

Visualization and Game Intelligence On Soccer Players

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ABSTRACT

The present study aimed to examine the impact on visualization and game intelligence on soccer players. **Methodology:** To achieve the purpose of the study forty five (N=45) college football players were selected as subjects from Affiliated Colleges of Bharathiar University, Coimbatore, Tamilnadu. The subject's ages ranged between 17 to 25 years. The selected forty five subjects were divided into three equal groups consisting of fifteen (n=15) each, Experimental Group I which underwent visualization Training, Experimental Group II which underwent game intelligence Training and Control Group III. The subjects in the control group will not undergo any sort of training except their routine work. The experimental group was treated with visualization and game intelligence training for four alternative days per week for a period of twelve weeks. **Result:** Data collected from the three groups before and after the training period was statistically examined for significant by using dependent 't' test. Further, the group means gains recorded by the various groups in the pre-test and post-test was tested for significance by applying paired 't' test was applied to determine whether the training programs produced any significantly improvements in selected variables after 12 weeks of training. The level of significance was fixed at 0.05. The results indicated that experimental groups (visualization and game intelligence) improved significantly at the end of twelve weeks of training. **Conclusion:** The experimental groups were showed highly significant when compared with control group. It was concluded that the visualization Training and game intelligence Training achieves an optimum level of physical fitness, skill performance variables and playing ability of soccer players over twelve weeks of training.

Keywords: visualization Training, game intelligence Training, Physical Fitness, Skill performance and Playing Ability.

1. INTRODUCTION

Soccer: Game in which two teams of 11 players, using any part of their bodies except their hands and arms, try to maneuver the ball into the opposing team's goal. Only the goalkeeper is permitted to handle the ball and may do so only within the penalty area surrounding the goal. The team that scores more goals wins. Football is the world's most popular ball game in numbers of participants and spectators.

Visualization training: Visualization training in football is the process of imagining successful performance of skills, tactics, or scenarios in the mind such as passing, shooting, defending, or scoring to reinforce neural pathways and prepare the brain for real play. Visualization training in football (also called mental imagery or mental rehearsal) is a psychological training technique used by players and

coaches to enhance performance, focus, and confidence without physical practice. It involves mentally simulating game situations, skills, or strategies to improve execution on the field.

Game intelligence training: Game intelligence in football is the cognitive ability to perceive situations, interpret patterns, and make optimal decisions in real time based on the constantly changing dynamics of the match. It involves combining perception, understanding, anticipation, and execution. Game intelligence in football refers to a player's ability to read, understand, and anticipate the game — making smart decisions quickly and effectively during play. It's often what separates good players from truly great ones.

Physical fitness: is the ability to perform daily activities with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits. It encompasses various components like cardio respiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. Achieving and maintaining physical fitness involves regular physical activity, a healthy diet, and sufficient rest.

Skill performance: encompasses the effective application of learned techniques in response to game situations, crucial for both scoring and defending. Key skills include passing, ball control, dribbling, and shooting, which collectively influence team coordination, confidence, and momentum. Physical fitness, tactical awareness, and mental fortitude also play vital roles in overall performance.

Playing ability: encompasses a wide range of skills, including technical prowess, tactical awareness, physical fitness, and strategic thinking. Key skills include ball control, passing, shooting, dribbling, and tactical understanding. Additionally, physical attributes like speed, agility, endurance, strength, and flexibility are crucial for success.

2. METHODOLOGY

The purpose of this study was to find out the “visualization and game intelligence on soccer players” in Bharathiar University, Coimbatore, Tamilnadu. The forty five (N=45) subjects were randomly selected from the Bharathiar University. It was decided to select trained students because untrained may get negative effects. So the investigator selected as subjects and they were allowed to participate in their routine training. Since the subjects were susceptible for changes, due to growth and daily activities during the period of training, N=45 students from Affiliated Colleges of Bharathiar University. Were selected with their willingness. The subjects were age between 17-25 years. The study was formulated as pre and post-test random group design, in which forty-five students were divided into three equal groups. The experimental group, in which the group I was (n=15) performed the visualization training, group II was (n=15) performed game intelligence training and group III was (n=15) acted as a control group did not underwent any specific, except their routine activities. The experimental groups underwent visualization training and game intelligence training for four alternative days per week for a period of twelve weeks. Data collected from the three groups before and after the training period were statistically tested for significance using dependent ‘t’ test. Further, the group means gains recorded by the various groups in the pre-test and post-test was tested for significance by applying paired ‘t’ test and ANOVA was applied to determine whether the training programs produced any significantly different improvements in selected variables after 12 weeks of training. at the 0.05 level of significance.

