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Impacts of Training Methods and Motivation on Free Throw Ability in Women's Basketball

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ABSTRACT

This study investigated how block and random training methods, along with motivation training, affect the free throw ability of the female basketball team at SMA Negeri 1 Kunto Darussalam. Quasi-experimental design (2 x 2 factorial) was employed, involving 32 female players. Training motivation was measured using a questionnaire, while free throw ability was assessed using a standardized test. Data analysis primarily utilized two-way ANOVA, with normality assessed using the Shapiro-Wilk test. Findings of the study revealed that the random training method significantly enhanced free throw shooting ability compared to the block method, particularly among players with high motivation. In contrast, the block training method was proved to be more effective for participants with low motivation levels. The results emphasize the necessity for coaches to tailor training programs according to individual motivation levels to maximize their free throw performance. By aligning training strategies with the motivational state of athletes, coaches can foster more effective skill development in basketball.

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INTRODUCTION

Free throw shooting is a critical skill in basketball, significantly influencing overall game performance. This skill often becomes the deciding factor in closely contested matches, where points can be secured without oppositions. In Indonesia, basketball has rapidly gained popularity, emerging as a prominent sport fostering achievement and physical health. As a developing country, Indonesia is making strides in various fields, including sports and physical education. Law No. 3 of 2005, Article 1, Paragraph 17 defines achievement as the result of maximum effort made by athletes or teams in sport activities. As a team sport, basketball requires effective collaborations among players, each striving to score points while preventing opponents from doing the same (Bezmylov et al., 2024). Basketball involves two teams of five players each (Anıl et al., 2024). Mastery of fundamental techniques in basketball is essential for achieving effective and efficient movements on the court.

Free throw shooting, in particular, requires a blend of technique, mental focus, and consistency. Players must develop a reliable shooting form, which includes proper stance, alignment, and follow-through. The psychological aspect is also crucial because players often face pressures during free throws, especially in critical game moments. Understanding how different training methods and levels of motivation impact free throw performance is vital for enhancing the skills of the players and overall success in basketball.

The development of basketball in Indonesia has grown rapidly, with numerous professional and amateur clubs established across the country. Various competitions, including championships for elementary to high school students and university leagues, showcase this sport increasing popularity. Among these competitions, the Indonesian Basketball League (IBL) stands out, featuring intense matchups among clubs at both district and national levels. As the sport evolves and competition intensifies, the significance of fundamental skills like free throw shooting becomes paramount. Mastering free throws not only contributes to individual player performance but also impacts the team success in critical moments of these high-stakes games. In this context, developing strong free throw ability is essential for players aiming to excel in Indonesia burgeoning basketball scene.

These various competitions will naturally bring out potential talents in the field of national basketball. In an era like today, all teams, both men's and women's, believe that evaluation of all basic technical abilities is useful for a team success to become better (Coronado-Maldonado & Benítez-Márquez, 2023). Basic basketball techniques are needed because teams whose players do not master basic basketball techniques will lose the ball more often (Prasetya et al., 2023).

In basketball, each player must master the basic skills and techniques of basketball, such as dribbling, passing, shooting, and rebounding (Ji, 2023). Basketball requires complicated skills and teamworks (Zheng & Qu, 2021). For this reason, in this sport, a player must master basic techniques as an absolute requirement to become a basketball player. Without ignoring other basic techniques, shooting is an often used basic technique and is more important than other basic techniques because the aim of the basketball game itself is to put the ball into the opponent basket through the results of shooting. One of the most important basic techniques in basketball and must be mastered by every player is shooting, as a way for basketball players to score points, because the winning team is the team that can score more points and hold the opponent from scoring points. Shooting in basketball is divided into two types, namely outside shots and inside shots (Radenković et al., 2023). Outside shots consist of jump shots, set shots, and free throws.

Shooting is a well-known and popular basic basketball skill to gain score. Therefore, shooting is a final attempt to get points by putting the ball into the opponent basket. In general, there are six basic shooting techniques, namely one-hand set shoot, free throw, jump shoot, shot from under the ring (under the basket), hook shot, and lay-up shoot (flying shot). Based on these types of shots, one type of shot that must be taken in every basketball match is the free throw, which is made when a foul occurs and the opponent is about to score a point. Free throw shots are taken from behind the penalty line with the approximate distance to the ring of 4.70 meters. A free throw is an opportunity given to a player to score one point, unguarded, from a position behind the free-throw line and inside the semi-circle (Hardhina, 2022). A team victory is sometimes determined by its success in making free throws. The more the successes made in making free throws, the more points the team gets. For this reason, since free throw shots determine the victory or the defeat in a match, practicing free throws in every practice is neccessary (Candra, 2020).

