

The Effect of The Pettlep Method on Achievement Motivation of Female Teenage Basketball Athletes

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ABSTRACT

This study aims to determine the effect of the PETTLEP method on the achievement motivation of female adolescent basketball athletes. The study used a quasi-experimental design with a pretest-posttest control group model. The study subjects were 30 athletes divided into two groups, namely the experimental group and the control group, each with 15 athletes. The instrument used was an achievement motivation questionnaire with a Cronbach's Alpha reliability of 0.873. The PETTLEP intervention was given 3 times per week for 4 weeks, with a duration of 10–15 minutes per session. Data analysis was performed using the Shapiro-Wilk normality test, the Wilcoxon Signed Rank Test, and the Mann-Whitney U test. The results showed that the achievement motivation scores in the experimental group increased significantly from pretest to posttest, while the control group showed no significant increase. Comparison of posttest scores between the experimental and control groups also showed a significant difference. Thus, the PETTLEP method increases the achievement motivation of female adolescent basketball athletes.

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Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh metode PETTLEP terhadap motivasi berprestasi atlet bola basket remaja putri. Penelitian menggunakan desain kuasi eksperimen dengan model pretest-posttest control group. Subjek penelitian berjumlah 30 atlet yang dibagi menjadi dua kelompok, yaitu kelompok eksperimen dan kelompok kontrol, masing-masing 15 atlet. Instrumen yang digunakan adalah kuesioner motivasi berprestasi dengan reliabilitas Cronbach's Alpha sebesar 0,873. Intervensi PETTLEP diberikan sebanyak 3 kali per minggu selama 4 minggu, dengan durasi 10–15 menit setiap sesi. Analisis data dilakukan menggunakan uji normalitas Shapiro-Wilk, uji Wilcoxon Signed Rank Test, dan uji Mann-Whitney U. Hasil penelitian menunjukkan bahwa skor motivasi berprestasi pada kelompok eksperimen meningkat secara signifikan dari pretest ke posttest, sedangkan kelompok kontrol tidak menunjukkan peningkatan yang berarti. Perbandingan skor posttest antara kelompok eksperimen dan kelompok kontrol juga menunjukkan perbedaan yang signifikan. Dengan demikian, metode PETTLEP berpengaruh terhadap peningkatan motivasi berprestasi atlet bola basket remaja putri.

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INTRODUCTION

In the world of sports, achievement motivation is a key psychological factor that significantly determines an athlete's success, particularly for adolescent athletes who are still developing (Arifin &

Wahyudi, 2021). Female adolescent basketball athletes often face various psychological challenges, such as competitive pressure, anxiety, low self-confidence, and negative body imagery, which can undermine achievement motivation (Ilyas, 2025). Motivation, however, is the foundation that drives behavior, encourages maximum effort, and helps athletes overcome obstacles to achieving success (Taylor et al., 2020). This situation highlights the urgent need for effective psychological interventions to enhance achievement motivation, one of which is through an imagery approach based on the PETTTLEP model, which integrates physical, environmental, task, time, learning, emotional, and perspective aspects to mimic real-world conditions.

Several previous studies have shown that imagery training, particularly PETTTLEP-based training, plays a significant role in improving athletes' mental readiness, self-efficacy, and self-confidence (Morone et al., 2022). Fang et al. (2023) confirmed that the PETTTLEP approach, based on the principle of functional equivalence, can have a greater impact than conventional imagery. Other findings also indicate that the more PETTTLEP components are implemented, the greater the impact on athlete performance (Morone et al., 2022). Furthermore, achievement motivation is influenced by psychological and social factors, such as environmental support, self-confidence, and the athlete's emotional state (Putranto & Putra, 2025). Previous research has also revealed that athletes with positive body image tend to have higher intrinsic motivation and are better able to cope with competitive pressure (Ramadhani et al., 2025).

However, most research still focuses on the influence of PETTTLEP imagery on technical performance and self-efficacy, and has not specifically examined its impact on achievement motivation, particularly in female adolescent basketball athletes in Indonesia. Therefore, the novelty of this study is to examine the effectiveness of PETTTLEP imagery in enhancing achievement motivation and comparing it with traditional imagery. Furthermore, this study develops variations of the PETTTLEP intervention using audio and audiovisual media to enhance its suitability for real-world training conditions, thus hopefully providing a more contextual and applicable approach.

