

## **EFFECT OF COMPLEX TRAINING ON CARDIO RESPIRATORY ENDURANCE AND DRIBBLING OF INTER COLLEGE FOOTBALL PLAYERS**

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### **Abstract**

Thirty intercollegiate level male football players were selected from different affiliated colleges of Kamaraj University Madurai. The selected subject was randomly divided into two groups (15 in each group). Group one was considered as Complex Training Group and other one is Considered a Control Group which was not given any training. The variables are cardio respiratory endurance and dribbling ability. The intensity for the training group was increased and decreased alternatively. The training was given 5 days a week for twelve weeks. Pre- test was conducted for all the two groups before giving the training and post test was conducted after 12 weeks of complex training group was increased consistently. The intensity for the Complex training. The statistical technical used was ANCOVA. The result of the study showed that complex training improved cardio respiratory endurance and dribbling ability, after 12 weeks of training program among the male inter- collegiate football players.

**Key words:** Complex Training. Cardio Respiratory Endurance and Dribbling Ability, ANCOVA and Football.

### **INTRODUCTION**

The Contemporary history of the world's favorite game spans more than 100years. It all began in 1863 in England, when rugby football and association football branched off on their different courses and the football association in England was formed being the sports first governing body. International Matches were being staged in great decades, the teaching of sports in general and of football in particular has evolved from a traditional technique- based approach into something more flexible and adaptable to both the needs and characteristics of the player and above all to the changing nature of the game itself. The aim of this research analysis is the influence of high load training and endurance and dribbling ability of inter collegiate football players. Football is quite simply the most popular sports in the world. A game where humanity comes alive with one goal. It inspires and enthuses millions of people all over the world. The federation of International de- football Association (FIFA) is probably the single largest organization in the world. With the establishment of the football association in England in 1863,

Football has evolved into fiercely competitive sports requiring the highest levels of physical fitness, technical skill, courage and endurance, According to baechle and Earle.

Complex training is a combination of high intensity resistance training followed by plyometric. However a somewhat more detailed definition is provided by Ebben who states: —Complex training alternates biomechanically similar high load weight training exercise with plyometric exercises, set for set in the same workout. An example of complex training would include performing a set of squats followed by a set of jump squats. As in the case of plyometric training, complex training appears to have its origins in Eastern Europe. Certainly this is the argument put forward by Chu: —Complex training was developed by the Europeans. To blend the result of heavy weight training with what they call shock training and what we call plyometric. —Note that in some programmes, the plyometric or explosive drill precedes the strength exercise. Complex training activates and works the nervous the fast twitch muscle fibers simultaneously. The strength exercise activates the fast twitch muscle fibers (responsible for explosive power). The plyometric movements stress those muscle fibers that have been activated by the strength training movement. During this activated state, the muscles fiber to perform like fast twitch fibers.

### **Methodology**

The purpose of the study was to find out the influence of complex training on the selected physical and skill performance variables among inter-collegiate football players. To achieve this purpose, thirty male were selected as subjects who were Kamaraj University Madurai. The selected subjects were aged between 18 to 22 years. The selected subjects were randomly divided into two groups of 15 subjects in each group. Group I acted as an experimental group and group II acted as the control group. Group one underwent the complex training for twelve weeks and groups two underwent the routine physical exercise and not involved in any specific trainings.

The dependent variables are cardio respiratory endurance and dribbling ability. Endurance was measured by 12 minutes run/walk test, dribbling ability was measure by Warner Soccer Test of dribbling. Each training sessions started with light warm up and ended with cool-down exercises. The intensity for the high load complex training group was increased consistently. The training was given 5 days a week for twelve weeks. The training schedule for group I and II are:

**Table I**  
**Complex Training Group Schedule**

**Week Weight training Plyometric Exercise Set Repetition Intensity**

<b>Week</b>	<b>Weight Training</b>	<b>Polymeric Exercise</b>	<b>Set</b>	<b>Repetition</b>	<b>Intensity</b>
1- 2	Leg press, half squat, knee extension, leg curt, abdominal curt, heal raise.	Bounds, box jump, hurdles hopping, single leg hop, depth jump, two leg hopping.	3	6-8	75%
3 - 4	Leg press, half squat, knee extension, leg curt, abdominal curt, heal raise.	Bounds, box jump, hurdles hopping, single leg hop, depth jump, two leg hopping.	3	6-8	65%
5- 6	Leg press, half squat, knee extension, leg curt, abdominal curt, heal raise.	Bounds, box jump, hurdles hopping, single leg hop, depth jump, two leg hopping.	3	6-8	80%
7- 8	Leg press, half squat, knee extension, leg curt, abdominal curt, heal raise.	Bounds, box jump, hurdles hopping, single leg hop, depth jump, two leg hopping.	3	6-8	70%
9- 10	Leg press, half squat, knee extension, leg curt, abdominal curt, heal raise.	Bounds, box jump, hurdles hopping, single leg hop, depth jump, two leg hopping.	3	6-8	85%
11 - 12	Leg press, half squat, knee extension, leg curt, abdominal curt, heal raise.	Bounds, box jump, hurdles hopping, single leg hop, depth jump, two leg hopping.	3	6-8	75%

\*Rest was for 2 minutes in between sets and duration was for 45 minutes for each session.

### **Experimental Design**

The subjects were randomly divided into Interval Training (n=15) and a control group (n=15). Then the subjects voluntarily consented to participate in the study. All tests were carried out before (pre-test) and after the training period (post-test). The duration of training session in the twelve weeks was between 55 minutes, including warming up and cool down. The control group did not participate in any specific training on equivalence with experimental group.

### **ANALYSIS OF DATA RESULTS OF THE SUDY**

The level of Significance to test F- ratio obtained by the analysis of co variance was fixed at 0.05 level of confidence.

**TABLE 2: ANALYSIS OF CO- VARIANCE OF PRE, POST AND ADJUSTED MEANS OF CARDIO RESPIRATORY ENDURANCE.**

Test	Complex Training Group	Control Group	SOV	SS	df	MS	F
Pre- Test	2195.40	2061.30	B/G	311560	2	155780	1.45
			W/G	4547720	42	108179.50	
Post Test	2397.45	2103.33	B/G	2283124	2	1141562.33	11.32*
			W/G	4240600	42	100966.70	
Adjusted Mean	2397.45	2213.98	B/G	968590.81	2	484295.70	37.90*
			W/G	523742.71	41	484295.50	

Significant level at 0.05 level

The adjusted posttest means on Complex training and control group were 2397.45 and 2213.98 respectively and the obtained F ratio of 37.90 was greater than the required table value of 3.21, which indicates that test was significant at 0.05 level of confidence for the degrees of freedom 2 and 42. The results of the study indicate that there was statically significant difference in endurance. Further to determine which of the paired means had significant differences scheffe's post hoc test was applied.

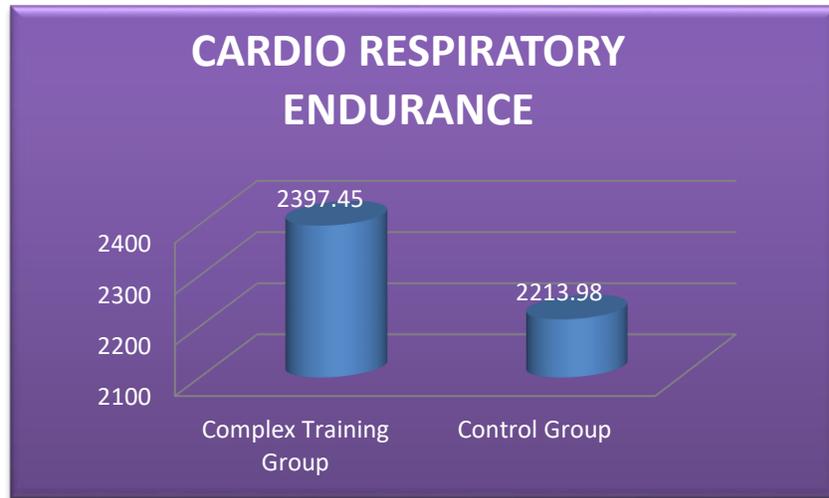
**TABLE 2.1 : SCHEFFE'S POST HOC TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POSTTEST PAIRED MEANS OF CARDIO RESPIRATORY ENDURANCE**

Complex Training Group	Control Group	Mean Difference	Confidence Interval
2397.45	.....	1997.37	103.89
.....	2213.98	370.23	103.89
2397.45	2213.98	183.47	103.89

Table 2.1 indicates that the mean difference in cardio respiratory endurance complex training group and. it is higher than the confidence level of 103.89. Required for significance at 0.05 level. The mean difference in endurance between complexes training it is higher than the confidence interval of 103.89 required for significance at 0.05 level. The mean difference in cardio respiratory endurance between complex load training and control group is 183.47, it is higher than the confidence interval of 103.89 required for significance at 0.05 level.