Criterion Measures: It is evaluated skill performance variables that were chosen as the criterion measures for this study for testing.

TABLE-I

CRITERION MEASURES

S. NO	CRITERION VARIABLES	TEST ITEMS	UNIT OF MEASUREMENTS
SKILL PERFORMANCE VARIABLES			
	Speed	50 mts dash	In seconds
	Cardiovascular endurance	Copper's 12 min run / walk test	In meters
	Dribbling	Mor Christian Soccer Test	In Seconds
	Overall playing ability	Subjective rating	In point

3. RESULT:

TABLE -II

't'- RATIO FOR FOOTBALL PLAYERS ON PASSING, SHOOTING, DRIBBLING AND OVERALL PLAYING ABILITY

Variable	Groups	Pre mean	Post mean	M. D	SEM	t
Speed	Experimental group I	8.62	8.46	0.16	0.03	4.60*
	Experimental group II	8.56	8.46	0.10	0.04	2.52*
	Control group	8.58	8.69	0.11	0.09	1.33
Cardiovascular endurance	Experimental group I	2407.67	2562.33	154.67	35.23	4.39*
	Experimental group II	2585.67	2668.40	82.73	25.71	3.21*
	Control group	2602.00	2595.33	6.67	19.88	0.33
Dribbling	Experimental group I	14.25	14.11	0.14	0.04	3.35*
	Experimental group II	14.18	13.79	0.39	0.07	5.21*
	Control groups	14.22	14.30	0.08	0.06	1.26
Overall playing ability	Experimental group I	4.93	6.06	1.13	0.29	3.90*
	Experimental group II	4.80	6.26	1.47	0.31	4.79*
	Control groups	4.73	4.33	0.40	0.25	1.57

(Significance at 0.05 level of confidence for df of 2 and 42, is 2.14)

The mean standard deviation and t-value were calculated for each outcomes measure as shown in Table-II. The result shows that the pre-test and post-test mean values of the Experimental group I (visualization training) for Speed (8.62 & 8.46), Cardiovascular endurance (2407.67 & 2562.33),

Dribbling (14.25 & 14.11) and Overall playing ability (4.93 & 6.06), Experimental group II (game intelligence training) for Speed (8.56 & 8.46), Cardiovascular endurance (2585.67 & 2668.40), Dribbling (14.18 & 13.79) and Overall playing ability (4.80 & 6.26) respectively. In comparison, the Control group had mean values for Speed (8.58 & 8.69), Cardiovascular endurance (2602.00 & 2595.33), Dribbling (14.22 & 14.30) and Overall playing ability (4.73 & 4.33) respectively. The obtained dependent t-test value of Experimental group I on Speed (**4.60***), Cardiovascular endurance (**4.39***), Dribbling (**3.35***) and Overall playing ability (**3.90***), Experimental group II on Speed (**2.52***), Cardiovascular endurance (**3.21***), Dribbling (**5.21***) and Overall playing ability (**4.79***) and Control group on Speed (**1.33**), Cardiovascular endurance (**0.33**), Dribbling (**1.26**) and Overall playing ability (**1.57**) respectively. The table value required for a significant, with 42 and 2 degrees of freedom at a 0.05 level of confidence, was 2.14.

Since the obtained 't' test value for the Experimental group I and Experimental group II was greater than the table value (2.14), the results clearly indicated that the Speed, Cardiovascular endurance, Dribbling and Overall playing ability significantly improved due to the impact of visualization training and game intelligence training among soccer players.

The table II, shows that visualization training significantly improved in Speed and Cardiovascular endurance then the game intelligence training and control group and the game intelligence training significantly improved in Dribbling and Overall playing ability then the visualization training and control group.

