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**EFFECT OF SPECIFIC SKILL TRAINING WITH AND WITHOUT  
SPORTS IMAGERY TRAINING ON SKILL PERFORMANCE  
VARIABLES AMONG COLLEGE MEN BASKETBALL PLAYERS**

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**ABSTRACT**

**Background:** Basketball is a multidimensional sport demanding high levels of technical proficiency. Skill performance variables such as dribbling, passing accuracy, and shooting accuracy are fundamental to competitive success. Sports imagery training has emerged as a potent psychological tool to augment physical skill acquisition. This study examines the effect of specific skill training with and without sports imagery on dribbling, passing accuracy, and shooting accuracy among college men basketball players.

**Objectives:** To determine whether the combination of specific skill training and sports imagery training produces significantly greater improvements in dribbling, passing accuracy, and shooting accuracy compared to skill training alone and a control condition.

**Methods:** Sixty male college basketball players (aged 18–24) were randomly assigned to three groups: Group A-Specific Skill Training (n=20), Group B-Specific Skill Training with Sports Imagery Training (n=20), and Group C- Control (n=20). The intervention lasted 12 weeks with five sessions per week. Pre-test and post-test data were collected for dribbling speed (seconds), passing accuracy (%), and shooting accuracy (/20). Data were analyzed using one-way ANOVA followed by Scheffé post hoc test at p<0.05 level of significance.

**Results:** Significant improvements were observed in all three skill variables across Groups A and B. Group B (Skill + Imagery) demonstrated superior gains compared to Group A and the Control Group (p<0.001). The Scheffé post hoc test confirmed significant pairwise

differences between all group combinations for dribbling, passing, and shooting accuracy. The Control Group showed no significant improvement.

**Conclusion:** Integrating sports imagery training with specific skill training significantly enhances dribbling speed, passing accuracy, and shooting accuracy in college men basketball players over a 12-week intervention. Coaches and practitioners should consider structured imagery protocols as an essential complement to physical skill development.

**KEYWORDS:** Basketball, specific skill training, sports imagery, dribbling, passing accuracy, shooting accuracy, mental training, motor learning.

## 1. INTRODUCTION

Basketball is a dynamic, fast-paced team sport that demands the seamless integration of technical, tactical, and psychological competencies. Among the most critical technical aspects are dribbling efficiency, passing accuracy, and shooting precision skills that directly influence team performance and individual contribution during competitive play (Hoffman & Maresh, 2000). While physical practice constitutes the cornerstone of skill development, research in sport psychology has consistently demonstrated that mental training techniques, particularly sports imagery, can significantly augment motor learning and performance outcomes (Weinberg, 2008).

Sports imagery involves the vivid cognitive simulation of athletic movements and scenarios in the absence of overt physical performance (Vealey & Greenleaf, 2010). It activates similar neural pathways to those engaged during actual motor execution, thereby reinforcing motor programs and enhancing neuromuscular coordination (Munzert, Lorey & Zentgraf, 2009). The PETTLEP model (Holmes & Collins, 2001), which emphasises functional equivalence between imagery and actual movement, has provided a theoretical foundation for understanding how structured imagery can replicate and complement physical training.

Previous research has established the efficacy of imagery in improving basketball-specific skills. Alvarez (2019) demonstrated that PETTLEP imagery enhanced free-throw shooting consistency, while Cumming and Ramsey (2009) highlighted imagery's role in motor skill consolidation across a range of sports contexts. However, comparatively fewer studies have adopted a comprehensive multi-skill approach simultaneously examining dribbling, passing, and shooting using an extended 12-week training protocol. The present study addresses this gap by investigating the differential effects of specific skill training alone versus its

combination with structured sports imagery training on three core basketball skill performance variables.

## **2. METHODS**

### **2.1 Participants**

A total of 60 male college basketball players, aged 18 to 24 years, were recruited from various collegiate institutions in Coimbatore, Tamil Nadu, India. Eligibility criteria included at least one year of competitive playing experience, absence of current musculoskeletal injury, and no prior formal training in sports imagery. Written informed consent was obtained from all participants.

