

**EFFECT OF CIRCUIT TRAINING ON SELECTED PHYSICAL AND
PHYSIOLOGICAL VARIABLES OF SCHOOL BOYS*****Dr. K. Senthilkumar**

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Abstract:

For this study 30 Kabaddi players selected. They subjects were selected from Namakkal dist Matriculation Higher Secondary School. The subject's age range was 16 to18 years. They were randomly divided into two equal groups; one group was considered as experimental group and another group as control group. The subject were tested in order to find out physical and physiological variables namely as muscular strength and endurance, speed ,agility, breath holding capacity ,vo2max.The experimental group participated in specific cardiac circuit training the training was carried out for a period of eight weeks and subject were trained three days a week. The data was collected before and after training for period of pre- test, post-test for Kabaddi players. The statistical tool used was't' test. The level of significant for the study was chosen as 0.05. The selected experimental group after the six weeks training significant improvement in all variables.

KEY WORDS: Circuit Training, Physical and Physiological Variables, School boys.**INTRODUCTION**

Circuit training method ,was developed by R.E.morgan and G.T.Adamson in 1953 at the university of leeds England .this type of conditioning involve almost all of the training factor .circuit training can be designed to develop strength ,power ,muscular endurance ,speed ,agility and neuromuscular coordination ,flexibility and cardiovascular endurance .circuit training combines a number of different components of training ,thus total fitness is emphasized. It provides an interesting training environment for the athlete, and there are established times and level to motivate the athlete to continue improving .it can be

adapted within the time constrains of the individual. in circuit training progression in all activities is assured. Circuit training is an excellent way to simultaneously improve mobility and build strength and stamina. The circuit training format utilizes a group of 6 to 10 strength exercises that are completed one exercise after another. Each exercise is performed for a specified number of repetition or for a given time period before moving on to the next exercise .There are numerous benefits to incorporating a healthy cardiovascular related training routine. Many people's workout regimen only involves a routine of lifting weights a few days a week. The term cardiovascular can be

defined as the body's ability and efficiency to get blood and oxygen to the muscles. The amount of time spent on cardiovascular exercises will vary according to your specific goals. For an individual attempting to further their heart health, without specifically gaining or losing weight, a general guideline would be to perform cardio a minimum of 30 minutes a day, 3 days a week. Circuit training is a type of interval training program which combines components of both strength training and cardiovascular training. It is often a set up of

stations or 'circuits' which individuals will complete before moving onto the next. Within each circuit participants will perform exercises for a specific count or a specific time period before they venture to the next station. The goal of circuit training is to increase strength and agility at the same time as increasing fitness. Some studies have even found that circuit training is the most efficient way to enhance cardiovascular training and muscle endurance.

SELECTION OF VARIABLES

TABLE - I

1. Physical variables		
S.No	Variables	Test
1	Muscular strength and endurance	Sit-ups
2	Speed	30 mts dash
3	Agility	Shuttle run
2. Physiological variables		
S.No	Variables	Test
1	Breath holding capacity	Timing
2	Vo2 Max	Bench step test

TABLE – II

COMPUTATION OF 't'- RATIO BETWEEN PRE AND POST TEST MEANS OF EXPERIMENTAL & CONTROL GROUP ON MUSCULAR STRENGTH ENDURANCE

Variable	Group		Mean	Std. deviation	Std-Error mean	't'- ratio
Muscular strength endurance	Experimental group	Pre	37	34.88	5.71	6.24*
		Post	48	47.48	6.21	
	Control group	Pre	35	33.70	51.71	0.59
		Post	34	34.81	5.81	

Table II shows that the muscular strength endurance of experimental group mean values. The mean value of pre and post test 37 and 48 respectively, the calculated value 6.24 is greater than the required

table value of 2.14 for 0.05 level of confidence. Hence there was significant difference on muscular strength endurance between the pre and post test on experimental group. The mean value

of pre and post test on control group is 35 and 34 respectively, the calculated value 0.59 is lower than the required table value of 0.05 level of confidence. Hence

there was no significant difference on muscular strength endurance between pre and post test on control group.