FIGURE-I

BAR DIAGRAM SHOWING THE 't' VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON SPEED AMONG SOCCER PLAYERS

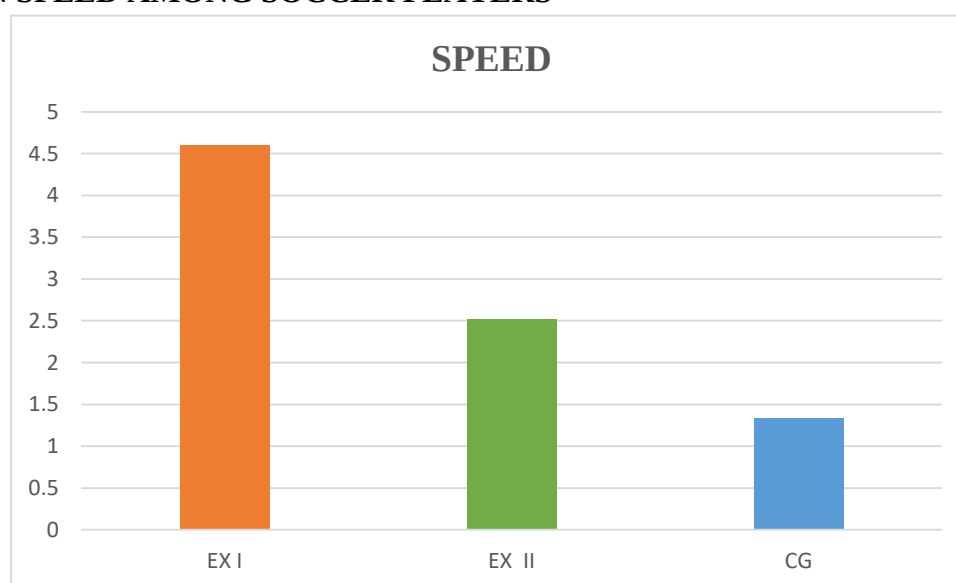
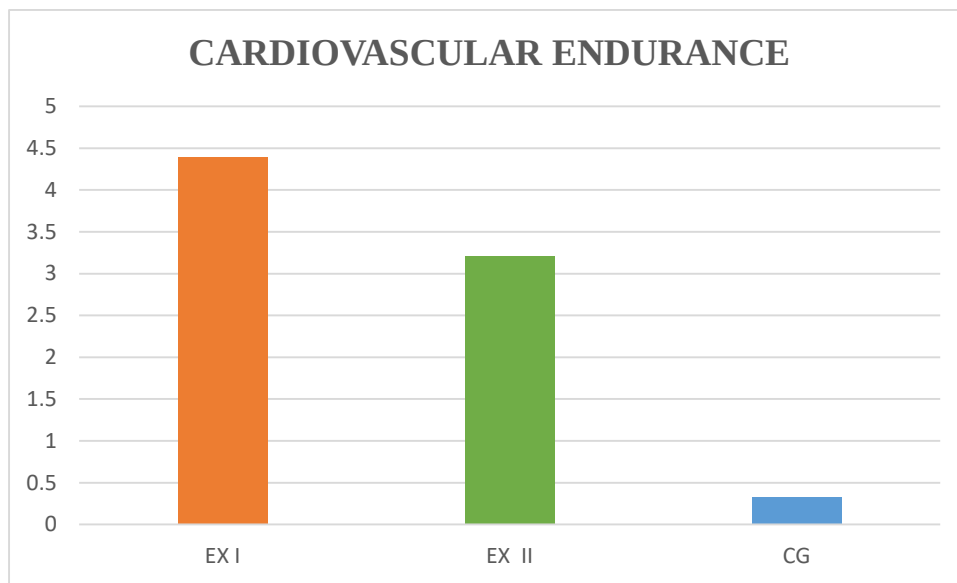
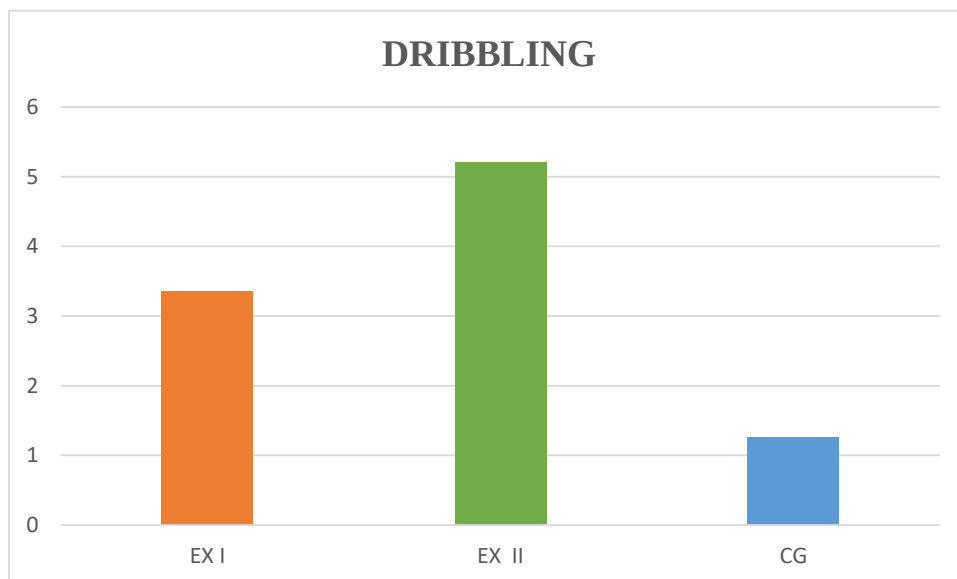


