

Effect of Contrast and Concurrent Training on Selected Physical Variables among Football Players

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Abstract

The purpose of this study was to find out the Effect of contrast and concurrent training on selected physical, parameters among Football players. To achieve the purpose of the study, forty five (n=45) male inter-collegiate level Football players were selected from the various colleges in and around Tiruchirappalli district, Tamil Nadu state. The age of subjects ranged from 18 to 25 years. The subjects had past experience of at least four years in Football and only those who represented their respective college teams were taken as subjects. All the subjects were informed about the nature of the study and their consist was obtained to co-operate till the end of the experiment and testing period. The control group Football player had not shown significant changes in any of the selected variables. The contrast training and concurrent training groups had shown significant improvement in all selected physical, variables among the Football players. The contrast training had registered significant level difference in speed, explosive power, maximum strength, among Football players. The concurrent training had shown significant level difference in endurance, muscular strength among Football players.

Key Words: Football, Contrast, Concurrent and Physical variables.

Introduction

Field Football is a popular competitive team sport played all around the world, belongs to the Football sport. Field Football is, in fact, the second largest team sport in the world played in over the countries. Contrast training consists of performing an exercise with moderate to heavy resistance alternated with a biomechanically similar exercise with low resistance and performed with high velocity

Concurrent strength and endurance training is undertaken by numerous athletes in various sports in an effort to achieve adaptations specific to both forms of training. The research findings to date, investigating the neuromuscular adaptations and performance improvements associated with concurrent strength and endurance training (referred to as concurrent training) have produced inconsistent results. Some studies have shown that concurrent training inhibits the development of strength and power, but does not effect the development of aerobic fitness when compared to either mode of training alone.

MATERIALS AND METHODS

The purpose of this study was to find out the Effect of contrast and concurrent training on selected physical, parameters among Football players. To achieve the purpose of the study, forty five (n=45) male inter-collegiate level Football players were selected from the various colleges in and around Tiruchirappalli district, Tamil Nadu state. The age of subjects ranged from 18 to 25 years. The subjects had past experience of at least four years in Football and only those who represented their respective college teams were taken as subjects. This study consisted of three equal groups of fifteen subjects each. Group-I (n=15) underwent contrast training, Group-II (n=15) underwent concurrent training and Group III acted as control group. The related group research design was used in this study. The collected data from the three groups prior to and after the experimental treatments on selected physical, variables were statistically analyzed by using the statistical technique of analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post-test means was found to be significant, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. In all the cases 0.05 level of confidence was fixed as a level of confidence to test the hypotheses.

Analysis of data

The influence of independent variables on each criterion variables were analysed and presented below:

TABLE -4.1 :	ANAL Y SIS	OF	COVAR	IANCE	FOR	THE	PRE,	POST	AND
	ADJUSTED	POST	Г-TESTS	DATA	ON SI	PEED	OF CO	NTROL	AND
	EXPERIME	NTAL	GROUP	S (IN SI	ECONI	DS)			

Test	Control group	Contrast training group Expt–A	Concurrent training group Expt-B	SOV	SS	df	MS	F – ratio
Pre-tes	t							
Mean	4.76	4.75	4.74	B.M.	0.004	2	0.002	0.22
SD(±)	0.08	0.10	0.10	W.G.	0.37	42	0.01	0.22

Test	Control group	Contrast training group Expt–A	Concurrent training group Expt-B	SOV	SS	df	MS	F – ratio
Post-test								
Mean	4.65	4.48	4.58	B.M.	0.23	2	0.12	52 0.1*
SD(±)	0.04	0.05	0.05	W.G.	0.09	42	0.002	32.94
Adjusted post-test								
Mean	4.65	4.48	4.58	B.S.	0.23	2	0.12	52.38*
				W.S.	0.09	41	0.002	

*Significant at 0.05 level of confidence.

* (*The table values required for significance at 0.05 level of confidence for 2 & 42 and 2 & 41 are 3.22 and 3.23 respectively*).

