

## EFFECT OF INTENSIVE INTERVAL TRAINING ON AEROBIC CAPACITY AND ANAEROBIC POWER OF MALE KABADDI PLAYERS

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### ABSTRACT

The purpose of the study was to investigate the effect of intensive interval training programme on aerobic and anaerobic power among kabaddi players. Forty kabaddi were selected as subjects from Annamalai University. The age, height and weight of the subjects ranged from 18 to 24 years, 160 to 171 centimeters and 55 to 66 kilograms respectively. The selected subjects were randomly assigned into two equal groups of 20 subjects each. Group-I performed intensive interval and group-II acted as control. The dependent variables selected were aerobic capacity and anaerobic power respectively. The collected data from the two groups prior to and post experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). The results of the study showed that the aerobic capacity and anaerobic power have significantly improved due to the 12 weeks of intensive interval training programme.

*Key words: Intensive interval training, Aerobic and anaerobic power, Kabaddi players.*

### INTRODUCTION

Kabaddi is an Indigenous game and it requires power and skill. It was originally meant to develop self defence, in addition to develop responses to attack and reflex of counter attack (Natrajon & Kumar 2006). Kabaddi is a body contact game and the intensity and aggression run very high amongst the player and it also requires both skill and power (Kumar, 2015). Strength and speed play a vital role because kabaddi is a body contact power sports (Mishra, 2010). For plying kabaddi players require strong leg muscle to give punch to the opponent players (Jadhav, 2011). Various techniques of attack and defense is played very quickly and strongly.

The game of Kabaddi is essential as game of tag by great deal of feinting, dodging, turns, kicks and twists apart from these the participants in Kabaddi require considerable muscular strength, either to catch or hold opponents or to resist the heads of opponents and escape from the antis the skills involved in these movements have to be understood and carefully practiced over long period as in any other well organized game in order that participants may not only play better but derive satisfaction in playing Kabaddi. In order to develop Kabaddi skills, players have first to develop considerable speed and great muscular strength by conditioning exercised and these will be dealt with in a separate chapter on conditioning.

The skills essential for Kabaddi are under two heads offensive skills and diffusive skills. Offensive skills are those required for a successful raid and the defensive skills include

the ability to out man ensure a raider, and present is return to his head side of the court and unless defensive skills are well under stood by the raider. The raider can hardly make effective raids. Since the raider has to put opponents by tagging without being caught. The terminology used in the described of these skills cannot be said to adapt in every case and follows current practice and there is need to modify or improve them. It is vital for whole person to have total effectiveness in the physical fitness, which includes, and neuro muscular, cardio vascular and other organic systems by the physical exercise.

Many elite athletes attribute their success to interval training with the spacing of exercise and rest periods, a tremendous amount of work can be accomplished that would not normally be completed in a workout in which the exercise was performed continuously. Repeated exercise bouts can vary from a few seconds to several minutes or more depending on the desired outcome. The interval training prescription can be modified in terms of intensity and duration of the exercise interval, the length and the type of relief interval, the number of work intervals and the number of repetitions and sets per workout. Adjustment of any or all of these can easily be made to the specific requirement for different performance. One value of interval training is that it permits high intensity and intermittent exercise for a relatively long period (McArdle, Katch & Katch, 1985). The aim of the present study was to assess the effect of intensive interval training programme on aerobic and anaerobic power among kabaddi players.

## **METHODOLOGY**

### **Subjects and Variables**

Forty kabaddi players were selected as a subjects from Annamalai University. The age, height and weight of the subjects ranged from 18 to 24 years, 160 to 171 centimeters and 55 to 66 kilograms respectively. The selected subjects were randomly assigned into two equal groups of 20 subjects each. Group-I performed intensive interval training and group-II acted as control. Cooper's twelve minutes run or walk test was used to assess the aerobic capacity and Margaria-Kalamen anaerobic power test was used to assess the anaerobic power.