FIGURE-II

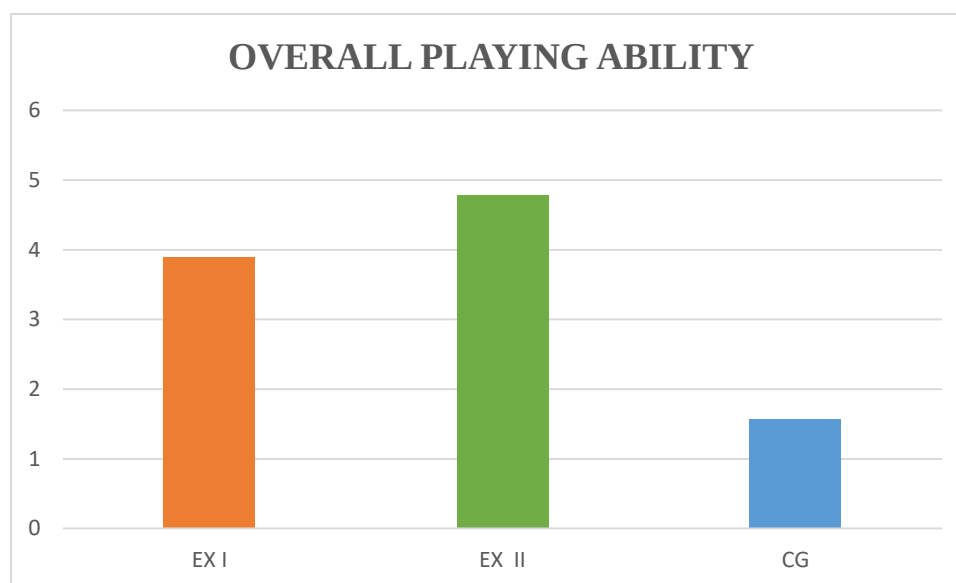
BAR DIAGRAM SHOWING THE 't' VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON CARDIOVASCULAR ENDURANCE AMONG SOCCER PLAYERS

**FIGURE-III**

BAR DIAGRAM SHOWING THE 't' VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON DRIBBLING AMONG SOCCER PLAYERS

**FIGURE-IV**

BAR DIAGRAM SHOWING THE 't' VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON OVERALL PLAYING ABILITY AMONG SOCCER PLAYERS


TABLE - III

ANALYSIS OF VARIANCE ON PRE AND POST-TEST MEANS OF SOCCER PLAYERS ON SPEED, CARDIOVASCULAR ENDURANCE, DRIBBLING AND OVERALL PLAYING ABILITY

Variables	Source of variance		Sum of square	Mean square	F – ratio
Speed	Pre test	Between sets	0.76	0.25	0.49
		Within sets	28.58	0.51	
	Post test	Between sets	3.38	1.13	3.33*
		Within sets	21.92	0.39	
Cardiovascular endurance	Pre test	Between sets	410556.67	136852.22	1.93
		Within sets	3960686.67	70726.55	
	Post test	Between sets	1160080.05	386693.35	5.66*
		Within sets	3828107.60	68359.06	
Dribbling	Pre test	Between sets	0.09	0.03	0.05
		Within sets	38.75	0.69	
	Post test	Between sets	4.77	1.59	3.85*
		Within sets	31.21	0.56	
Overall playing ability	Pre test	Between sets	0.32	0.11	0.05
		Within sets	126.67	2.26	
	Post test	Between sets	64.33	21.44	6.92*
		Within sets	173.60	3.10	

*Significant at 0.05 level (3.23) df is 2 and 42.