TABLE – III
COMPUTATION OF 't'- RATIO BETWEEN PRE AND POST TEST MEANS OF EXPERIMENTAL & CONTROL GROUP ON SPEED

Variable	Group		Mean	Std. deviation	Std- Error mean	't'-ratio
Speed	Experimental group	Pre	8.14	0.49	0.0447	7.24*
		Post	7.84	16.94	1.483	
	Control group	Pre	7.73	7.48	2.6908	0.70
		Post	7.70	27.76	10.08	

Table III shows that the speeds of experimental group mean values. The mean value of pre and post test 8.14 and 7.84 respectively, the calculated value 7.24 is greater than the required table value of 2.14 for 0.05 level of confidence. Hence there was significant difference on speed between the pre and post test on experimental group.

The mean value of pre and post test on control group is 7.73 and 7.70 respectively, the calculated value 0.70 is lower than the required table value of 0.05 level of confidence. Hence there was no significant difference on speed between pre and post test on control group.

TABLE – IV
COMPUTATION OF 'T' RATIO BETWEEN PRE AND POST TEST MEANS OF EXPERIMENTAL & CONTROL GROUP ON AGILITY

Variable	Group		Mean	Std. deviation	Std- Error mean	't'-ratio
agility	Experimental group	Pre	11.89	10.196	3.09	4.78*
		Post	11.42	43.158	12.17	
	Control group	Pre	11.16	15.70	48.26	0.73
		Post	11.21	28.08	8.91	

Table IV shows that the agility of experimental group mean values. The mean value of pre and post test 11.89 and 11.42 respectively, the calculated value 4.78 is greater than the required table value of 2.14 for 0.05 level of confidence. Hence there was significant difference on agility between the pre and post test on experimental group.

The mean value of pre and post test on control group is 11.16 and 11.21 respectively; the calculated value 0.73 is lower than the required table value of 0.05 level of confidence. Hence there was no significant difference on agility between pre and post test on control group

TABLE – V

**COMPUTATION OF 't'- RATIO BETWEEN PRE AND POST TEST MEANS OF
EXPERIMENTAL & CONTROL GROUP ON BREATH HOLD CAPACITY**

Variable	Group		Mean	Std. deviation	Std- Error mean	't'-ratio
Breath hold	Experimental Group	pre	0.514	1.93	2.692	3.89*
		Post	3.96	0.65	0.33	
	Control group	Pre	3.162	12.16	1.76	0.04
		Post	0.421	6.09	1.54	

Table V shows that the breath hold capacity of experimental group mean values. The mean value of pre and post test 0.514 and 3.96 respectively, the calculated value 3.89 is greater than the required table value of 2.14 for 0.05 level of confidence. Hence there was significant difference on breath hold capacity between the pre and post test

on experimental group. The mean value of pre and post test on control group is 3.162 and 0.421 respectively, the calculated value 0.04 is lower than the required table value of 0.05 level of confidence. Hence there was no significant difference on breath hold capacity between pre and post test on control group.

**TABLE – VI
COMPUTATION OF 't'- RATIO BETWEEN PRE AND POST TEST
MEANS OF CONTROL GROUP ON VO₂ MAX**

Variable	Group		Mean	Std. deviation	Std- Error mean	't'-ratio
Breath hold capacity	Experimental group	pre	131.86	15.27390	0.44399	10.13*
		Post	127.36	16.02903		
	Control group	Pre	133.93	14.84154	0.83450	0.87
		Post	134.66	14.49455		

Table V I shows that the vo₂ max of experimental group mean values. The mean value of pre and post test 131.86 and 127.36 respectively, the calculated value 10.13 is greater than the required table value of 2.14 for 0.05 level of confidence. Hence there was significant difference on vo₂ max between the pre and post test on Experimental group. The mean value of pre and post test on control group is 133.93 and 134.66 respectively; the calculated value

0.87 is lower than the required table value of 0.05 level of confidence. Hence there was no significant difference on vo₂ max between pre and post test on control group.

CONCLUSION

On the basis of the interpretation of the data, following conclusion to draw from the study. Eight weeks practice of circuit training programme improved the selected physical and physiological variables such as

muscular strength and endurance, speed, agility, breathe holding capacity, vo_2 max.

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