### **2.2 Research Design**

A randomised controlled experimental design with pre-test/post-test structure was adopted. Participants were randomly assigned to one of three groups:

- Group A – Specific Skill Training only (n = 20)
- Group B – Specific Skill Training with Sports Imagery Training (n = 20)
- Group C – Control Group (n = 20, regular physical education classes only)

### **2.3 Intervention Protocol**

The 12-week intervention was conducted five days per week. Groups A and B participated in structured 60-minute skill training sessions targeting dribbling technique, passing drills, and shooting exercises under progressive overload principles. Group B additionally completed a 15-minute guided sports imagery session immediately following physical training. Imagery scripts were developed in accordance with established guidelines (Martin, Moritz & Hall, 1999), incorporating motivational general-mastery and cognitive specific imagery functions. The Control Group continued their regular physical education schedule with no additional intervention.

### **2.4 Outcome Measures**

Three skill performance variables were assessed at pre-test and post-test: (1) Dribbling Speed standardised obstacle course (seconds); (2) Passing Accuracy wall-target test (% of 20 attempts); and (3) Shooting Accuracy field goal attempts from designated court positions (/20).

## 2.5 Statistical Analysis

Data were analysed using SPSS (Version 27.0). One-way ANOVA assessed between-group differences in post-test scores, followed by Scheffé post hoc test for pairwise comparisons. Significance was set at  $p < 0.05$ .

## 3. RESULTS

Table 1 presents pre-test and post-test descriptive statistics. Table 2 presents the ANOVA summary, and Table 3 presents Scheffé post hoc comparisons. Figure 1 provides a consolidated graphical representation of pre-test vs post-test comparisons, post-test group differences, and ANOVA F-values.

**Table 1: Pre-test and Post-test Performance Metrics across Groups.**

Variable	Group	Pre-Test Mean $\pm$ SD	Post-Test Mean $\pm$ SD	Mean Diff.	t-value	Sig.
Dribbling (sec)	Skill Training (A)	18.64 $\pm$ 1.42	14.32 $\pm$ 1.18	4.32	14.76	0.001*
	Skill + Imagery (B)	18.71 $\pm$ 1.38	12.85 $\pm$ 1.10	5.86	19.42	0.001*
	Control (C)	18.58 $\pm$ 1.45	18.10 $\pm$ 1.40	0.48	1.32	NS
Passing Accuracy (%)	Skill Training (A)	54.20 $\pm$ 4.62	66.45 $\pm$ 4.10	12.25	13.88	0.001*
	Skill + Imagery (B)	53.85 $\pm$ 4.74	72.30 $\pm$ 3.88	18.45	20.14	0.001*
	Control (C)	54.10 $\pm$ 4.58	55.20 $\pm$ 4.62	1.10	1.18	NS
Shooting Accuracy (/20)	Skill Training (A)	10.80 $\pm$ 1.52	14.65 $\pm$ 1.38	3.85	12.44	0.001*
	Skill + Imagery (B)	10.75 $\pm$ 1.48	16.90 $\pm$ 1.22	6.15	21.38	0.001*
	Control (C)	10.90 $\pm$ 1.55	11.20 $\pm$ 1.50	0.30	0.95	NS

\* $p < 0.05$  (significant); NS = Not Significant

**Table 2: One-Way ANOVA Summary for Post-Test Skill Performance Variables.**

Variable	Source	SS	df	MS	F	p	Significance
Dribbling	Between Groups	184.62	2	92.31	58.74	<0.001	Significant*
	Within Groups	89.14	57	1.57			
	Total	273.76	59				