This study analyzes the effect of the PETTTLEP-based imagery method on achievement motivation among female adolescent basketball athletes and compares its effectiveness with traditional imagery methods. This research is expected to enrich the study of sports psychology, particularly regarding imagery-based mental interventions, and provide practical recommendations for coaches and sports trainers in developing effective psychological training programs (Liu et al., 2025). Furthermore, the results are expected to serve as a basis for developing more comprehensive youth athlete development strategies, particularly in enhancing achievement motivation and mental readiness for competition (Guo et al., 2025).

METHODS

This study used a quantitative, quasi-experimental design. This method was used to test the

effect of imagery training on Physical, Environment, Task, Timing, Learning, Emotion, and Perspective on the achievement motivation of female adolescent basketball athletes (Lu & Xu, 2023). The research design used was a pretest–posttest control-group design, in which the participants were divided into two groups: the experimental and the control groups (Abraham & Supriyati, 2022). The experimental group received imagery training based on Physical, Environment, Task, Timing, Learning, Emotion, and Perspective, while the control group received no special treatment and only conventional training.

The sampling technique used in this study was purposive sampling, with 30 female basketball athletes who actively participated in extracurricular basketball activities at Kemala Bhayangkari Middle School as the subjects. The subjects were then divided into two groups: 15 athletes in the experimental group and 15 athletes in the control group. The instrument used in this study was the Sport Motivation Scale (SMS), which has been validated and widely used to assess various dimensions of motivation in sport (Walczak & Tomczak, 2019). This instrument was used during the pretest and posttest to assess changes in athletes' levels of achievement motivation.

The imagery training treatment based on Physical, Environment, Task, Timing, Learning, Emotion, and Perspective was carried out for 4 weeks, comprising 12 sessions and a training frequency of three times a week. Each training session lasted 10-15 minutes. The imagery implementation integrated seven main components: Physical, Environment, Task, Timing, Learning, Emotion, and Perspective, which were adjusted to the conditions and situations of the basketball game.

After all treatments were administered, a posttest was conducted using the same instrument as the pretest to measure changes in athletes' achievement motivation. The data were then analyzed using a paired-samples t-test to assess differences before and after treatment within each group, and an independent-samples t-test to determine the differences between the experimental and control groups (Rahmani et al., 2025). In addition, an effect size calculation was performed to determine the magnitude of imagery training based on Physical, Environment, Task, Timing, Learning, Emotion, and Perspective.

Data obtained from the Sport Motivation Scale (SMS) questionnaire were analyzed to determine the average (mean), standard deviation, maximum, and minimum values. This analysis aims to provide an overview of the initial and final conditions of athlete motivation in each group. The research prerequisite test, also known as the classical assumption test or analysis requirements test, is the initial step taken before conducting hypothesis testing. This stage is very important in quantitative research that uses parametric statistical analysis because it aims to ensure that the data obtained meet the requirements for analysis using the appropriate method. Broadly speaking, the research prerequisite test includes several tests: a normality test, a homogeneity test, a T-test (Hypothesis), a Wilcoxon test on the control and experimental groups, and a Mann-Whitney test.

RESULT AND DISCUSSION

Table 1. Normality Test for Pretest and Posttest

Group	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest A (Control)	.925	15	.232
Post-test A (Control)	.569	15	.000
Pretest B (Experiment)	.844	15	.014
Post-test B (Experiment)	.512	15	.000

The results of the Shapiro-Wilk normality test showed that the pretest data in the control group were normally distributed with a significance value of .232. In contrast, the posttest data of the control group, the pretest of the experimental group, and the posttest of the experimental group had a significance value of less than 0.05, so the three data sets were not normally distributed. Based on these results, the hypothesis analysis was continued using nonparametric tests, namely the Wilcoxon Signed Rank Test to see the differences in pretest and posttest within the group, and the Mann-Whitney U to see the differences between the control and experimental groups.

Table 2. Homogeneity Test

	Levene Statistic	df1	df2	Sig
Based on Mean	.458	1	28	.504
Based on Median	.414	1	28	.525
Based on Median and with adjusted df	.414	1	24.332	.526
Based on trimmed mean	.252	1	28	.620

Based on the results of the homogeneity test in Table 2 using Levene's Test, the F value was 0.458, with a significance value (Sig.) of 0.504. Because the significance value is greater than 0.05 ($0.504 > 0.05$), it can be concluded that the variances between the control class and the experimental class are homogeneous. Thus, both groups have the same level of diversity and meet the assumptions for conducting an Independent-Samples t-Test, under the assumption of equal variances.

