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ISOLATED AND COMBINED EFFECT OF PLYOMETRIC AND TABATA TRAINING ON SELECTED MENTAL STRENGTHENING AND PERFORMANCE VARIABLES AMONG COLLEGE LEVEL FOOTBALL PLAYERS

Nidhin M N*, Dr. K. Sundar & Sali K S*****
* Research Scholar, Alagappa University College of Physical Education, Karaikudi, Tamil Nadu
** Research Guide & Assistant Professor, Alagappa University College of Physical Education, Karaikudi, Tamil Nadu
*** Research Scholar, Calicut University, Calicut, Kerala

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Abstract:

Sixty football players from colleges connected to Calicut University were selected for this study as samples. Along with performance variables like passing and shooting, mental strengthening variables such as aggression and self-confidence were also selected. After 12 weeks of separate and combined Plyometrics and Tabata training for selected subjects separated into four groups, a significant difference in all selected variables were seen. Scheffe's post-hoc test and Analysis of Covariance (ANCOVA) were used to analyze the dependent variables.

Key Words: Plyometrics, Tabata, Aggression, Self-Confidence, Football

Introduction:

Football, commonly referred to as "association football," "football," or "Soccer," is one of the most played sports in the world. Football may be compared to a life school where important life lessons like teamwork, commitment, perseverance, and maintaining a healthy lifestyle are taught. In order to harness the force of football and ensure the game's future strength and prosperity, FIFA lays a specific emphasis on youth training.

The characteristics and nature of the game Football requires a variety of movement skills, and for the purposes of this inquiry, the fundamental game skills of dribbling, passing, shooting, and kicking are significant. According to Reilly et al. (2000), "characteristics are vital for good football players. Elite athletes are highly dependent on their core anaerobic capacity, aerobic activity, and quickness-related movement skills. (2005) Mohr et al.

Exercises involving high-intensity interval training (HIIT), such as tabata, have grown in popularity recently. This form of cardio exercise has mostly replaced steady state cardio because it alternates short bursts of all-out exertion with recovery periods. Better cardio fitness and fat reduction are promised by tabata and HIIT programs than moderate and steady cardio, all in a lot less time spent working out. Lack of time is not a major concern when all you need is roughly 15 minutes to see results.

Plyometrics is a term that derives from the Latin words "ply" and "metric," which, when combined, indicate "increase" and "measure," respectively. You may develop maximum muscle strength in the shortest amount of time with plyometric exercise. Most plyometric exercises involve a variety of jumping drills. In this training technique, muscle groups are pre-stretched before a concentric contraction that ends in an explosive contraction. Plyometrics is a physical exercise that involves rapidly extending and contracting muscles. This is often referred to as the cycle of study stretch and shortening.

Recently, the use of psychological criteria to improve athletic performance has gained popularity. There are certain accepted psychological norms that must be connected in order for competitors to perform to their highest potential. Researchers in sports, physical education, and coaching have all consistently shown a great need to learn about the mental strategies that can help athletes improve their engine skills. When preparing for and participating in competitive situations, it is crucial to consider the role of response time, development time, eager wonders like focused unease, and 31 other traits like anxiety and player confidence (Ajmeer Singh, 2005). A stronger structure and the ability to communicate sagely about its role and capabilities are taking the place of the field's unclarity.

Methodology:

Subjects' Selection:

Sixty football players were selected from colleges affiliated with the University of Calicut in Kozhikode as samples for the study.

Selection of Variables:

- Mental strengthening variables: self-confidence and aggression
- Performance variables: passing and shooting

Selection of Test: The following standard test will be administered to collect relevant data from the subjects.

Mental Strengthening Variables:

- Self-confidence- Rekha Agnihotry (1987)
- Aggression- Buss. A.H. & Perry. M

Performance Variables:

- Passing: Mor-Christian General Soccer Ability Test (Yobu, 2010)
- Shooting: Mor-Christian General Soccer Ability Test (Yobu, 2010)

Experimental Design:

A test will be conducted using the random group design. Sixty subjects in total were randomly assigned to four groups, with three of them receiving both combined and isolation training. The final group served as the control group and received no instruction.

- Experimental Group 1: Plyometrics training – isolated training
- Experimental group 2: Tabata training – isolated training
- Experimental Group 3: Combined Plyometrics + Tabata training
- Control group: No training

Training Protocol:

- No. of training weeks: 12 weeks
- Isolated Plyometric training -3 days per week
- Isolated Tabata training - 3 days per week
- Combined training - 3 days per week

Statistical Technique:

After 12 weeks of training, the subject data was statistically evaluated using analysis of covariance (ANCOVA) to determine whether there were any differences between the groups on particular dependent variables. Scheffe's test was applied as a post hoc test to identify paired mean differences if the 'F' ratio for the adjusted post test was significant. The confidence level was maintained at 0.05 to assess the proper significance. The findings of the study of covariance displayed in Tables I and II.

