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Influence of Different Training Methods on Selected Skill-Related Performance Variables among Football Players

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KEYWORDS

Plyometric Training, Circuit Training, Football Players, Passing, Shooting.

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Abstract

The purpose of the study was to investigate the comparative effect of plyometric training and circuit training on selected skill performance variables among football players. To achieve the purpose of the study, forty-five football players from different colleges in Pudukkottai District, Tamil Nadu, India, aged between 18 and 25 years, were selected at random. The selected subjects were divided into three equal groups of fifteen each. Group I underwent plyometric training, Group II underwent circuit training, and Group III acted as the control group. The experimental training programmes were conducted for a period of twelve weeks. Passing and shooting were selected as the dependent variables to assess football skill performance. The pre-test and post-test data were analysed using Analysis of Covariance (ANCOVA) to determine the significant differences among the groups. Whenever the adjusted post-test F-ratio was significant, Scheffe's post hoc test was applied to identify the differences between paired means. The level of significance was fixed at 0.05. The results indicated that both plyometric training and circuit training significantly improved passing and shooting performance among football players. However, the plyometric training group showed greater improvement than the circuit training group, while the control group showed comparatively less improvement. It was concluded that plyometric training was more effective than circuit training in improving the selected skill performance variables among football players.

INTRODUCTION

Football is one of the most popular competitive team sports, requiring a combination of physical fitness, technical proficiency, tactical awareness and psychological preparation. The performance of football players depends on their ability to execute fundamental skills such as dribbling, passing, shooting and ball control effectively under different playing conditions. These skills require adequate speed, agility, muscular strength, explosive power, coordination and endurance. Stolen et al. (2005) explained that football performance involves the interaction of physiological, biomechanical and technical factors. Reilly et al. (2000) also emphasized the importance of physical and skill-related characteristics in achieving successful football performance. Therefore, the development of appropriate training programmes is essential for improving the physical capacities and technical proficiency of football players. Plyometric training is an effective method of developing explosive muscular power through rapid stretching and shortening of muscles, known as the stretch-shortening cycle. Exercises such as jumping, hopping, bounding and skipping improve neuromuscular coordination, reactive strength and the ability to produce force rapidly. Markovic and Mikulic (2010) reported that plyometric training

produces positive adaptations in muscular power and athletic performance.

Circuit training is a systematic training method in which different exercises are performed in a predetermined sequence with specific work and recovery intervals. It helps develop muscular strength, muscular endurance, cardiovascular endurance, agility and overall physical fitness. Malathy et al. () demonstrated the effectiveness of circuit weight training in improving muscular strength and cardiovascular fitness. Both plyometric training and circuit training may contribute to football skill development through different training mechanisms. While plyometric training primarily emphasises explosive power and rapid force production, circuit training provides opportunities to develop multiple physical fitness components. These physical qualities are essential for maintaining effective skill execution throughout a football match. In this context, the present study was designed to investigate the effect of plyometric training and circuit training on selected skill performance variables among football players. For this purpose, forty-five football players were selected and divided into two experimental groups and one control group. The experimental groups underwent plyometric training and circuit training programmes respectively for twelve weeks to determine their effectiveness in improving selected skill performance variables.

METHODOLOGY

The purpose of the study was to find out the effect of plyometric training and circuit training on selected skill performance variables among football players. To achieve the purpose of the present study, forty-five football players from different colleges Pudukkottai district, Tamilnadu, India were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups of fifteen subjects each. Group I acted as Experimental Group I (Plyometric training), Group II acted as Experimental Group II (Circuit training) and Group III acted as Control Group. The duration of experimental period was 12 weeks. Skill performances were assessed by subjective ratings. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses.