Free throw shooting ability must be mastered by every basketball player because shooting is the basic element for scoring. Therefore, free throw ability needs to be developed with suitable training methods so that, in the future, it will be easier for players to do it and get the victory. Training methods are generally used to obtain dexterity or skills from what has been learned (Ekanayake et al., 2022). According to journals, a number of training methods can be used to improve free throw shooting ability, including the block practice training method and random practice training method. Through these training methods, the coach can direct the athletes on what they will do in the training session. Block practice is a training method that requires athletes to concentrate on performing one aspect or type of technique repeatedly until the athlete can perform the technique correctly in one session. Meanwhile, random practice is a training method that includes several aspects or types of techniques in one training session and is carried out randomly for subsequent training sessions. Block practice focuses solely on mastering a single technique, while random practice incorporates multiple techniques and is conducted in a random order during each session (Doewes et al., 2022).

In addition to training methods, mental factors, particularly motivation to practice, are crucial. Motivation encourages players to engage in trainings with diligence and enthusiasm. It is also a vital component in enhancing free throw shooting ability in basketball. As stated earlier, mastering free throw shooting ability is fundamental for players to easily score points by getting the ball into the basket. However, it is not as simple as it seems, as executing a free throw involves components that require careful mastery. Through dedicated practices, this research explored the significance of the block practice training method on free throw shooting ability, the impact of the random practice training method on shooting performance, and, most importantly, the influence of training motivation on shooting proficiency on a woman basketball team at a school. This school provided good basketball coaching as a platform to develop the abilities and skills of the students. However, the achievements or wins obtained by this school women's basketball team could be said to be inconsistent.

This basketball team was formed in 2018 when they participated in their first basketball tournament at the Honda Student Basketball League (HSBL) Ujungbatu series. This team immediately lost in the initial match. In the following year, 2019, this team took part in the tournament again and made it to the semi-finals. The highest achievement ever achieved by the women's basketball team of SMA Negeri 1 Kunto Darussalam was becoming champions in the Honda Student Basketball League (HSBL) Ujungbatu series. After the Covid-19 pandemic passed, in early 2022, the SMA Negeri 1 Kunto Darussalam 1 basketball team took

part in a more prestigious basketball event, namely the Development Basketball League (DBL) Riau Series, in Pekanbaru. In this event, the women's basketball team from SMA Negeri 1 Kunto Darussalam surprisingly suffered a crushing defeat against the women's basketball team from SMA Darma Yudha Pekanbaru with a score of 83-13, which made the team immediately fall in the initial match.

Research observations and interviews with the women's basketball team at SMA Negeri 1 Kunto Darussalam indicated that the primary cause of their declining performance was the frequent failure to convert free throws during competitions. This could be attributed to a lack of appropriate training methods grounded in established theories. Specifically, free throw shooting was not consistently and systematically incorporated into their training regimen, thus the players only practiced free throws in competitive situations. To address this issue, the SMA Negeri 1 Kunto Darussalam women's basketball team was introduced to block and random practice methods to improve their free throw ability. Furthermore, low training motivation among the students also impeded their progress, with frequent absences from the scheduled training sessions. Observations revealed that many players only demonstrated enthusiasm for practice when a match was imminent. Meanwhile, a consistent repetitive practice is crucial for developing automaticity in shooting skills. Therefore, this research aimed to investigate how the implementation of structured theoretically-based training methods, combined with strategies to enhance player motivation, could significantly improve free throw performance within the team.

This study focused on the influence of training methods and motivation on free-throw ability in basketball. Various studies have shown that these two factors play an important role in improving athlete skills, especially in team sports such as basketball. The training method used in sports can affect athlete performance results. There are two main approaches to training, namely the block method and the random method. The block method involves practicing one technique repeatedly until the athlete masters in-depth skills and increases self-confidence through repetitions. The advantages of this method include faster mastery of techniques and ease of error analysis. The disadvantages of the block method are limitations in adapting to match situations and potential boredoms due to monotonous trainings.

The random method includes a variety of techniques in one training session. The random method involves introducing various techniques in one training session alternately, which is more similar to real game conditions and helps athletes adapt to multiple situations. The advantages of the random method include increased adaptability and higher motivation due to variations in trainings. However, mastery of techniques may be slower and it is not easy to assess progress in certain skills. Therefore, many coaches choose to combine these two methods, using the block method for basic mastery and the random method for match readiness. The random method is more effective in increasing free throw success because it encourages athletes to adapt their skills in more dynamic situations, similar to match conditions (Clark et al., 2025). However, still, the block and random training methods are two different approaches to developing the athlete skills.