Table 3. Description of Posttest and Experimental Control Group Data

Group	N	Mean	Std. Deviation	Std. Mean
Post-test Control Group	15	66.93	7.995	2.064
Post-test Experiment Group	15	137.80	5.102	1.317

The average posttest score of the control group was 66.93 with a standard deviation of 7.995, while the experimental group had an average of 137.80 with a standard deviation of 5.102. These data

indicate that the achievement motivation score of the experimental group was higher than that of the control group after the treatment was given.

Table 4. T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Equal variances assumed		.458	.504	-28.939	28
Equal variances not assumed				-28.939	23.780

Tables 3 and 4 show two groups, and an Independent Samples Test (ISP), which displays the test statistics for two independent samples. In the Independent Samples Test section, there is Levene's Test for Equality of Variances, which assesses the assumption of homogeneity of variance using the F and Sig. columns. If the Sig. (Levene's) is less than 0.05, then we use the result from the "Equal variances not assumed" row; otherwise, use "Equal variances assumed." In the relevant rows, we look at the t-value, df, and Sig. (2-tailed) To determine the significance of the difference between the two groups. Furthermore, there is a Mean Difference, which shows the mean difference between the two groups, and a 95% Confidence Interval, which provides the estimated range of that difference. In general, if the p-value is less than 0.05, there is a significant difference between the two groups on the tested variable; the direction of the difference is determined by the sign of the t-value and the direction of the Mean Difference.

Table 5. Wilcoxon Test

		N	Mean Rank		Sum of Rank
Post-test-Control Post-test-Control	Negative Ranks	8 ^a	7.94		63.50
	Positive Ranks	6 ^b	6.92		41.50
	Ties	1 ^c			
	Total	15			
Post-test-Experiment – Pretest-Experiment	Negative Ranks	0 ^a	.00	.00	
	Positive Ranks	15 ^b	8.00	120.00	
	Ties	0 ^c			
	Total	15			

Based on the results of the Wilcoxon test in Table 5, the Signed Ranks Test on the comparison of Posttest control and Pretest control scores, it was found that there were 8 students who experienced a decrease in grades (negative ranks) with a mean rank of 7.94 and a total ranking of 63.50. Conversely, 6 students experienced an increase in grades (positive ranks) with a mean rank of 6.92 and a total ranking of 41.50. In addition, 1 student who had the same grade between the pretest and posttest resulted

in a tie. The total sample analyzed was 15 students.

In the Experimental Group, the Positive Ranks category shows no data pairs where the post-experiment is higher than the post-test, so the N value is 0, the mean rank is not listed, and the sum of ranks is also 0. Furthermore, the Negative Ranks category records 9 pairs where the post-experiment is lower than the post-test, with a mean rank of 8.00 and a sum of ranks reaching 120, which is indicated by a superscript a to indicate the post-experiment is greater than the post-test in that context. The overall N total is 15, with the sum of ranks remaining 120, while the footnote explains that a refers to the post-experiment being greater, b to equality, and c to the post-experiment being less.

Table 6. Z-Score Statistical Test

	Post-test_Kontrol - Pretest_Kontrol	Post-test_Experiment - Pretest_Experiment
Z	-.693 ^b	-3.410 ^b
Asymp. Sig. (2-tailed)	.488	.001

The Wilcoxon test results in the control group showed a Z value of -0.693 with a significance of 0.488, indicating no significant difference between the pretest and posttest in the control group. In the experimental group, the Z value was -3.410 with a significance of 0.001, indicating a significant difference between the pretest and posttest after PETTLEP treatment.

Table 7. Mann-Whitney Test between Group of Posttest

Group	N	Mean Rank	Sum of Ranks
Post-test-Control	15	8.00	120.00
Post-test-Experiment	15	23.00	345
Total	30		

Based on Table 7 of the Mann-Whitney Test, the Posttest, there are two groups, namely the Control Posttest and the Experimental Posttest, each consisting of 15 students (a total of 30 students). The average rank value in the control class is 8.00 with a sum of ranks of 120.00, while the experimental class has an average rank of 23.00 with a sum of ranks of 345.00. This shows that in terms of ranking, the posttest value for the experimental class is higher than that of the control class.