RESULTS

TABLE – I
COMPUTATION OF ANALYSIS OF COVARIANCE ON PASSING

	PTG	CTG	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre-test Mean	4.00	4.07	3.93	BG	0.14	2	0.07	0.12
				WG	25.20	42	0.60	
Post-test Mean	8.40	7.20	4.50	BG	119.70	2	59.85	149.63*
				WG	16.80	42	0.40	
Adjusted Post-test	8.40	7.20	4.50	BG	119.70	2	59.85	199.50*
				WG	12.30	41	0.30	

Mean								

Significant at 0.05 level.

Table value for df 2, 42 = 3.21 and df 2, 41 = 3.22.

The pre-test results showed no significant difference among the plyometric training group, circuit training group and control group, indicating that the groups were comparable before the commencement of the training programme. However, the post-test and adjusted post-test results revealed significant differences among the groups. The plyometric training group recorded the highest passing performance, followed by the circuit training group, while the control group recorded the lowest performance.

TABLE – II
ADJUSTED MEANS AND DIFFERENCES ON PASSING

PTG	CTG	Control Group	Mean Difference	CI Value
8.40	7.20	---	1.20*	0.51
8.40	---	4.50	3.90*	
---	7.20	4.50	2.70*	

Significant at 0.05 level.

Table II shows the adjusted means and differences between the means of the plyometric training, circuit training and control groups on passing. The mean differences between the plyometric training and circuit training groups, plyometric training and control groups, and circuit training and control groups were 1.20, 3.90 and 2.70 respectively. All the mean differences were greater than the confidence interval value of 0.51. Hence, significant differences existed among all three groups in passing performance.

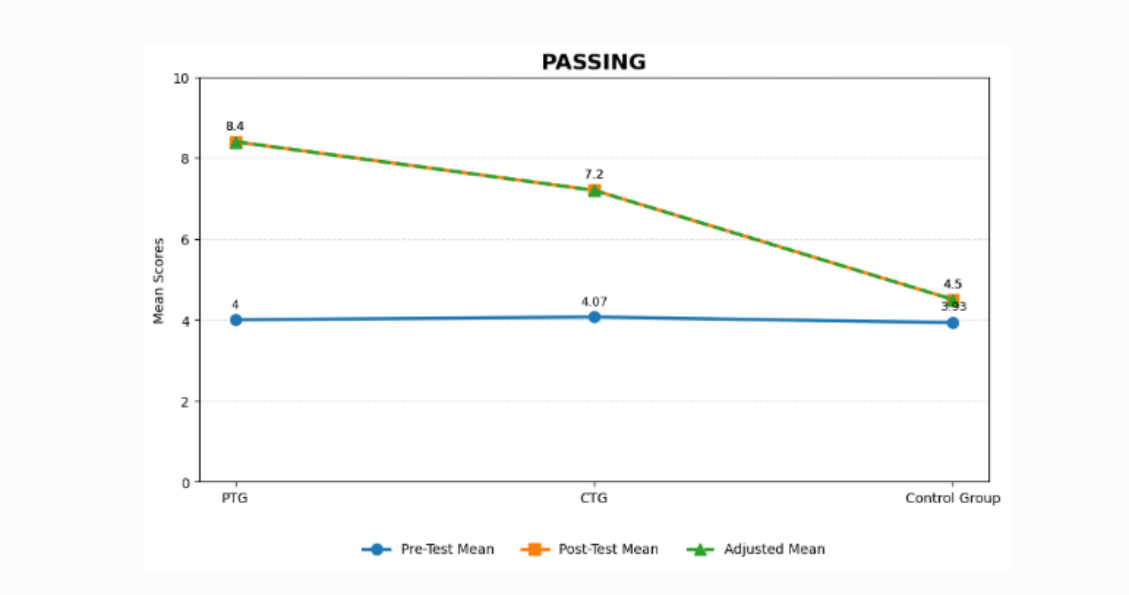


FIGURE I

TABLE – III
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF SHOOTING

	PTG	CTG	Control	Source of	Sum of	df	Mean	F

			Group	Variance	Squares		Square	
Pre-test Mean	3.87	3.93	4.00	BG	0.12	2	0.06	0.11
				WG	22.00	42	0.52	
Post-test Mean	7.50	6.60	4.40	BG	76.30	2	38.15	30.52*
				WG	52.50	42	1.25	
Adjusted Post-test Mean	7.55	6.62	4.43	BG	76.98	2	38.49	40.51*
				WG	38.95	41	0.95	

Significant at 0.05 level.
Table value for df 2, 42 = 3.21 and df 2, 41 = 3.22.