In the initial data analysis, of variance ('F' test) was applied to find out the significance of mean difference in the pre and post-test among the three groups namely visualization training, game intelligence training and Control Group on Speed, Cardiovascular Endurance, Dribbling, Overall playing ability of soccer players. The analysis is presented in table 3

Table – III reveals the obtained ‘F’ values on pre and post-test means among the three groups. The obtained ‘F’ ratio were: Speed (**0.49**) Cardiovascular Endurance (**1.93**), Dribbling (**0.05**) and Overall Playing Ability (**0.05**). The ‘F’ values observed on pre-test these variables are not significant since it fails to reach the critical ratio of 3.23 for degree of freedom 2 and 42 at 0.05 levels and The obtained ‘F’ ratio were: Speed (**3.33***), Cardiovascular Endurance (**5.66***), Dribbling (**3.85***) and Overall Playing Ability (**6.92***) The ‘F’ values observed on post-test these variables are highly significant as the values are higher than the required critical value 3.23 for degree of freedom 2 and 42 at 0.05 levels.

FIGURE-V

PIE DIAGRAM SHOWING THE ANALYSIS OF VARIANCE ON PRE AND POST-TEST MEANS OF SOCCER PLAYERS ON SPEED

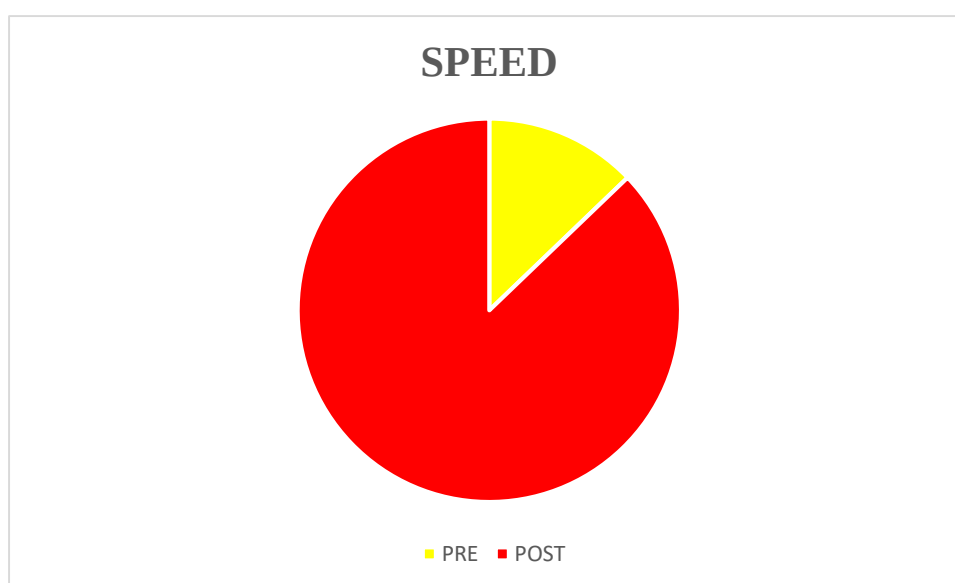


FIGURE-VI

PIE DIAGRAM SHOWING THE ANALYSIS OF VARIANCE ON PRE AND POST-TEST MEANS OF SOCCER PLAYERS ON CARDIOVASCULAR ENDURANCE

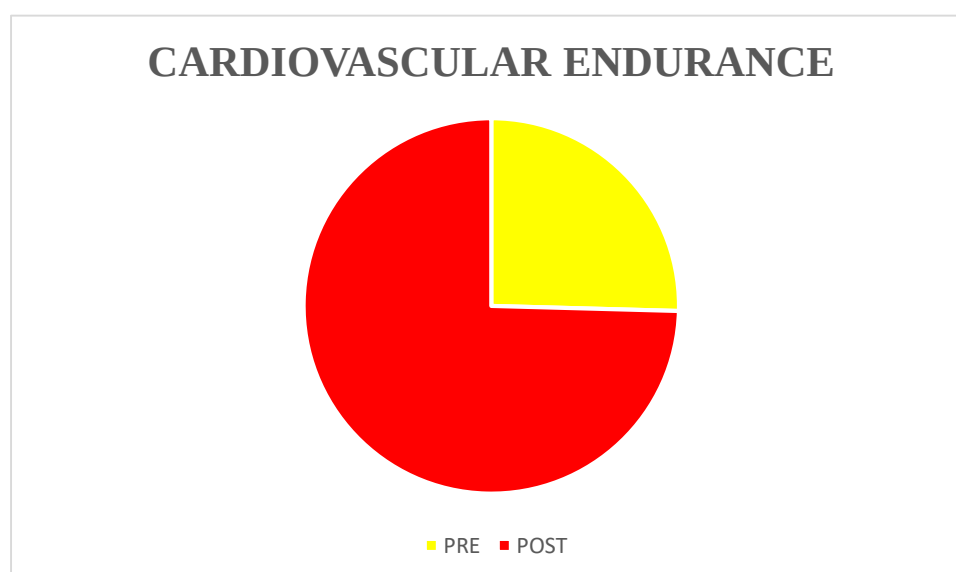


FIGURE-VII

PIE DIAGRAM SHOWING THE ANALYSIS OF VARIANCE ON PRE AND POST-TEST MEANS OF SOCCER PLAYERS ON DRIBBLING

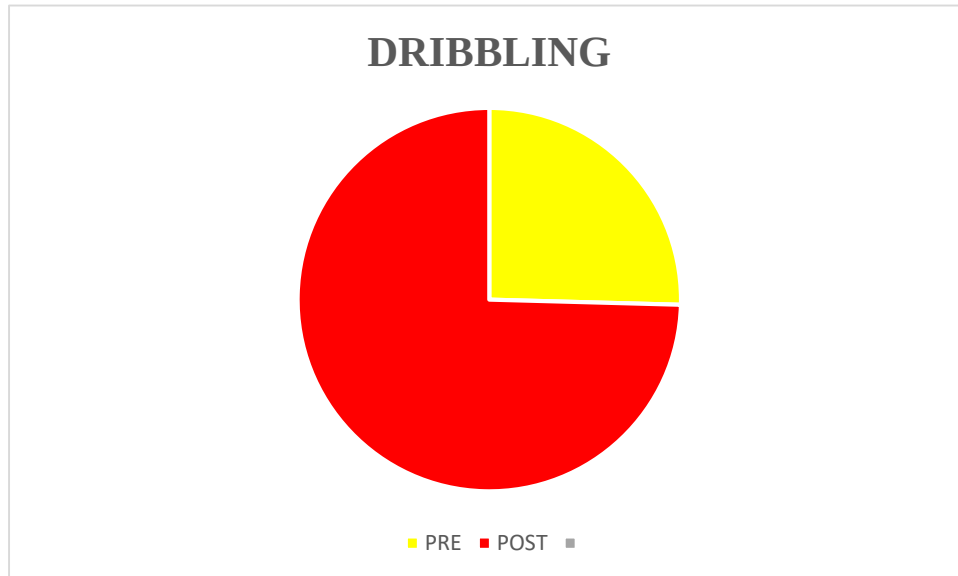
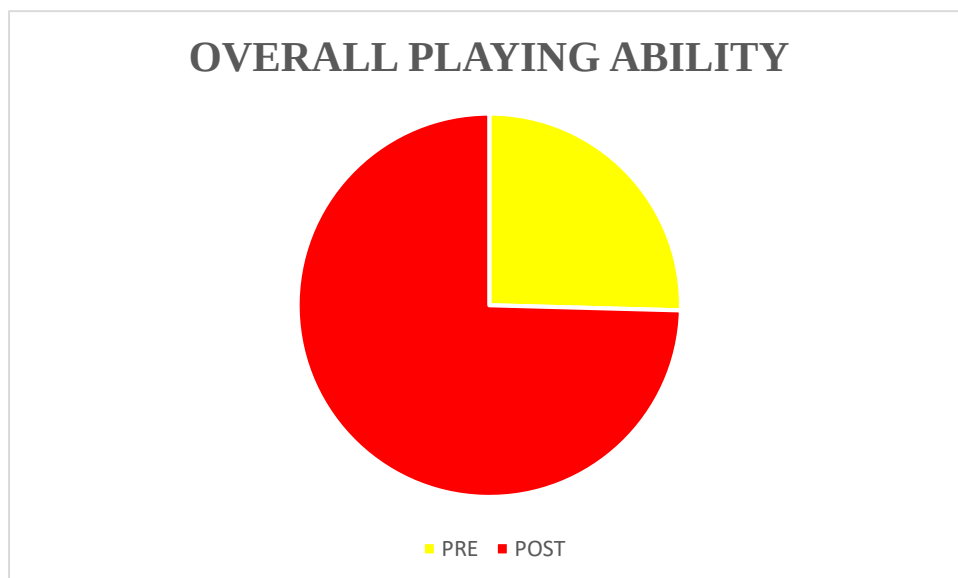