Results:

The collected data were statistically analyzed, and the tables below present the mean, standard deviation, degree of freedom between and within, and F value for variables relating to mental toughness and performance among college football players.

Table 1: Analysis of Covariance for Mental Strengthening Variables on Pre Test and Post Test Data of Experimental and Control Groups

		Plyometric								
Variables	Test	Training Group	Tabata Training Group	Combined Plyometric and Tabata Training	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	'F' Ratio
Self Confidence	Pre-Test Means	34.8	36.07	34.93	36.2	BG	24.33	3	8.11	0.7
						WG	640.67	56	11.44	
	Post-Test Means	40.27	42.27	44.8	38.27	BG	351.2	3	117.07	12.58*
						WG	521.2	56	9.31	
	Adjusted Post-Test Means	40.61	41.99	45.08	37.92	BG	394.86	3	131.62	19.90*
						WG	363.82	55	6.61	
Aggression	Pre-Test Means	86.87	91.67	89	88.27	BG	182.85	3	60.95	1.58
						WG	2162	56	38.61	
	Post-Test Means	75	79.6	71.53	87.2	BG	2063.6	3	687.87	22.24*
						WG	1731.73	56	30.92	
	Adjusted Post-Test Means	76.37	77.82	71.5	87.65	BG	2062.28	3	687.43	17.18*
						WG	801.44	55	14.57	

Required 'F' (0.05), (df 3, 56) =2.77; (df 3, 55) =2.77, *Significant. BG- Between Groups, WG- Within Group, df- Degrees of Freedom

The obtained 'F' ratio was 0.70, according to Table 1. Because it was less than the table value of 2.77, it was proven that there had been no significant change in the intercollegiate football players' pre-test means. The 'F' proportion that was determined was 12.58. Since it exceeded the table value of 2.77, it was proven that there had been a significant change in the intercollegiate football players' post-test means. The 'F' proportion that was found was 1 9.90. It therefore exceeded the table value of 2.77, which demonstrated that there had been a significant shift in the adjusted post-test means of collegiate football players in self-confidence.

The obtained 'F' ratio of aggression was 1.58, as shown in Table 1 Since the obtained "F" fraction was less than the table value of 2.77, it was proven that the intercollegiate football players' pre-test means had no

significant difference. The 'F' fraction that was found was 22.24. Since it exceeded the table value of 2.77, it was proven that there had been a significant difference in the intercollegiate football players' post-test means. The 'F' fraction that was found was 47.18. It therefore exceeded the table value of 2.77, which demonstrated that there had been a significant difference in the adjusted post-test means of collegiate football players in aggression.

Figure 1: Bar Diagram Showing Pre-Test Post-Test and Adjusted Post- Test Means on Self Confidence

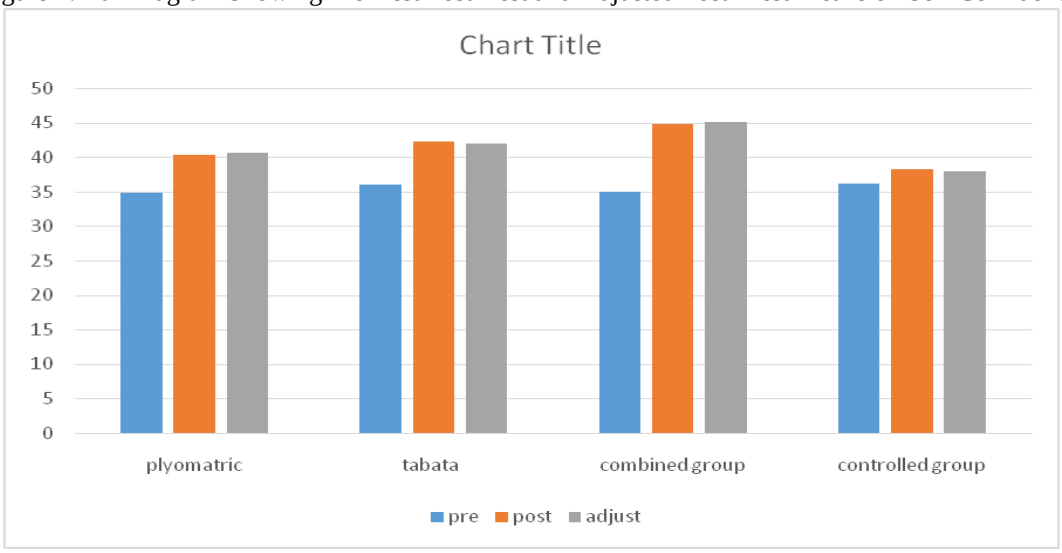


Figure 2: Bar Diagram Showing Pre-Test Post-Test and Adjusted Post- Test Means On Aggression