The pre-test results showed no significant difference among the plyometric training group, circuit training group and control group, indicating that the groups were comparable at the initial stage. The post-test results revealed a significant difference among the groups. The adjusted post-test results further confirmed significant differences in shooting performance. The plyometric training group recorded the highest adjusted mean, followed by the circuit training group, whereas the control group recorded the lowest adjusted mean.

TABLE – IV
ADJUSTED MEANS AND DIFFERENCES BETWEEN THE MEANS ON SHOOTING

PTG	CTG	Control Group	Mean Difference	CI Value
7.55	6.62	---	0.93*	0.90
7.55	---	4.43	3.12*	
---	6.62	4.43	2.19*	

Significant at 0.05 level.

Table IV shows the adjusted means and differences between the means of the plyometric training, circuit training and control groups on shooting. The mean differences between the plyometric training and circuit training groups, plyometric training and control groups, and circuit training and control groups were 0.93, 3.12 and 2.19 respectively. All the mean differences were greater than the confidence interval value of 0.90. Hence, significant differences existed among the three groups in shooting performance.

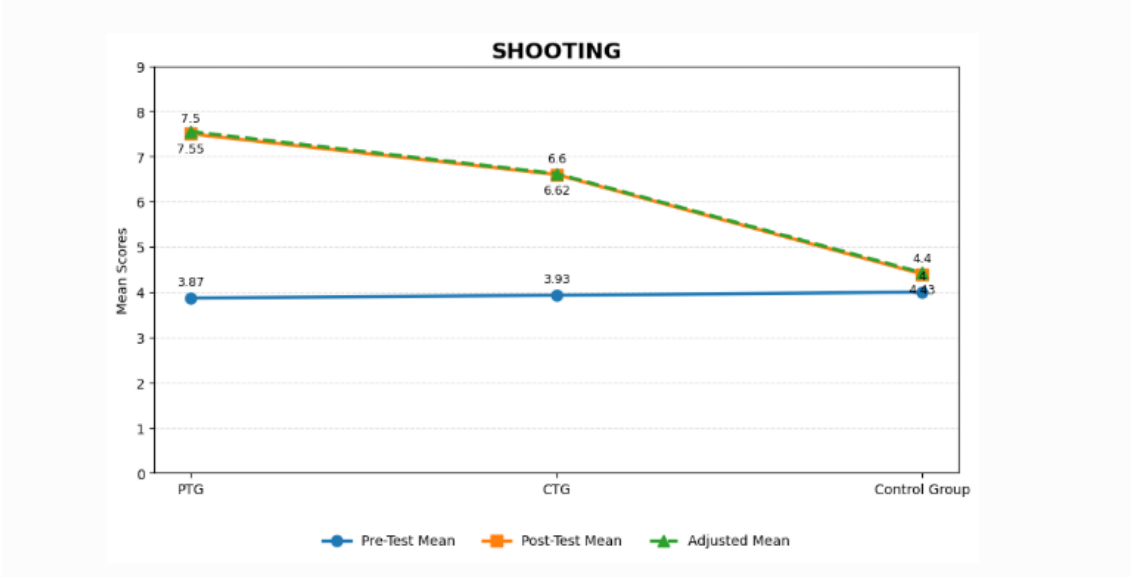


FIGURE II

DISCUSSION

The results of the present study revealed that both plyometric training and circuit training significantly improved passing performance among football players. However, the plyometric training group showed greater improvement than the circuit training group. This improvement may be attributed to the development of explosive power, muscular coordination, balance and neuromuscular efficiency through systematic training. Zhang et al. (2023) reported that plyometric training had a positive effect on technical skill performance, including shooting and dribbling abilities among athletes. These findings support the effectiveness of plyometric exercises in developing sport-specific performance.