CG – Control Group SOV – Sum of variance SS – Sum of Squares df – degrees of freedom MS – Mean Square B.G. – Between Mean W.G. – Within groups B.S. – Between set W.S. Withinset

The table 4.1 shows that the pre-test mean values on control group, contrast training and concurrent training are 4.76, 4.75 and 4.74 respectively. The obtained 'F' ratio 0.22 for pre-test scores was less than the table value, 3.22 for degrees of freedom 2 and 42 required for significance at 0.05 level of confidence on speed. The post-test mean values on control group, contrast training and concurrent training are 4.65, 4.48 and 4.58 respectively. The obtained 'F' ratio 52.94 for post-test scores was greater than the table value 3.22 for degrees of freedom 2 and 42 required for significance at 0.05 level of confidence on speed. The adjusted post-test means of control group, contrast training and concurrent training are 4.65, 4.48 and 4.58 respectively. The obtained 'F' ratio of 52.38 for adjusted post-test means was greater than the table value of 3.23 for degrees of freedom 2 and 41 required for significance at 0.05 level of confidence on speed. The result of the study indicates that there was a significant difference among the adjusted post-test means of control group, contrast training and concurrent training on speed.

Since the obtained 'F' ratio value was significant further to find out the paired mean difference, the Scheffe's test was employed and presented in table-4.2.

TABLE – 4.2: THE SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON SPEED

Control group	Contrast training group Expt-A	Concurrent training group Expt-B	MD	CI
-	4.48	4.58	0.10*	
4.65	4.48	-	0.17*	0.04
4.65	-	4.58	0.07*	

*Significant at 0.05 level of confidence.

The table 4.2 shows that the mean difference values between contrast training & concurrent training, control group & contrast training and control group & concurrent training are 0.10, 0.17 and 0.07 respectively which are greater than the confidence interval value 0.04 at 0.05 level of confidence. The results of the study showed that there were a significant difference between contrast training & concurrent training, control group & contrast training on speed.

TABLE - 4.3: ANALYSIS OF COVARIANCE FOR THE PRE, POST AND
ADJUSTED POST-TESTS DATA ON EXPLOSIVE POWER OF
CONTROL AND EXPERIMENTAL GROUPS (IN CENTIMETRES)

Test	Control group	Contrast training group Expt–A	Concurrent training group Expt-B	SOV	SS	df	MS	F –ratio	
Pre-test									
Mean	139.13	138.40	150.33	B.M	1341.91	2	670.96	2 47	
SD(±)	14.37	13.64	20.58	W.G	11432.67	42	272.21	2.4/	
Post-tes	t								
Mean	140.47	183.40	167.40	B.M	14123.38	2	7061.69	12.06*	
SD(±)	13.99	30.29	22.56	W.G	22710.93	42	540.74	13.00	
Adjusted post-test									
Mean	142	185.26	164.01	B.S	14031.65	2	7015.83	14 04*	
				W.S	20495.55	41	499.89	14.04	

*Significant at 0.05 level of confidence.

* (*The table values required for significance at 0.05 level of confidence for 2 & 42 and 2 & 41 are 3.22 and 3.23 respectively*).

CG – Control GroupSOV – Sum of variance SS - Sum of Squares df – degrees of freedom MS – Mean Square B.G. – Between Mean W.G. – Within groups B.S. –Between set W.S.Withinset

The table 4.3 shows that the pre-test mean values on control group, contrast training and concurrent training are. 139.13, 138.40 and 150.33 respectively. The obtained 'F' ratio 2.47 for pre-test scores was less than the table value, 3.22 for degrees of freedom 2 and 42 required for significance at 0.05 level of confidence on explosive power. The post-test mean values on control group, contrast training and concurrent training are 140.47, 183.40 and 167.40 respectively. The obtained 'F' ratio 13.06 for post-test scores was greater than the table value 3.22 for degrees of freedom 2 and 42 required for significance at 0.05 level of confidence on explosive power. The adjusted post-test means of control group, contrast training are 142, 185.26and 164.01. The obtained 'F' ratio of 14.04 for adjusted post-test means was greater than the table value of 3.23 for degrees of freedom 2 and 41 required for significance at 0.05 level of confidence on explosive power. The result of the study indicates that there was a significant difference among the adjusted post-test means of on control group, contrast training and concurrent training on explosive power.

