better shooting mechanics, concentration, and accuracy in performing free throws.

### Instrument

The instrument used in this study was a free-throw shooting skill test, which was administered during both the pretest and posttest. The test procedure began with a warm-up session, after which each participant performed 10 free-throw attempts. A score of 1 was awarded for each successful shot that entered the basket, while a score of 0 was given for each unsuccessful attempt. The final score was the total number of successful shots made out of 10 attempts.

### Statistical Analysis

The data obtained from the pretest and posttest were analyzed to determine the effect of wall shooting training based on the BEEF concept on students' free-throw performance. Descriptive and inferential statistical analyses were used to compare the scores before and after the treatment. Hypothesis testing was conducted to identify whether the improvement in free-throw performance was statistically significant.

## Results

The results of this study were obtained from the pretest and posttest scores of students' free-throw performance following wall shooting training based on the BEEF concept. The data were analyzed using SPSS through descriptive statistics, normality testing, homogeneity testing, and paired-samples t-test analysis.

### Descriptive Statistics

The descriptive analysis showed an increase in students' free-throw scores after the treatment. The mean pretest score was 2.3333, whereas the mean posttest score increased to 5.1333. This finding indicates an improvement in free-throw performance following the implementation of wall shooting training based on the BEEF concept.

**Table 1.** Descriptive Statistics of Pretest and Posttest Scores

| Variable | Mean   | N  | Std. Deviation | Std. Error Mean |
|----------|--------|----|----------------|-----------------|
| Pretest  | 2.3333 | 15 | 0.97590        | 0.25198         |
| Posttest | 5.1333 | 15 | 1.35576        | 0.35006         |

### Normality Test

A normality test was conducted using the One-Sample Kolmogorov–Smirnov test to determine whether the residual data were normally distributed. The analysis showed a significance value of 0.969, which was higher than 0.05. Therefore, the data were considered to be normally distributed.

**Table 2.** Results of the Normality Test

| Variable                | N  | Kolmogorov–Smirnov Z | Asymp. Sig. (2-tailed) | Category |
|-------------------------|----|----------------------|------------------------|----------|
| Unstandardized Residual | 15 | 0.492                | 0.969                  | Normal   |

### Homogeneity Test

The homogeneity test was performed using Levene's test. The analysis produced a significance value of 0.363, which was greater than 0.05. This result indicates that the data variance was homogeneous.

**Table 3.** Results of the Homogeneity Test

| Variable | Levene Statistic | df1 | df2 | Sig.  | Category    |
|----------|------------------|-----|-----|-------|-------------|
| Posttest | 1.250            | 2   | 5   | 0.363 | Homogeneous |

### Hypothesis Testing

Hypothesis testing was conducted using the paired-samples t-test to compare students' free-throw scores before and after the treatment. The analysis showed that the mean difference between pretest and posttest scores was -2.80000, with a t-value of -8.984,  $df = 14$ , and a significance value of 0.000. Since the p-value was lower than 0.05, there was a statistically significant difference between the pretest and posttest scores. These findings indicate that wall shooting training based on the BEEF concept had a significant effect on students' free-throw performance.

**Table 4.** Results of the Paired-Samples t-Test

| Comparison       | Mean Difference | Std. Deviation | Std. Error Mean | t      | df | Sig. (2-tailed) |
|------------------|-----------------|----------------|-----------------|--------|----|-----------------|
| Pretest–Posttest | -2.80000        | 1.20712        | 0.31168         | -8.984 | 14 | 0.000           |

Overall, the findings demonstrate that students' free-throw performance improved significantly after receiving wall shooting training based on the BEEF concept. The increase in the mean score from 2.3333 at pretest to 5.1333 at posttest confirms the effectiveness of the treatment in improving free-throw outcomes among male students participating in the basketball extracurricular program at SMAN 1 Sakra.

### Discussion

The findings of this study showed that wall shooting training based on the BEEF concept had a positive and statistically significant effect on students' free-throw performance. This was evident from the increase in the mean score from 2.3333 in the pretest to 5.1333 in the posttest, as well as from the paired-samples t-test result, which indicated a significant difference between the two measurements ( $p = 0.000$ ). These results suggest that the training program was effective in improving free-throw outcomes among male students participating in the basketball extracurricular program at SMAN 1 Sakra.

One possible explanation for this improvement is that wall shooting training provided repeated and focused practice on essential shooting mechanics (Riyanto & Kuswoyo, 2019). As described in the study background, many students previously experienced difficulties in free-throw execution due to poor accuracy, limited concentration, and technical errors during the preparation, release, and follow-through phases. In this context, the wall shooting drill appears to have offered a more structured way to reinforce proper shooting movement patterns through repetition and immediate



correction.

The effectiveness of the intervention may also be related to the application of the BEEF concept, which emphasizes Balance, Eyes, Elbow, and Follow-Through as key components of successful shooting technique (Suherman et al., 2018). These elements provide a simple but practical framework for helping students understand correct shooting mechanics. When combined with wall shooting practice, the BEEF concept likely supported better body control, improved concentration on the target, more consistent elbow alignment, and a more effective follow-through. Collectively, these technical improvements may explain the significant increase in students' free-throw scores after the intervention.

The present findings are also consistent with the practical demands of basketball training, where free throws often play a decisive role in match outcomes. Although free throws are taken without direct defensive pressure, successful execution still requires technical consistency and mental focus. The problem identified in the SMANDA Cup competition, where players frequently failed to convert free-throw opportunities into points, highlights the importance of a specific and systematic training method. The results of this study therefore indicate that wall shooting training based on the BEEF concept can serve as an effective response to that practical problem.

From a methodological perspective, the prerequisite tests further support the validity of the statistical findings. The normality test indicated that the residual data were normally distributed, and the homogeneity test showed that the variance was homogeneous. These results confirm that the data met the assumptions required for parametric analysis and strengthen the interpretation that the observed improvement was statistically reliable.

Despite these positive findings, several limitations should be acknowledged. This study used a one-group pretest-posttest design without a control group, which limits the ability to attribute the improvement exclusively to the intervention. In addition, the sample size was relatively small and restricted to one extracurricular group, which may limit the generalizability of the findings. Future studies are therefore encouraged to involve larger samples, include comparison groups, and examine the effectiveness of similar training approaches in different playing levels or school contexts (Arjol-Serrano et al., 2021; Díez et al., 2021).

Overall, the results of this study demonstrate that wall shooting training based on the BEEF concept is a practical and effective approach for improving free-throw performance. Beyond its statistical effectiveness, the method also offers a focused training structure that may help students develop better shooting technique, concentration, and scoring consistency in basketball.

## Conclusions

The findings of this study indicate that wall shooting training based on the BEEF concept had a positive and statistically significant effect on the free-throw performance of students participating in the basketball extracurricular program at SMAN 1 Sakra. This conclusion is supported by the increase in the mean score from 2.3333 in the pretest to 5.1333 in the posttest, as well as the paired-samples t-test result showing a significant difference between the two measurements ( $t = -8.984$ ;  $p = 0.000$ ). These results suggest that the training method was effective in improving students' free-throw outcomes.

Overall, wall shooting training based on the BEEF concept may be considered a practical and effective training alternative for improving free-throw performance in school basketball extracurricular programs. In addition to enhancing shooting results, this method also appears to support better technical consistency and concentration during free-throw execution.



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