Motivation is also a crucial factor in skill development. Intrinsic and extrinsic motivation can affect athlete participation and effort in training (Almagro et al., 2020). High motivation tends to increase athlete involvement, which has a positive impact on their technical skills. Highly motivated students are more consistent in training, thereby improving their overall technical abilities (Alsalamah & Callinan, 2021).

Furthermore, the interaction between training methods and motivation is also important to understand. Research by (Wicaksono et al., 2022) showed that a combination of training methods appropriate to the athlete motivation level can result in significant skill improvements. In this context, coaches need to adapt training methods to the motivational characteristics of athletes to maximize results. This suggests that training approaches should be individualized and adaptive to meet the needs and potential of each athlete. Overall, the existing literature supports the importance of selecting appropriate training methods and understanding athlete motivation in the development of sport skills. This study aimed to explore further the effects of block and random training methods and motivation on free throw ability to provide deeper insights for coaches and training program developers.

METHODS

This research employed a 2×2 factorial experimental design to explore the influence of training methods and training motivation on free throw shooting skill. This design allowed the researchers to examine two independent variables, training methods (block practice and random practice) and levels of training motivation (high and low), and their interaction effects on the dependent variable, free throw performance. By utilizing this approach, the study could effectively assess how different training methods and motivation levels impact athlete skills, providing a comprehensive understanding of their effects.

The research population consisted of 60 female basketball team members at SMA Negeri 1 Kunto Darussalam. Using the Verducci technique, by categorizing individuals based on their training motivation levels, 32 participants were selected as samples. This technique was justified as it would allow for a more targeted analysis of motivation influences on training outcomes. Specifically, it helped ensure that the samples included individuals with varying motivational levels, which were essential for examining the interaction between motivation and training methods.

The two sample groups—high and low training motivation groups—received treatments according to their respective training methods, the block practice and random practice. The research was conducted over 16 sessions on the basketball court at SMA Negeri 1 Kunto Darussalam, with a frequency of three times per week.

To assess free throw shooting ability, a shooting test and a training motivation questionnaire were administered to gauge participant motivation levels. The data collected were analyzed using a two-way analysis of variance (ANOVA) statistical test, with Tukey's follow-up test applied to examine significant differences further. Before conducting ANOVA, normality and homogeneity tests were performed to ensure that the data met the necessary assumptions for valid analysis. Normality tests check if the data distribution approximates a normal distribution, while homogeneity tests assess whether the variances across groups are similar. Both tests are crucial as they validate the applicability of ANOVA, ensuring that the results are reliable and that any conclusions drawn from the data are scientifically sound.

The statistical hypothesis tested the mean differences between the groups receiving block practice and random practice training methods, considering the interaction between training methods and motivation levels. Additionally, the hypothesis evaluated the mean differences between high and low-training motivation groups. All research steps were designed to yield relevant information regarding the effect of training methods and motivation in enhancing free throw shooting ability among the women's basketball team at SMA Negeri 1 Kunto Darussalam. The research design is as follows:

Training Method (A) Training Motivation (B)	Block Practice (A ₁)	Random Practice (A ₂)
High (B ₁)	A_1B_1	A_2B_1
Low (B ₂)	A_1B_2	A_2B_2

Table 1. Treatment Design by Level 2 x 2

RESULTS

This research used a two-way analysis of variance with interaction (ANOVA) and continued with a test of differences in the means of two treatment groups. Requirements involved random samples, normal distributions, and homogeneity of variance, tested by using Levene's and Bartlett's tests. Normality testing was carried out on eight groups of data using a significance level of $\alpha = 0.05$. The normality test results conducted using the Shapiro-Wilk test. The results showed that the standardized residual for free throw shooting had a W statistic of 0.963, with a significance value (Sig.) 0.5. Since the significance value was greater than 0.05, the data followed a normal distribution. A homogeneity test using Levene's test was performed following the normality test to assess the equality of variances across different groups. This test was conducted on three sets, including (a) A1 and A2, (b) B1 and B2, and (c) the four groups of cells A1B1, A1B2, A2B1, and A2B2. The homogeneity test results indicated acceptance of the null hypothesis (H0) with a significance value of 0.977 (Sig. > 0.05), confirming that the variances in the four data groups were homogeneous at a significance level of $\alpha = 0.05$.

