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Effect of continuous training and interval training on selected flexibility and muscular strength among college level men boxers

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Abstract
Aim: The objective of the present study is to identify the effects of continuous training and interval training performances on flexibility and muscular strength among college level boxers.
Methodology: Twelve weeks of continuous training was studied with constant-flexibility and muscular strength procedure and constant-time procedure. Twelve weeks of interval training was studied. ANCOVA statistical analyses have been used to analyses the performance and outcome of the men boxers and Scheffe's post hoc test was used to find out the mean difference of confidence continuous training and Interval training.
Result: The submaximal-performance effects on flexibility F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.06, 2 and 86 (df) =3.06. Significant is better than control group. These effects have been compared for muscular strength boxers F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.06, 2 and 86 (df) =3.06. Significant is better than control group.

Keywords: flexibility, muscular strength, continuous and interval training

1. Introduction

The present study sought to evaluate the inconsistencies previously observed regarding the pre dominance of continuous and interval training for improving fitness. The experimental design initially equated and subsequently maintained the same relative exercise intensity by both groups throughout the programs. Thirty subjects were equally divided into continuous training (continuous training, exercise at 50% to 60% maximal work) or interval training (30 subject as working group and control group respectively at 100% maximal work) training groups that performed 30 min per day for 3 days in all 12 weeks. Following continuous training and interval training, exercising work rates were parallel examined both the interval training and continuous training. Three equated groups were performed to measure the performance of flexibility and muscular strength; one group act as control group and another two group act as experimental group. Interval training and continuous training regimens are used to improved physical fitness. There is conflicting evidence as to which is the more effective in improving biochemical, physiological, and performance measures (Cunningham *et al*. 1979). The purpose of this study were to compare the effects of using the same relative work intensities in the two training modes and examine their effect in continuous training and Interval training tests.

2. Methodology
2.1 Sample selection
Simple random procedure was used to select the subjects for the present study. To delimit the present study only male boxers of Tamil Nadu were selected. Totally, 90 members have been taken as sample size. The sample size was divided into three groups namely; continuous training group, interval training group and control group.

2.2 Collection of data
A selected package of continuous training and interval training were administered to collect the data. 12 weeks was administered to all three groups. The performance of all groups was administered for only 30 min per day especially for continuously 3 days in all 12 weeks.

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2.3 Analysis

ANCOVA and Scheffe's post hoc test were used for the study. The mean, sum of squares, mean square and f-ratio are identified by using the SPSS package and Microsoft version is used to all the tabular columns and figures.

2.4 Selection of variables

The various scientific literatures have been reviewed, based on the review flexibility and muscular strength among college level boxers in Tamil Nadu was selected as variables of the present study.

3. Computation of analysis of covariance and post hoc test Results on flexibility

The statistical analysis comparing the initial and final means of flexibility due to Continuous training and Interval training among college level boxers is presented in Table 1.

Table I: Ancova results on effect of continuous training and interval training compared with controls on flexibility

	Continuous training	Interval training	Control group	Source of variance	Sum of squares	df	Mean squares	Obtained F
Pre Test Mean	14.37	15.17	14.90	Between	9.96	2	4.98	1.90
				Within	227.83	87	2.62	
Post Test Mean	18.57	17.23	15.57	Between	135.56	2	67.78	18.31*
				Within	322.10	87	3.70	
Adjusted Post Test Mean	18.81	17.04	15.52	Between	159.09	2	79.54	26.67*
				Within	256.45	86	2.98	
Mean Diff	4.20	2.07	0.67					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.06, 2 and 86 (df) =3.06. *Significant

As shown in Table 1, the obtained pre-test means on Flexibility on Continuous training group was 14.37, Interval training group was 15.17 was and control group was 14.90. The obtained pre-test F value was 1.90 and the required table F value was 3.06, which proved that there was no significant difference among initial scores of the subjects.

The obtained post-test means on Flexibility on Continuous training group was 18.57, Interval training group was 17.23 was and control group was 15.57. The obtained post-test F value was 18.31 and the required table F value was 3.06, which proved that there was significant difference among post test scores of the subjects.

Taking into consideration of the pre-test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F value 26.67 was greater than the required value of 3.06 and hence it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table 2.

Table 2: Multiple comparisons of paired adjusted means and scheffe's confidence interval test results on flexibility

Means			Mean Difference	Required . C I
Continuous training Group	Interval training Group	Control Group		
18.81	17.04		1.76*	1.10
18.81		15.52	3.29*	1.10
	17.04	15.52	1.52*	1.10

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Continuous training group and control group (MD: 3.29). There was significant difference between Interval training group and control group (MD: 1.52). There was significant difference between treatment groups, namely, Continuous training group and Interval training group. (MD: 1.76).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure 1.
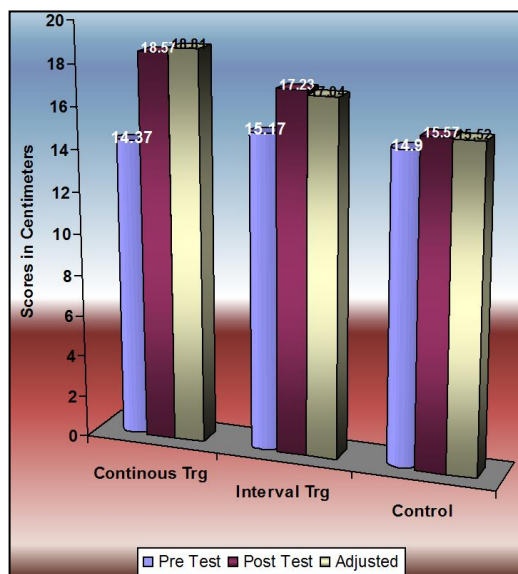