Table 8. Mann-Whitney Statistical Test

Test Statistics^a		Nilai
Mann-Whitney U	.000	
Wilcoxon W	120.000	
Z	-4.831	
Asymp. Sig. (2-tailed)	.000	
Exact Sig. [2*(1-tailed Sig.)]	.000 ^b	

The Mann-Whitney U test results on the posttest scores showed a U value of 0.000, a Z value of -4.831, and a significance level of 0.000. These results indicate that there was a significant difference between the control and experimental groups in the posttest scores, with the experimental group obtaining a higher score.

Discussions

Based on the results of data analysis, this study shows that the PETTTLEP imagery method has a very significant effect on increasing the achievement motivation among female adolescent basketball athletes. The results showed that in the experimental group, the average achievement motivation score increased from 52.40 in the pretest to 137.80 in the posttest. Thus, there was an increase of 85.40 points after treatment with PETTTLEP imagery training. In contrast, in the control group that received no special treatment, the average score actually decreased from 70.20 to 66.93, by a decrease of 3.27 points. The difference in improvement between the experimental and control groups shows that the PETTTLEP imagery method makes a real contribution to increasing the achievement motivation of female adolescent basketball athletes. The results of this study indicate that providing mental training through the PETTTLEP imagery method can help athletes increase their internal drive to achieve success.

Athletes who received treatment showed greater positive behavioral changes, such as increased enthusiasm for training, a desire to perform better, and higher confidence in their abilities when facing matches. Meanwhile, the control group, which only participated in routine training without psychological intervention, did not show a significant increase in achievement motivation. This condition indicates that physical and technical training alone is insufficient to support optimal development of athlete motivation, especially in female adolescent athletes who are still in the emotional and psychological development stage (Candra et al., 2025). Theoretically, the results of this study can be explained by Holmes (2001) functional equivalence theory. This theory holds that imagery will be more effective when carried out in conditions that resemble the athlete's real-life experience during competition. The PETTTLEP method has seven main components: Physical, Environment, Task, Timing, Learning, Emotion, and Perspective, which are designed to ensure that imagery training can provide a realistic mental experience (Smith et al., 2007). In this study, athletes imagined the entire basketball match from the court atmosphere, game movements, competitive pressure, emotions during the match, and the desired success target (Smith et al., 2007). The repeated imagery process helps athletes build mental readiness and strengthen confidence in their abilities. An individual's belief in their abilities influences their level of effort, persistence, and motivation in achieving goals (Siegle et al., 2017). Athletes with high self-efficacy tend to be more confident in facing challenges and are better able to persist in competitive situations (Setiawan et al., 2020). Through PETTTLEP imagery, athletes gain positive mental experiences that help shape their perception of success before a match. This leads athletes to be more optimistic, focused, and to have a stronger drive to achieve (Guo et al., 2025). The results of the study showed that the PETTTLEP method significantly increased achievement motivation

in female adolescent basketball athletes. In the experimental group, achievement motivation scores increased significantly from pretest to posttest, while the control group showed no significant improvement. These findings confirm that imagery-based psychological interventions are more effective than routine training without special treatment in increasing achievement motivation.

These results align with the PETTTLEP approach, which emphasizes the involvement of physical, environmental, task, time, learning, emotional, and perspective aspects to make the imagery process more closely resemble real-world competition conditions. When athletes imagine competition situations more realistically, they tend to be more mentally prepared, more focused, and more confident in facing the demands of training and competition. This can strengthen the internal drive to achieve. The results of this study align with those of Smith et al. (2007), who stated that PETTTLEP imagery significantly improves sports performance compared to traditional imagery. This study explains that PETTTLEP-based imagery is more effective because it simultaneously involves physical, emotional, and competitive-environmental elements, creating a more realistic mental experience. The PETTTLEP method can improve athletes' concentration, mental readiness, and emotional control in competitive situations (Lu & Xu, 2023). Imagery positively influences the intrinsic motivation of adolescent athletes (Mariani et al., 2019). Athletes who practice imagery have clearer goals, greater self-confidence, and the ability to manage competitive pressure more effectively (Williams & Cumming, 2016). These findings support the results of this study, which showed that female adolescent basketball athletes who received PETTTLEP imagery training demonstrated a greater increase in achievement motivation than the control group.