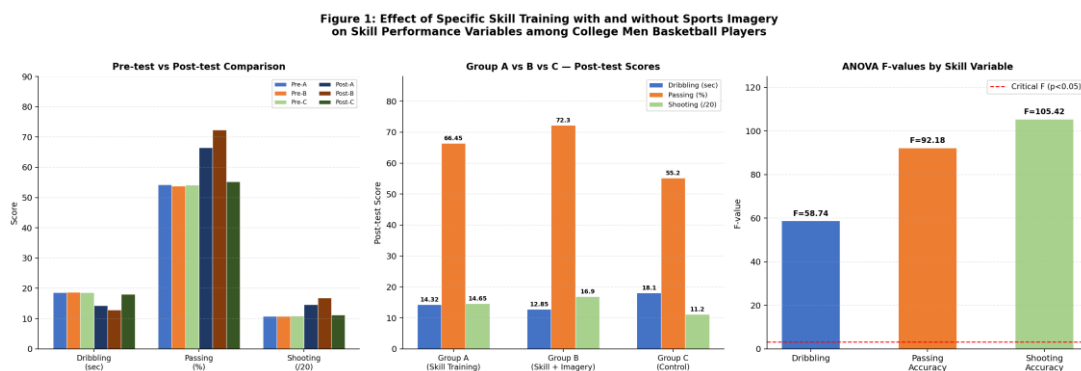
Passing	Between Groups	3246.80	2	1623.40	92.18	<0.001	Significant*
	Within Groups	1004.20	57	17.62			
	Total	4251.00	59				
Shooting	Between Groups	462.13	2	231.07	105.42	<0.001	Significant*
	Within Groups	124.95	57	2.19			
	Total	587.08	59				

\*Significant at  $p < 0.05$

**Table 3: Scheffé Post Hoc Test for Pairwise Group Comparisons.**

Variable	Comparison	Mean Diff.	p-value	Significance
Dribbling (sec)	A vs B	1.47	0.012	Significant* (B < A)
	A vs C	3.78	<0.001	Significant* (A < C)
	B vs C	5.25	<0.001	Significant* (B < C)
Passing Accuracy (%)	A vs B	5.85	0.003	Significant* (B > A)
	A vs C	11.25	<0.001	Significant* (A > C)
	B vs C	17.10	<0.001	Significant* (B > C)
Shooting Accuracy (/20)	A vs B	2.25	0.008	Significant* (B > A)
	A vs C	3.45	<0.001	Significant* (A > C)
	B vs C	5.70	<0.001	Significant* (B > C)

\*Significant at  $p < 0.05$ ; A = Skill Training; B = Skill + Imagery; C = Control



**Figure 1: Effect of Specific Skill Training with and without Sports Imagery on Skill Performance Variables.**

The ANOVA results revealed highly significant between-group differences for all three skill variables: dribbling ( $F = 58.74, p < 0.001$ ), passing accuracy ( $F = 92.18, p < 0.001$ ), and shooting accuracy ( $F = 105.42, p < 0.001$ ). As illustrated in Figure 1, Group B demonstrated

the greatest pre-to-post improvements across all variables. Scheffé post hoc analysis confirmed significant pairwise differences between all group combinations. The Control Group showed negligible changes.

#### **4. DISCUSSION**

The findings provide compelling evidence that combining specific skill training with sports imagery training yields superior gains in basketball skill performance variables compared to skill training alone or no intervention. The superiority of Group B supports the functional equivalence hypothesis (Holmes & Collins, 2001), which posits that motor imagery activates overlapping neural substrates to those engaged during physical execution, thereby reinforcing motor programmes.

The significantly superior dribbling improvements in Group B align with prior research demonstrating imagery's role in automating movement sequences (Guillot & Collet, 2008). The marked improvements in passing accuracy for Group B further support imagery's contribution to spatial accuracy and anticipatory processing. The most pronounced effect was observed for shooting accuracy, where Group B achieved 16.90/20 compared to Group A's 14.65/20, corroborating Alvarez (2019) and extending findings to a broader shooting accuracy context.

The moderate but significant improvement in Group A relative to the Control Group confirms that specific skill training alone has tangible benefits, though these are substantially amplified when imagery is incorporated. The absence of significant improvement in the Control Group underscores that structured, deliberate training interventions are necessary to drive meaningful skill gains (Ericsson, Krampe & Tesch-Romer, 1993).

#### **5. CONCLUSION**

This study demonstrates that specific skill training combined with sports imagery training significantly enhances dribbling speed, passing accuracy, and shooting accuracy in college men basketball players over a 12-week intervention. Group B outperformed both Group A and the Control Group on all three performance variables. These findings advocate for the systematic inclusion of structured mental rehearsal protocols within basketball training programmes.

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