Fig 1: Bar diagram showing pre-test, post-test and ordered adjusted means on flexibili

3.1 Discussions on findings on flexibility

In order to find out the effect of Continuous training and Interval training on Flexibility the obtained pre and post-test means were subjected to ANCOVA and post hoc analysis through Scheffe's confidence interval test.

The effect of Continuous training and Interval training on Flexibility is presented in Table 2. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 26.67 was greater than the required table F value to be significant at 0.05 level.

Since significant F value was obtained, the results were further subjected to post hoc analysis and the results presented in Table 2 proved that there was significant difference between Continuous training group and control group (MD: 3.29) and Interval training group and control group (MD: 1.52). Comparing between the treatments groups, it was found that there was significant difference between Continuous training and Interval training group among college level boxers.

Thus, it was found that continuous training was significantly better than interval raining and control group in improving Flexibility of the college level boxers

4. Results on muscular strength

The statistical analysis comparing the initial and final means of muscular strength Due to Continuous training and Interval training among college level boxers is presented in Table 3.

Table 3: Ancova results on effect of continuous training and interval training compared with controls on muscular strength

	Continuous training	Interval training	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	33.20	30.93	31.87	Between	77.87	2	38.93	2.88
				Within	1176.13	87	13.52	
Post Test Mean	36.10	35.93	31.73	Between	367.36	2	183.68	11.48*
				Within	1392.43	87	16.00	
Adjusted Post Test Mean	34.94	36.96	31.86	Between	393.86	2	196.93	57.83*
				Within	292.88	86	3.41	
Mean Diff	2.90	5.00	-0.13					

Table F-ratio at 0.05 level of confidence for 2 and 87 (df) =3.06, 2 and 86 (df) =3.06. *Significant

As shown in Table 3, the obtained pre-test means on Muscular strength on Continuous training group was 33.20, Interval training group was 30.93 was and control group was 31.87. The obtained pre-test F value was 2.88 and the required table F value was 3.06, which proved that there was no significant difference among initial scores of the subjects.

The obtained post-test means on Muscular strength on Continuous training group was 36.10, Interval training group was 35.93 was and control group was 31.73. The obtained post-test F value was 11.48 and the required table F value was 3.06, which proved that there was significant difference among post test scores of the subjects.

Taking into consideration of the pre-test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F value 57.83 was greater than the required value of 3.06 and hence it was accepted that there was significant differences among the treated groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table 4.

Table 4: Multiple comparisons of paired adjusted means and scheffe's confidence interval test results on muscular strength

Means			Mean Difference	Required. C I
Continuous training Group	Interval training Group	Control Group		
34.94	36.96		-2.02*	1.18
34.94		31.86	3.08*	1.18
	36.96	31.86	5.10*	1.18

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Continuous training group and control group (MD: 3.08). There was significant difference between Interval training group and control group (MD: 5.10). There was significant difference between treatment groups, namely, Continuous training group and Interval training group. (MD: -2.02).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure 2.
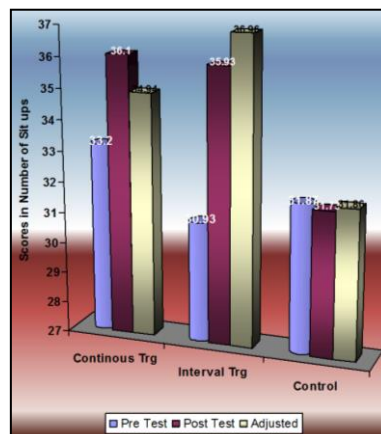

Fig 2: Bar diagram showing pre-test, post-test and ordered adjusted means on muscular strength

4.2 Discussions on findings on muscular strength

In order to find out the effect of Continuous training and Interval training on Muscular strength the obtained pre and post-test means were subjected to ANCOVA and post hoc analysis through Scheffe's confidence interval test.

The effect of Continuous training and Interval training on Muscular strength is presented in Table 4. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 57.83 was greater than the required table F value to be significant at 0.05 level.

Since significant F value was obtained, the results were further subjected to post hoc analysis and the results presented in Table 4 proved that there was significant difference between Continuous training group and control group (MD: 3.08) and Interval training group and control group (MD: 5.10). Comparing between the treatments groups, it was found that there was significant difference between Continuous training and Interval training group among college level boxers.

Thus, it was found that Interval training was significantly better than Continuous training and control group in improving Muscular strength of the college level boxers.

5. Conclusion

In the present study, the effects of 12 week of exercise (Continuous training and interval training), were studied in college level men boxers. The data shows that there is a significant increase in the performance of flexibility and muscular strength sports training of the college level male boxers.

6. References

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