The findings also indicated that plyometric training and circuit training significantly improved shooting performance, with the plyometric training group demonstrating superior improvement. Plyometric exercises such as jumping, bounding and hopping may enhance lower-limb explosive strength and the ability to produce force rapidly, which are important for effective shooting performance. Sedano et al. (2011) found that a ten-week plyometric training programme improved explosive strength, acceleration capacity and shooting speed among young elite soccer players. Similarly, Zhang et al. (2023) confirmed the positive influence of plyometric training on shooting speed and distance among soccer players.

The superiority of plyometric training over circuit training in the present study may be related to its specific emphasis on explosive muscular actions and the stretch-shortening cycle. Circuit training also contributed to improvements in passing and shooting through the development of general physical fitness, muscular endurance and coordination. However, the control group showed comparatively less improvement in both skill variables. The findings suggest that incorporating systematic plyometric and circuit training programmes into regular football practice may help improve skill performance, with plyometric training showing greater effectiveness in the present study.

CONCLUSION

It was concluded that both plyometric training and circuit training significantly improved passing and shooting performance among football players. However, plyometric training was more effective than circuit training. Therefore, plyometric training may be included in football training programmes to enhance selected skill performance.

REFERENCES

1. Babu, K. J. (2018). Effect of physical activities and yogasanas on body mass index and concentration ability among male staff members. *Ganesar College of Arts and Science*. Conference proceedings.
2. Babu, K. J., Edwin, A. P., Gladina, I. D., Mahalakshmi, G., & Jabakumar, K. I. (2026). Effect of micro-breaks on attention, mental fatigue, and cognitive performance among college students. *International Journal of Multidisciplinary Research and Modern Education, 12*.
3. Malathy, C. (2022). Impact of yogic practices on selected physiological variables among college women students. *Madhya Bharti, 82*(2), 55–58.
4. Malathy, C. (2022). Influence of explosive strength training on strength parameters among physical education students. *Dogo Rangsang Research Journal. 2,2,98-100.*
5. Malathy, C., & Alexandar, C. R. (2015). A study of physical fitness and influence of physical exercise, circuit training and yogic practice on speed among college girls in Tamilnadu State. *International Journal of Physical Education, Sports and Health, 2*(1), 131–133.
6. Malathy, C., & Alexandar, D. C. R. (2016). A study of the influence of physical exercise, circuit training and yogic practice on strength among college girls in Tamilnadu State. *International Journal of Physical Education, Sports and Health, 3*(1), 129–132.
7. Markovic, G., & Mikulic, P. (2010). Neuro-musculoskeletal and performance adaptations to lower-extremity plyometric training. *Sports Medicine, 40*(10), 859–895.
8. Reilly, T., Williams, A. M., Nevill, A., & Franks, A. (2000). A multidisciplinary approach to talent identification in soccer. *Journal of Sports Sciences, 18*(9), 695–702.
9. Sedano, S., Matheu, A., Redondo, J. C., & Cuadrado, G. (2011). Effects of plyometric training on explosive strength, acceleration capacity and kicking speed in young elite soccer players. *The Journal of Sports Medicine and Physical Fitness, 51*(1), 50–58.
10. Stolen, T., Chamari, K., Castagna, C., & Wisloff, U. (2005). Physiology of soccer: An update. *Sports Medicine, 35*(6), 501–536.
11. Zhang, Y., Li, D., Gómez-Ruano, M. Á., Memmert, D., Li, C., & Fu, M. (2023). Effects of plyometric training on kicking performance in soccer players: A systematic review and meta-analysis. *Frontiers in Physiology, 14*, 1072798.