### **Training Protocol**

The experimental group subjects underwent their respective training three days per week (alternate days) for twelve weeks. The experimental group performed intensive interval training. To fix the training load for the experimental groups the subjects were examined for their exercise heart rate in response to different work bouts, by performing continuous running of two minutes duration for proposed repetitions and sets, alternating with active

recovery based on work-rest ratio. The subject’s training zone was computed using Karvonen formula and it was fixed at 80%HRmax to 95%HRmax for intensive interval training. The work rest ratio of 1:1 between exercises and 1:3 between sets was given. In all the cases the level of confidence was fixed at 0.05 for significance.

**Experimental Design and Statistical Technique**

The experimental design in this study was random group design involving 40 subjects. The subjects were divided at random in to two groups of twenty each. Both the groups selected from the same population. The collected data from the two groups prior to and post experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA).

**Results**

The pre and posttest data collected from the intensive interval training and control groups were analysed and presented in table – I

**Table – I: Analysis of Covariance on Aerobic Capacity of Experimental and Control Groups**

	<b>Intensive Interval Training Group</b>	<b>Control Group</b>	<b>S o v</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean squares</b>	<b>‘F’ ratio</b>
Pre test Mean	2472.75	2471.25	B	22.50	1	22.50	0.006
SD	62.64	59.82	W	14.2567.50	38	3751.77	
Post test Mean	2510.75	2471.75	B	15210.00	1	15210.00	5.25*
SD	55.28	52.27	W	109977.50	38	2894.14	
Adjusted Post test Mean	2510.48	2472.01	B	14791.68	1	14791.68	5.96*
			W	91704.88	37	2478.51	

*(Table value required for significance at 0.05 level of confidence with df 1 & 37 and 1 & 38 is 4.11 and 4.10.) \*Significant at .05 level of confidence*

Table-I shows that the pre-test means and standard deviation on aerobic capacity of intensive interval training group and control group are  $2472.75 \pm 62.64$  and  $2471.25 \pm 59.82$  respectively. The obtained ‘F’ ratio value is 0.006 of aerobic capacity was less than the required table value of 4.10 for the degrees of freedom 1 and 38 at 0.05 level of confidence.

The post-test means and standard deviation on aerobic capacity of intensive interval training group and control group are  $2510.75 \pm 55.28$  and  $2471.75 \pm 52.27$  respectively. The obtained ‘F’ ratio value is 5.25 of aerobic capacity was greater than the required table value of 4.10 for the degrees of freedom 1 and 38 at 0.05 level of confidence.

The adjusted post-test means on aerobic capacity of intensive interval training group and control group are 2510.48 and 2472.01 respectively. The obtained ‘F’ ratio value is 5.96 of aerobic capacity was greater than the required table value of 4.11 for the degrees of freedom 1 and 37 at 0.05 level of confidence. Hence it was concluded that due to the effect of 12 weeks of intensive interval training the aerobic capacity of the subjects was significantly improved.

The data collected before and after the experimental period on anaerobic power of intensive interval training group and control group were analysed and presented in table – II

**Table – II: Analysis of Covariance on Anaerobic Power of Experimental and Control Groups**

	<b>Intensive Interval Training Group group</b>	<b>Control Group</b>	<b>SoV</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean squares</b>	<b>‘F’ ratio</b>
Pre test Mean SD	122.10	121.85	B	0.62	1	0.62	0.14
	2.14	2.08	W	170.35	38	4.48	
Post test Mean SD	124.25	121.95	B	52.90	1	52.90	8.49*
	2.88	2.03	W	236.70	38	6.23	
Adjusted Post test Mean	124.20	121.99	B	48.33	1	48.33	8.48*
			W	210.85	37	5.69	