This clearly indicates that there is better improvement in the High load complex training group than the control group. It may be concluded from the result of the study that 12weeks of training increased cardio respiratory endurance significantly for High load complex training group than the control group.

**FIGURE-1: BAR DIAGRAM SHOWING ADJUSTED POSTTEST MEAN VALUE OF EXPERIMENTAL GROUP AND CONTROL GROUP IN CARDIO RESPIRATORY ENDURANCE**



**TABLE 3: ANALYSIS OF CO- VARIANCE OF PRE, POST AND ADJUSTED MEANS OF DRIBBLING.**

Test	Complex Training Group	Control Group	SOV	SS	df	MS	F
Pre- Test	15.84	18.43	B/G	662.88	2	31.44	3.60*
			W/G	366.80	42	8.73	
Post Test	15.03	18.33	B/G	107.85	2	53.93	6.56*
			W/G	345.21	42	8.22	
Adjusted Mean	16.72	16.72	B/G	6.69	2	3.34	28.99*
			W/G	4.43	41	0.12	

Significant level at 0.05 level

The adjusted posttest means on high load complex training. Control group were 15.72 and 16.72 respectively and the obtained F ratio of 28.99 was greater than the required F ratio of 3.21, which indicates that test was significant at 0.05 level of confidence for the degrees of freedom 2 and 42. The results of the indicate that there was statically significant difference in dribbling. further, to determine which of the paired means had significant difference Scheffe's post hoc test was applied.

**TABLE 3.1 SCHEFFE'S POST HOC TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST – TEST PAIRED MEANS OF DRIBBLING**

Complex Training Group	Control Group	Mean Difference	Confidence Interval
15.78	.....	0.17	0.30
.....	16.72	0.94	0.30
15.78	15.78	0.80	0.30

Significant level at 0.05 level

Table 3.1 indicates that the mean difference in dribbling between complex training group and group is 0.14, it is lesser than the confidence interval of 0.30 required for significance at 0.05 level. The mean difference in dribbling between complex training and control group is 0.94, it is higher than the confidence interval of 0.30 required for significance at 0.05 level. The mean difference dribbling between complex training and control group is 0.80 it is higher than the confidence interval of 0.30 required for significance at 0.05 level. This clearly indicates that there is better improvement in the complex training group than the control group. It may be concluded from the results of the study that twelve weeks of training increased dribbling significantly for complex training group than the complex training group.

**FIGURE-2: BAR DIAGRAM SHOWING ADJUSTED POSTTEST MEAN VALUE OF EXPERIMENTAL GROUP AND CONTROL GROUP IN DRIBBLING****DISCUSSION:-**

Football is the most popular sport in the world. Scientific methods of sports training are required to attain greater heights in the game of Football. Training is usually defined as a systematic process of repetitive progressive exercise or work, involving the learning process and acclimatization (David, D. 1987). The performance of a footballer is largely depended upon his

or her football specific physical fitness and improvement in football specific physical fitness happens only when the general physical fitness is improved. The contribution of physical fitness towards sports performance is indirect. But it Should never be overlooked that specific physical fitness depends largely on the general physical fitness (Hardayal Singh 1983). Complex training, one of the most advanced forms of sports training, integrates strength training, plyometrics, and sport specific movement. It consists of an intense strength exercise followed by a plyometric exercise. According to Ebben and Watts: & quot; High load weight training increases motor neuron excitability and reflex potentiating which may create optimum training conditions for subsequent plyometric exercise. Also, the fatigue associated with high load weight training may force more motor units to be recruited during the plyometric phase, possibly enhancing the training state & quot; The results of the study reveals that there was a significant improvement in endurance and dribbling ability after the completion of twelve weeks of complex training program among the male intercollegiate football players as compared to the control group. Further the study revealed that there was better improvement due to complex training programme on endurance and dribbling ability than complex training programme.

#### **CONCLUSIONS:-**

Based on the analysis and results of the study the following conclusions were drawn.

1. Complex training and improved cardio respiratory endurance and dribbling ability after the twelve weeks of training programme among the male inter-collegiate football players.
2. Twelve weeks of complex training improved cardio respiratory endurance and dribbling ability complex training among the male intercollegiate football players.
3. Twelve weeks of complex training improved cardio respiratory endurance and dribbling ability better than control group among the male inter-collegiate football players.

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