The increased motivation in the experimental group can also be explained by the mechanisms of strengthening self-confidence and engaging in positive emotions during imagery training. Athletes who trained with the PETTTLEP approach experienced more vivid and relevant mental experiences related to the competition situation, thus encouraging them to perform better. In contrast, the control group, which only underwent regular training, did not receive the additional psychological stimulus that could strengthen their motivation to achieve. In basketball, achievement motivation is crucial because the game demands physical, technical, tactical, and mental readiness simultaneously (Lestari & Dewi, 2022). Highly motivated athletes are more disciplined in training, exhibit greater fighting spirit, and are able to maintain performance in stressful match situations (Swann et al., 2017). Psychological factors such as motivation, self-confidence, and emotional control significantly influence an athlete's success in competitive sports (Effendi, 2016). Therefore, enhancing achievement motivation through the PETTTLEP imagery method is an important psychological intervention in the athlete development process (Alexander et al., 2019).

The decrease in achievement motivation scores in the control group indicates that without mental intervention, athletes tend to experience decreased enthusiasm and motivation for training and matches. This condition can be influenced by training fatigue, competitive pressure, or other

psychological factors (Markati et al., 2019). This is particularly relevant for female adolescent athletes, who are still developing their self-identity and tend to be more sensitive to social pressure and environmental evaluation (Brewer et al., 2017). Therefore, mental training such as PETTTLEP imagery is needed to help athletes maintain emotional stability and increase psychological readiness to face competition (Lu & Xu, 2023).

The Mann-Whitney U test results showed a significant difference between the posttest scores of the experimental and control groups. This indicates that the improvement in the experimental group was not merely a temporary change, but significantly different from the group that did not receive the intervention. Therefore, PETTTLEP can be considered an effective form of psychological intervention to support the development of young female athletes, particularly in terms of achievement motivation. In addition to increasing achievement motivation, the PETTTLEP imagery method also provides other benefits for athletes, such as improving focus, reducing competition anxiety, and helping athletes control emotions in competitive situations (Li et al., 2024). Athletes who practice imagery are better prepared to face competition conditions because they have a mental picture of the situation they will face (Janjigian, 2024). Thus, athletes become calmer, more confident, and able to perform at a higher level. Based on research results, supporting theories, and prior research, the PETTTLEP imagery method has been shown to be effective in increasing achievement motivation in female youth basketball athletes (Lubis et al., 2025). This method helps athletes build mental readiness, increase self-confidence, and strengthen their internal drive to achieve through a realistic and structured imagery process (Bedir & Erhan, 2021). Therefore, the PETTTLEP imagery method can be used as an alternative psychological intervention in female youth basketball athlete development programs to support optimal performance and mental readiness.

Although this study demonstrated significant results, several limitations warrant consideration. The sample size was relatively small, involving only 30 athletes from a single school, making the results difficult to generalize. Furthermore, the treatment duration was relatively short, making it impossible to fully describe the long-term impact of the PETTTLEP imagery method on achievement motivation (Rhodes, 2020). Achievement motivation was also measured using a self-report questionnaire, which relies heavily on the respondents' honesty and psychological state at the time of completion. However, interpretation of the results requires consideration of the study's limitations, such as the relatively small sample size, short treatment duration, and the use of a self-report instrument that relies on respondent honesty. Therefore, further research is needed involving larger samples, longer intervention durations, and additional measurements of aspects of sports performance to more comprehensively understand the effects of PETTTLEP.

CONCLUSION

Based on the research and data analysis conducted, it can be concluded that the PETTTLEP

imagery method has a significant effect on the achievement motivation of female teenage basketball athletes. This is indicated by an increase in the average achievement motivation score in the experimental group from 52.40 at the pretest to 137.80 at the posttest, with a difference of 85.40 points. In contrast, in the control group that did not receive the PETTLEP imagery treatment, the average score decreased from 70.20 to 66.93, a decrease of 3.27 points. The difference in results between the experimental and control groups shows that the increase in achievement motivation was not due to chance factors but rather the result of the treatment, the PETTLEP imagery method. Thus, it can be concluded that the PETTLEP method is effective in increasing the achievement motivation of female teenage basketball athletes.

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