The two-way ANOVA analysis revealed significant results for both the training method and training motivation variables, with significance values (Sig.) of 0.015 and 0.001, respectively. Both values were below the 0.05 threshold, indicating that there were statistically significant differences in the free throw shooting performance of the women's basketball team at SMA Negeri 1 Kunto Darussalam based on the type of training and the interaction between training methods and motivation levels.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
Training	11.281	1	11.281	6.668	0,015	
Training Motivation	1.531	1	1.531	0,905	0,350	
* Motivation	22.781	1	22.781	13.464	0,001	

Table 2. ANOVA Results

Table 2 presents the results of the two-way ANOVA conducted to assess the effects of training methods and training motivation on free throw shooting ability. The analysis revealed significant differences in shooting performance based on the type of training, as indicated by the training variable (F = 6.668, p = 0.015). This suggests that the method of training, block practice or random practice, notably impacts the athlete ability to successfully execute free throws.

In addition to the training methods, the analysis also examined the role of training motivation. The results showed that the main effect of training motivation alone was not statistically significant (F = 0.905, p = 0.350), indicating that motivation by itself did not lead to meaningful differences in shooting performance when considered independently.

However, the interaction effect of motivation was significant (F = 13.464, p = 0.001). This finding suggests that the effectiveness of the training methods is influenced by the level of motivation, highlighting the importance of considering both factors together. Next, further tests were carried out using the Tukey Test.

Group	Std Error	Sig -	95% Confidence Interval	
	Stu. Error	Sig.	Lower Bound	Upper Bound
A1B1 with A2B1	0,650	0,001	1.0993	4.6507
A1B2 with A2B2	0,650	0,023	-1.2757	2.2757

Table 3. Tukey Test Calculation Results

Table 3 summarizes the Tukey test results, investigating the differences in free throw shooting ability among groups defined by training methods and motivation levels. The analysis revealed significant differences between specific combinations. A1B1 showed a highly significant difference (p = 0.001) compared to A2B1, while A1B2 versus A2B2 also indicated a significant difference (p = 0.023). These findings provide valuable insights into the efficacy of various training methods when paired with different motivational levels. However, to enhance their practical utility, coaches and athletes can use these results to inform training strategies. Coaches should tailor programs that align effective training methods with athlete motivation levels and incorporate techniques, such as goal-setting and positive reinforcement. Athletes, in turn, should assess their motivation levels regularly and communicate with coaches to ensure that the training approaches are engaging and effective. By integrating these insights into practice, both coaches and athletes can optimize shooting performance and achieve better outcomes in competition.

The first research hypothesis is supported by the finding that the free throw shooting ability of female students using the random practice training method (A1B1) was significantly higher than those using the block practice method (A2B1), with a significance value of 0.001 (Sig. < 0.05). This highlights the advantage of the random practice approach in enhancing shooting performance, affirming that variability in practice conditions can better prepare athletes for real-game scenarios. The second hypothesis, which posited an interaction between the training method and training motivation, was also accepted. The significance value of 0.001 (Sig. < 0.05) indicated that the effectiveness of training methods was influenced by the level of motivation, confirming that motivation plays a crucial role in determining the outcomes of different training strategies.

There are practical implications for sport training programs according to findings. The significant differences highlighted by the ANOVA suggest that not all training methods yield the same results. Coaches should evaluate which training methods (block or random practice) are most effective for their team and consider incorporating both based on the athlete needs. The interaction between training methods and motivation signifies that athlete responses to training can vary based on their motivation levels. Programs should be designed to adapt training methods according to individual motivation levels. For example, athletes with high motivation might excel with more dynamic and varied training (random practice), while those with lower motivation may benefit from a structured repetitive practice (block practice). Given the strong influence of motivation on performance, it is crucial to implement strategies that boost athlete intrinsic and extrinsic motivation. This could include setting goals, providing feedback, and creating a supportive team environment that fosters engagement and enthusiasm. In addition, continuous assessments of athlete performance and motivation

levels will allow coaches to make informed adjustments to training programs. Regular feedback sessions can help identify what works best for each athlete, ensuring that the training remains effective and relevant. By integrating these findings into training programs, coaches can develop more effective strategies that enhance free throw shooting abilities and overall team performance. This tailored approach not only improves skill acquisition but also fosters a more motivated and engaged team environment.

DISCUSSION

This research investigated the improvement on free throw shooting ability by applying block and random practices, with motivation as a moderating factor. The significant differences observed in performance based on the interaction of variables underscored the complex dynamics between training methods and athlete motivation levels. The results of this study indicated that using random practice methods resulted in better free throw shooting ability than block practice methods, especially in players with high motivation levels. This finding aligns with Clark et al. (2025) research, which found that random practice methods could improve free throw success by encouraging athletes to adapt to more dynamic situations similar to match conditions. The use of variation in trainings could help athletes develop more responsive skills and respond to challenges on the field.