Since the obtained 'F' ratio value was significant further to find out the paired mean difference, the Scheffe's test was employed and presented in table-4.4.

 TABLE – 4.4:
 THE SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN

 PAIRED MEANS ON EXPLOSIVE POWER

Control group	Contrast training group Expt–A	Concurrent training group Expt-B	MD	CI
-	185.26	164.01	21.25*	
142	185.26	-	43.26*	21.23
142	-	164.01	22.01*	

*Significant at 0.05 level of confidence.

The table 4.4 shows that the mean difference values between contrast training & concurrent training, control group & contrast training and control group & concurrent training are 21.25, 43.26 and 22.01 respectively which are greater than the confidence interval value 21.23 at 0.05 level of confidence. The results of the study showed that there were a significant difference between contrast training & concurrent training, control group & contrast training group and control group & concurrent training group on explosive power.

TABLE - 4.5: ANALYSIS OF COVARIANCE FOR THE PRE, POST AND
ADJUSTED POST-TESTS DATA ON MUSCULAR STRENGTH OF
CONTROL AND EXPERIMENTAL GROUPS (IN NUMBERS)

Control group	Contrast training group Expt–A	Concurrent training group Expt-B	SOV	SS	Df	MS	F –ratio	
Pre-test								
35.93	37.26	34.73	B.M	48.18	2	24.09	2.10	
3.90	2.85	3.37	W.G	482.8	42	11.50	2.10	
t								
36.0	44	45.73	B.M	808.71	2	404.36	60.02*	
3.18	2.45	2.017	W.G	282.93	42	6.74	00.05	
Adjusted post-test								
35.99	44.2	45.54	B.S	800.68	2	400.34	60 59*	
			W.S	270.95	41	6.61	00.38	
	Control group 35.93 3.90 36.0 3.18 1 post-test 35.99	Control group Contrast training group Expt-A 35.93 37.26 3.90 2.85 36.0 44 3.18 2.45 J post-test 35.99	Contrast training group Concurrent training group 35.93 37.26 34.73 3.90 2.85 3.37 36.0 44 45.73 3.18 2.45 2.017 J post-test 44.2 45.54	Control groupContrast training group Expt-AConcurrent training group Expt-BSOV 35.93 37.26 34.73 B.M 3.90 2.85 3.37 W.G 3.90 2.85 3.37 W.G 3.90 2.85 2.017 W.G 3.18 2.45 2.017 W.G 1 post-test 44.2 45.54 $B.S$ 35.99 44.2 45.54 $B.S$	$\begin{array}{c c c c c c c } \hline Contrast training group group group Expt-A & Concurrent training group Expt-B & SOV \\ \hline SOV & SS \\ \hline$	$\begin{array}{c c c c c c c } \hline Contrast training group \\ \hline control group \\ group \\ \hline Expt-A \end{array} \begin{array}{c c c c c } \hline Concurrent training group \\ group \\ \hline Expt-A \end{array} \begin{array}{c c c c } \hline SOV \\ \hline SS \end{array} \begin{array}{c c c } SS \end{array} \begin{array}{c c c } SS \end{array} \begin{array}{c c c } Df \end{array} \\ \hline SS \end{array} \begin{array}{c c c } SS \end{array} \begin{array}{c c c } SS \end{array} \begin{array}{c c } Df \end{array} \\ \hline SS \end{array} \begin{array}{c c } Df \end{array} \\ \hline SS \end{array} \begin{array}{c c } Df \end{array} \\ \hline SS \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \begin{array}{c c } SS \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \begin{array}{c } SS \end{array} \end{array} \begin{array}{c c } SS \end{array} \end{array} \begin{array}{c } SS \end{array} \end{array} \end{array} \end{array} \begin{array}{c } SS \end{array} \end{array} \end{array} \end{array} \end{array} \end{array} \begin{array}{c } SS \end{array} \begin{array}{c } SS \end{array} \end{array}$	$\begin{array}{c c c c c c c } \hline Contrast training group group group Expt-A & Concurrent training group Expt-B & SOV & SS & Df & MS \\ \hline SOV & SS & Df & MS \\ \hline SSS & Df & MS \\ \hline SSS & 2.85 & 3.473 & B.M & 48.18 & 2 & 24.09 \\ \hline 3.90 & 2.85 & 3.37 & W.G & 482.8 & 42 & 11.50 \\ \hline SSS & SSSS $	