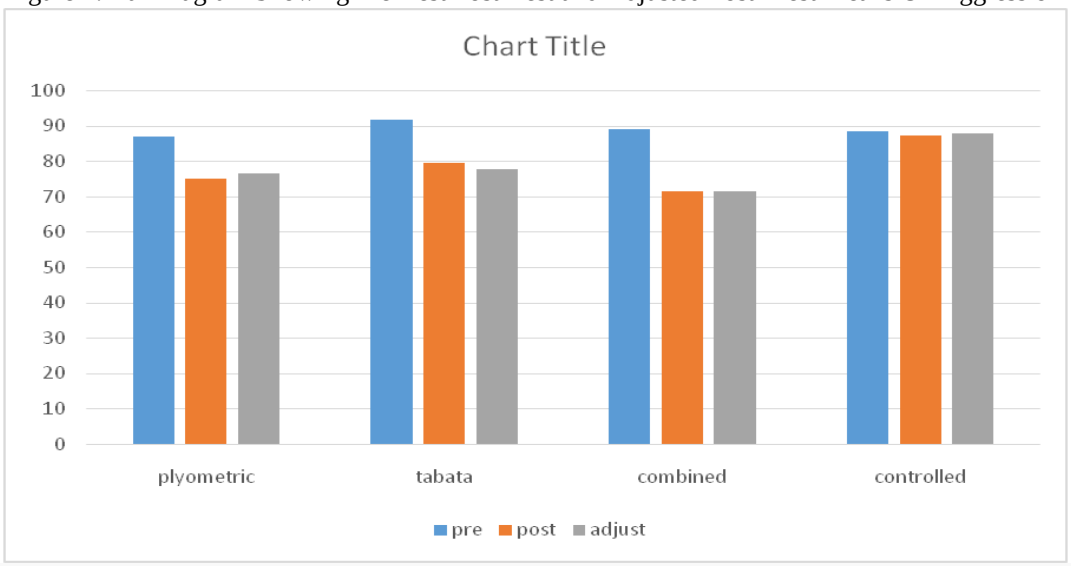


Table 2: Analysis of Covariance for Performance Variables on Pre Test and Post Test Data of Experimental and Control Groups

Variables	Test	Plyometric Training Group	Tabata Training Group	Combined Plyometric and Tabata Training Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	"F" Ratio
Passing	Pre Test Means	6.27	6.2	6.13	5.67	BG	3.33	3	1.11	0.81
						WG	76.4	56	1.36	
	Post Test Means	7.93	9.33	10.13	5.67	BG	172.4	3	57.47	43.88*
						WG	73.33	56	1.31	
	Adjusted Post Test Means	7.75	9.21	10.07	6.02	BG	138.73	3	46.24	208.23*
						WG	12.21	55	0.22	
Shooting	Pre Test Means	37.73	37.07	32.4	35.73	BG	253.33	3	84.44	1.11
						WG	4278.4	56	76.4	
	Post Test Means	52.67	66.07	73.07	38.27	BG	10634.85	3	3544.95	46.04*
						WG	4312.13	56	77	
	Adjusted Post Test Means	50.92	64.9	75.98	38.27	BG	11935.9	3	3978.63	211.36*
						WG	1035.32	55	18.82	

Required 'F' (0.05), (df 3, 56) =2.77; (df 3, 55) =2.77, *Significant. BG- Between Groups, WG- Within Group, df- Degrees of Freedom

Table 2 explains that the computed "F" value 0.81 was similarly lower than the necessary value and demonstrated that there had been no appreciable variations in the intercollegiate football players' pre-test averages in passing. It was established that there had been significant changes in the post-test means of intercollegiate football players by the calculated "F" value, which was 43.88 greater than the necessary value. It was established that there had been considerable changes in the adjusted post-test averages of collegiate football players by the calculated "F" value, which was 208.23 higher than the needed number in passing.

Table 2 also showed that there were no significant changes in the pre-test means of intercollegiate football players, with the computed "F" value 1.11 being accordingly lower than the needed value in shooting. The calculated "F" value, which was 46.04 larger than the needed value, confirmed that there had been significant changes in the intercollegiate football players' post-test averages. It was established that there had been considerable changes in the adjusted post-test averages of collegiate football players by the calculated "F" value, which was 211.36 greater than the necessary value.