FIGURE-VIII

PIE DIAGRAM SHOWING THE ANALYSIS OF VARIANCE ON PRE AND POST-TEST MEANS OF SOCCER PLAYERS ON OVERALL PLAYING ABILITY



4. FINDINGS

The findings observed on impact on visualization and game intelligence on soccer players are as follows:

1. In the visualization training group, the mean differences observed between pre– test and post – test for Speed, Cardiovascular Endurance, Dribbling and Overall playing ability of soccer player were statistically significant.
2. In the game intelligence training group, the mean differences observed between pre– test and post – test for Speed, Cardiovascular Endurance, Dribbling and Overall playing ability of soccer player were statistically significant.
3. In the control group, the mean differences observed between pre– test and post – test for Speed, Cardiovascular Endurance, Dribbling and Overall playing ability of soccer player were not statistically significant.
4. In the visualization training group, the mean differences observed between pre– test and post – test for Speed and Cardiovascular Endurance of soccer player were statistically significant then the game intelligence training group.
5. In the game intelligence training group, the mean differences observed between pre– test and post – test for Dribbling and Overall playing ability of soccer player were statistically significant then the visualization training group.

5. DISCUSSION ON FINDINGS

The study found that a twelve week of visualization and game intelligence on soccer players had a significant positive impact on the physical fitness, performance variables and playing ability of soccer player namely Speed, Cardiovascular endurance, Dribbling and Overall playing ability of soccer players. It is also found that the improvement caused by visualization training and game intelligence training significantly improved the experimental groups when compared to the control group. Thus, the results are in line with other study of which has visualization and game intelligence on soccer players on Physical Fitness, Performance Variables and Playing Ability of soccer players.

Speed significantly improved following the intervention, due to their repetitive high-intensity nature, contribute to the enhancement of acceleration and sprinting capabilities (**Köklü et al., 2011; Hill-Haas et al., 2010**). The frequent sprints, quick changes of pace, and demand for reactive movements in replicate competitive game conditions, thereby improving speed-related performance.

Cardiovascular endurance showed a notable increase, consistent with findings from **Dellal et al. (2008) and Halouani et al. (2014)**, who concluded that were effective for improving aerobic capacity due to their sustained intensity and minimal rest periods. The continuous effort replicates match demands, making this modality an effective aerobic training method.

Dribbling abilities improved due to both isolated technical practice and in-game applications within. **Slaidiņš and Fernāte (2021)** found that dedicated dribbling drills enhance motor control and ball mastery, while **Aguiar et al. (2013)** observed that improve dribbling under time and space constraints.

Overall playing ability reflecting combined skill execution, tactical awareness, and physical competence showed the most holistic improvement. **Clemente, Afonso, and Sarmiento (2021)** affirm

that integrated training combining with tactical and technical elements leads to comprehensive development. Tactical sessions enhance positioning, decision-making, and understanding of play dynamics (Memmert, 2010; Rico-González et al., 2022), thereby elevating overall performance.

6. CONCLUSIONS

The study concludes that a twelve week program of visualization and game intelligence on soccer players effectively enhances Speed, Cardiovascular endurance, Dribbling and Overall playing ability of soccer player. Moreover, these improvements were significantly greater in the Experimental group I and Experimental group II compared to the Control group, highlighting the efficacy of this training approach in enhancing physical fitness, skill performance variables and playing ability of soccer player.

The study concludes that a twelve week program of visualization training group were significantly greater in Speed and Cardiovascular endurance of soccer player then the game intelligence training group.

The study concludes that a twelve week program of game intelligence training group were significantly greater in Dribbling and Overall playing ability of soccer player then the visualization training group.

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