In addition, research by Almagro et al. (2020) confirmed that motivation could play a vital role in athlete engagement in trainings. Highly motivated athletes tend to be more consistent in trainings, positively impacting their technical skills. In this context, our study found a significant interaction between training methods and motivation, where athletes undergoing trainings with random methods showed more substantial improvements in skill when they were highly motivated. This aligns with a study by Wicaksono et al. (2022), stating that a combination of training methods appropriate to the athlete motivation level could result in significant skill improvements.

This view is also reinforced by research from Alsalamah & Callinan (2021), showing that intrinsic and extrinsic motivation could affect athlete participations and efforts in training. Motivated athletes tend to put more efforts into their trainings, contributing to better technical skill development.

Overall, this study emphasizes the importance of choosing a training method that suits the athlete motivation level. Coaches must consider the individual motivation level before designing a training program. By adjusting the training approach and providing variations in the training experience, coaches can maximize the player potential in developing free throw ability as a crucial component in basketball.

Previous studies had established that block practice, characterized by repetitive executions of the same skill, facilitated initial learning and skill acquisition. This method is particularly effective for developing foundational skills, allowing athletes to focus on mastering specific techniques. Conversely, random practice, which involves varying conditions under the practiced skills, has enhanced the retention and transfer of skills, preparing athletes for real-game scenarios (Cao et al., 2022).

Motivation significantly influences how athletes engage with training methods, potentially amplifying or diminishing their effectiveness. For example, highly motivated athletes may thrive under random practice conditions, as this method maintains engagement and presents challenges that stimulate skill development. This is consistent with literature that suggests that intrinsic motivation enhances learning outcomes, as motivated athletes are likely to invest efforts and persist through challenges (Deci & Ryan, 2018). In contrast, less motivated individuals may find block practice more beneficial for building confidence through

repetitions. The structured nature of block practice can provide a sense of accomplishment, which is crucial for athletes who may struggle with motivation (Foster et al., 2021). This finding resonates with previous research highlighting the importance of confidence in skill execution, particularly in high-pressure situations such as free throw shooting (Miller et al., 2019).

Furthermore, the results suggest that the effectiveness of training methods depends not solely on the methods themselves but also on the athlete motivational levels. Coaches should consider individual differences in motivation when designing training programs. For example, highly motivated athletes may benefit from dynamic and varied training environments, which challenge their abilities and enhance engagement (Liu & Wiersma, 2021). In contrast, those with lower motivation might require more structured and repetitive practice to foster confidence and skill mastery.

Additionally, future research could explore different types of motivation, intrinsic versus extrinsic motivations. Understanding how these motivational drivers interact with specific training methods may provide deeper insights into why certain athletes respond better to varying practice conditions (Vallerand, 2020).

In conclusion, this research highlights the critical interplay between training methods and motivation in enhancing free-throw shooting ability. Coaches can optimize training outcomes by tailoring training strategies to align with athlete motivational levels. Implementing strategies that enhance motivation, such as goal-setting and positive reinforcements, can further improve engagement and performance. This comprehensive approach enhances skill acquisitions and fosters a more motivated and cohesive team environment, ultimately leading to athlete performance on the court.

CONCLUSION

This study highlights the significant impact of training methods and motivation on the free throw shooting ability of the women's basketball team at SMA Negeri 1 Kunto Darussalam. The findings demonstrated that the random practice training method was particularly effective for students with high motivation, resulting in notable improvements in shooting performance. In contrast, block practice was beneficial for athletes with lower motivation levels, as it allowed for skill development even when their engagements were not optimal. By providing opportunities for repetitive practice, block training helped these students build confidence and foundational skills. Acknowledging the dedicated participants of this study, whose commitments and efforts contributed to these insights, reinforces the importance of tailoring training approaches aligning with the motivational levels of athletes. This personalized strategy not only enhances individual performance but also fosters a more effective and engaging training environment for the entire team.

Furthermore, the research demonstrates an interaction between training methods and motivation, underscoring that effective coaching strategies must consider both aspects. By adapting training techniques based on individual motivational levels, coaches can optimize performance outcomes. This approach not only fosters skill enhancement but also encourages a more engaging and supportive training environment, which is crucial for the overall development of young athletes.

In conclusion, this study provides valuable recommendations for coaches and trainers in designing effective basketball training programs. By implementing a combination of block and random practice methods while considering the athlete motivation, trainers can significantly enhance the free throw shooting ability of their players. As basketball continues to grow in

popularity, these findings will aid in developing successful training regimens that prepare athletes for competitive success.

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AUTHORS' NOTE

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