Figure 3: Bar Diagram Showing Pre-Test Post-Test and Adjusted Post- Test Means On Passing

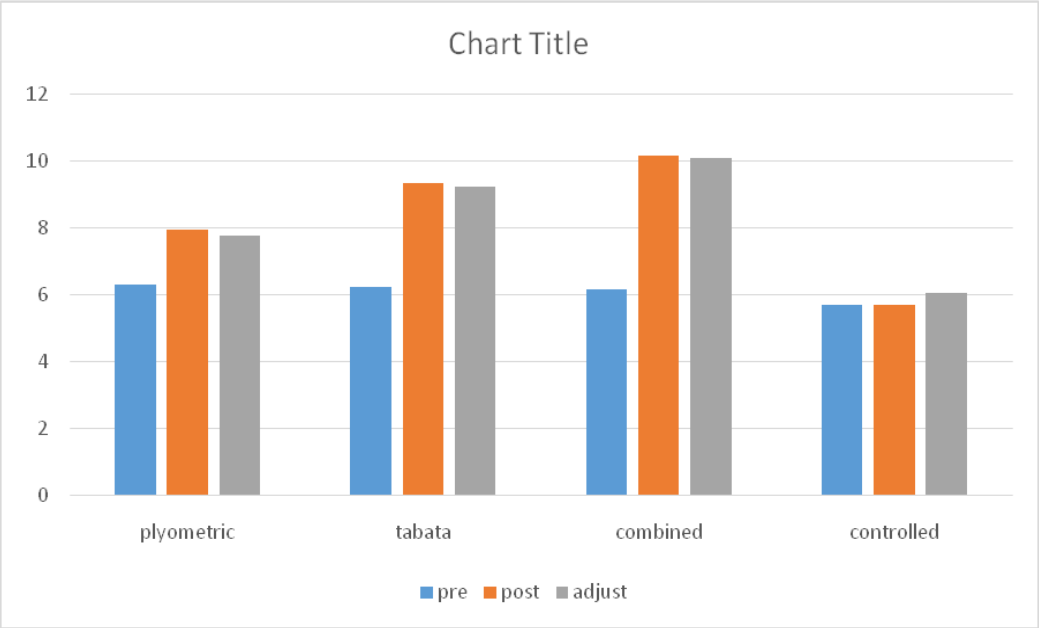
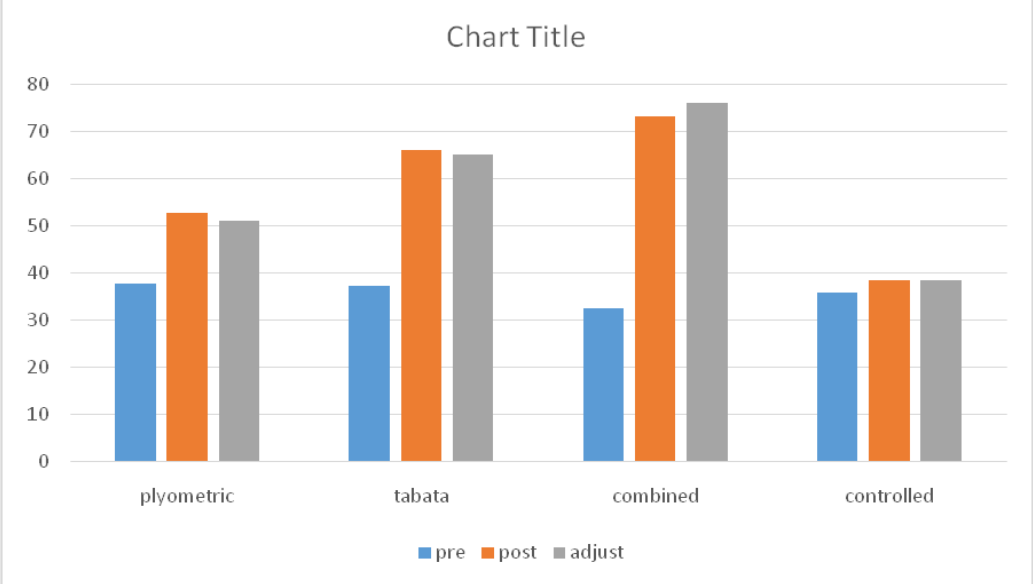


Figure 4: Bar Diagram Showing Pre-Test Post-Test and Adjusted Post- Test Means On Shooting



Discussion and Conclusion:

Intercollegiate football players' self-confidence and aggression have increased in comparison to the control group after participating in isolated Tabata training, isolated Plyometric training, and combination training groups.

Football players who underwent 12 weeks of isolated Tabata training, isolated Plyometric training, and combined training all outperformed the control group in passing. Additionally, the post hoc analysis

demonstrated that the combined training programme outperformed the other two programmes in improving passing. Football players who underwent 12 weeks of isolated Tabata training, isolated Plyometric training, and combined training all outperformed the control group in shooting. Additionally, the post hoc analysis demonstrated that the combined training programme was superior to the other two programmes in terms of enhancing shooting.

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