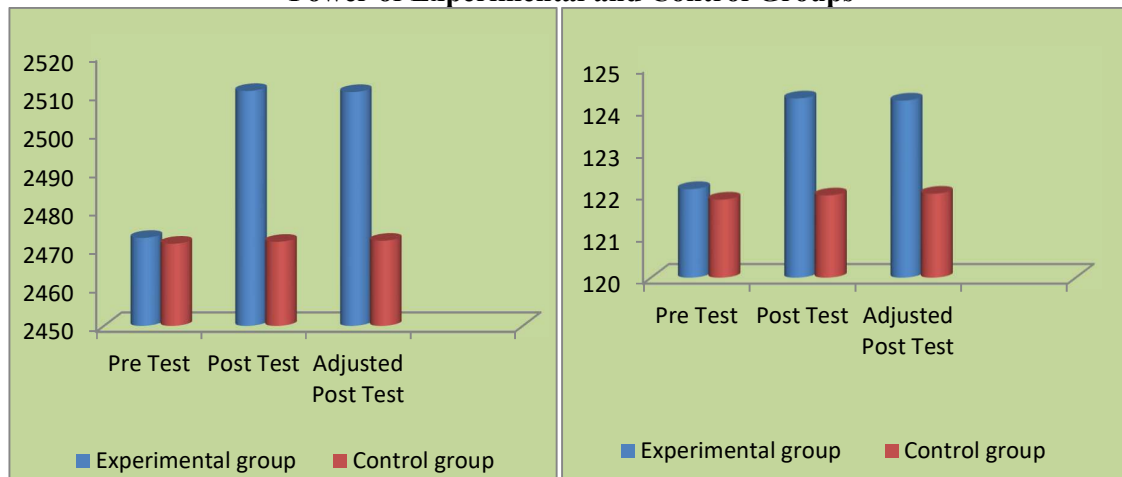
*(Table value required for significance at 0.05 level of confidence with df 1 & 37 and 1 & 38 is 4.11 and 4.10.) \*Significant at .05 level of confidence*

Table-II shows that the pre-test means and standard deviation on anaerobic power of intensive interval training group and control group are  $122.10 \pm 2.14$  and  $121.85 \pm 2.08$  respectively. The obtained ‘F’ ratio value is 0.14 of anaerobic power was less than the required table value of 4.10 for the degrees of freedom 1 and 38 at 0.05 level of confidence.

The post-test means and standard deviation on anaerobic power of intensive interval training group and control group are  $124.25 \pm 2.88$  and  $121.95 \pm 2.03$  respectively. The obtained ‘F’ ratio value is 8.49 of anaerobic power was greater than the required table value of 4.10 for the degrees of freedom 1 and 38 at 0.05 level of confidence.

The adjusted post-test means on anaerobic power of intensive interval training group and control group are 124.20 and 121.99 respectively. The obtained ‘F’ ratio value is 8.48 of anaerobic power was greater than the required table value of 4.11 for the degrees of freedom 1 and 37 at 0.05 level of confidence. Hence it was concluded that due to the effect of 12weeks of intensive interval training the anaerobic power of the subjects was significantly improved.

**Figure – I: Diagram Showing the Mean Value on Aerobic Capacity and Anaerobic Power of Experimental and Control Groups**



## DISCUSSION

The results of the study showed significant improvement on aerobic capacity and anaerobic power due to intensive interval training. Many studies have examined the possible interference of interval training on aerobic capacity. To maintain aerobic capacity, training must be conducted at least three times per week and training intensity should be 70%  $VO_{2max}$  (Wilmore & Costill, 1999). These results are conformity with the following findings. Paton and Hopkins (2005) found that 1- and 4-km time trial performance increased could have also been a result of high intensity interval training. Alcevedo and Goldfarb (1989) suggested that, to produce best performance training intensities have to be equal to those, which will be attempted in the competition. Weltman *et al.*, (1992) arrived at the conclusion that, exercise at lactate threshold, was sufficient for endurance gains within the first 4 months whereas continuing improvement needed higher intensities. Kolata, Gina (2002) indicated that approximately 10% of aerobic power can improve by healthy individuals with short term exercise. The protocol for interval training is to push our body past the aerobic threshold for a few moments and then return to aerobic conditioning level with the objective of improving speed, strength, endurance and cardiovascular fitness.

## CONCLUSIONS

The results of the study showed that the aerobic capacity and anaerobic power have significantly improved due to the 12 weeks of intensive interval training programme. It is a technique particularly employed by runners, but athletes in many disciplines use this type of training. Today, athletes use more structured interval training workouts to build speed and endurance.

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