*Significant at 0.05 level of confidence.

* (*The table values required for significance at 0.05 level of confidence for 2 & 42 and 2 & 41 are 3.22 and 3.23 respectively*).

CG – Control GroupSOV – Sum of variance SS - Sum of Squares df – degrees of freedom MS - Mean Square B.G. – Between Mean W.G. – Within groups B.S.–Between set W.S. Withinset

The table 4.5 describes that the pre-test mean values on control group, contrast training and concurrent training are 35.93, 37.26 and, 34.73 respectively. The obtained 'F' ratio 2.10 for pre-test scores was less than the table value, 3.22 for degrees of freedom 2 and 42 required for significance at 0.05 level of confidence on muscular strength. The post-test mean values on control group, contrast training and concurrent training are 36.00, 44.00 and 45.73 respectively. The obtained 'F' ratio 60.03 for post-test scores was greater than the table value 3.22 for degrees of freedom 2 and 42 required for significance at 0.05 level of confidence on muscular strength. The adjusted post-test means of control group, contrast training are 35.99, 44.20, and 45.54. The obtained 'F' ratio of 60.58 for adjusted post-test means was greater than the table value of 3.23 for degrees of freedom 2 and 41 required for significance at 0.05 level of confidence on muscular strength. The result of the study indicates that there was a significant difference among the adjusted post-test means of on control group, contrast training and concurrent training on muscular strength.

Since the obtained 'F' ratio value was significant further to find out the paired mean difference, the Scheffe's test was employed and presented in table-4.6.

TABLE – 4.6:	THE	SCHEFFE'S	TEST	FOR	THE	DIFFERENCE	BETWEEN
	PAIR	ED MEANS O	N MUS	CULAF	R STRF	ENGTH	

Control group	Contrast training group Expt–A	Concurrent training group Expt-B	MD	CI
-	44.20	45.54	1.34	
35.99	44.20	-	8.21*	2.38
35.99	_	45.54	9.55*	

*Significant at 0.05 level of confidence.

The table 4.6 reveals that the mean difference values between control group & contrast training and control group & concurrent training group are 8.21 and 9.55 respectively which are greater than the confidence interval value 2.38 at 0.05 level of confidence. The results of the study showed that there were a significant difference between control group & contrast training group and control group & concurrent training group on muscular strength.

Discussion on findings

The results of the study indicates that the experimental groups namely contrast training and concurrent training groups had shown significant improvement in all selected physical, variables among the Football players. The control group Football player had not shown significant changes in any of the selected variables. The results of the study indicates that the contrast training had registered significant level difference in speed, explosive power, maximum strength, among Football players.

The results of the study indicates that the concurrent training had shown significant level difference in muscular strength among Football players. The results of the study indicate that the contrast and concurrent trainings had shown significant improvement in Football playing ability when compared to control group among the players.

The consistency is determining the significant contribution of contrast training and concurrent training on developing variables in this study was similar to the findings of other studies using contrast training and concurrent training as independent variables.

Nagarajan and Kalidasan, (2013) examined the effect of concurrent training on selected physical variable among kabaddi players. The results of the study showed that there was significant differences exist between concurrent group and control group. And also

concurrent training group showed significant improvement on explosive power, strength endurance.

In the first hypothesis, it was also hypothesized that there would be significant difference among the contrast training and concurrent training groups on selected physical variables among the Football players. The findings of the study were similar to this hypothesis. Hence the research hypothesis was accepted.

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