



## Effect of Kalaripayattu Training on Selected Biochemical Variables among Basketball Players

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### Abstract

The purpose of the present study was to determine the effect of Kalaripayattu training programme on selected biochemical variables among inter-collegiate basketball players. To achieve the purpose of the present study, twenty-four inter-collegiate basketball players were selected from the Bharathidasan University, Tiruchirappalli. The subjects were randomly selected and their age ranged from 18 -25 years. The selected groups were divided into two groups, experimental and control group. The experimental group consisted of twelve basketball players and they underwent the medium of kalaripayattu selected skill training. Twelve Basketball players acted as the control group. The duration of the training period was restricted to eight weeks and the session for alternative days in a week. Kalaripayattu training is considered as the independent variables. The Biochemical variables (total cholesterol and fasting blood sugar) were known as dependent variables. The statistical technique covariance ANCOVA was used to analyze the pre-test and post-test data of experimental group and control group. The results showed that the kalaripayattu training group had significant improvement ( $P \leq 0.05$ ) in the level of the selected biochemical variable such as Total Cholesterol and Fasting Blood Sugar compared to the control group.

**Keywords:** Kalaripayattu Training, Total Cholesterol, Fasting Blood Sugar.

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### Introduction

Kalaripayattu is a traditional fighting system and martial art that combines many facts evenly and it includes some health elements and fitness mantras as well and it is a traditional martial art of Kerala, popular in Malabar regions. According to scientifically written rules, Kalaripayattu has four distinct stages – meythari, kolthari, angathari and verumkai. It gives benefits to the body as whole, it helps the body to respond quickly and stimulate body parts, it improves the movements, the flexibility and many other bodily benefits related to health. This training assists athletes yield for athletes a good stretching exercise and moulds the body to function healthy and fit. Kalaripayattu training is usually conducted in an arena or a gymnasium of specific dimensions with mud flooring. This is an ancient traditional martial art form of Kerala, India. This is the most ancient martial art in the world. People believe that the kalaripayattu culture has 3000 years of history and it is known to be the mother of all martial arts.

In humans, training reduces the rate of glucose uptake during moderate intensity exercise of maximal oxygen uptake (Coggan *et al.*, 1990). However, the rate of glucose uptake increases exponentially with

increasing exercise intensity and trained individuals are capable of exercising at higher intensities than untrained individuals (Jansson and Kaijser, 1987). Furthermore, the rate of glucose uptake by muscle depends on both exercise and circulating insulin concentration (DeFronzo *et al.*, 1979).

### Statement of the Problem

The purpose of the study is to find out the effect of Kalaripayattu training on selected Biochemical variable among inter collegiate Basketball players.

### Hypothesis

It was hypothesised that the kalaripayattu training programme would improve the selected biochemical variables among inter-collegiate basketball players.

### Methodology

The purpose of the study was to find out the effect of kalaripayattu training on selected biochemical variables among inter-collegiate men's basketball players. To achieve the purpose of this study, twenty-four basketball players were selected from Bharathidasan University, Tiruchirappalli. The subject was randomly selected by with the age group ranging from 18 to 25 years. The selected subject was divided into two equal groups of twelve each. Group I (KPG) was considered

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as an experimental group who underwent for eight weeks kalaripayattu skill trainings programme for alternate days in week and group II (CG) as a control group without any special training. Biochemical parameters were selected as variable for the study. The Data was collected from the selected criterion variables before and after a training programme as pre and post test respectively. The analysis of covariance (ANCOVA) was used to find out the significant difference between the groups of selected criterion variable separately.

**Measurements :** Medical Laboratory Equipments,  
**Kalaripayattu Exercise**

The following Kalari exercises were given to the experimental group.

- Varahavadivu - Wild Boar
- Gajavadivu - Elephant

- Marjaravadivu–Cat
- Simhamvadivu -Lion
- Sarpamvadivu– Snake
- Kukkudavadivu-Cock
- Mayuravadivu-Peacock
- Aswavadivu -Horse

**Statistical Analysis**

The Data was collected from the selected criterion variables prior to and immediately after training programme as pre and post test respectively. The analysis of covariance (ANCOVA) was used to find out the significant difference among the groups of selected criterion variable separately. The influence of Kalaripayattu Training on Biochemical parameters was analysed separately and the data is presented below.

**Table I.** Analysis of covariance of total cholesterol of kalaripayattu group and control group

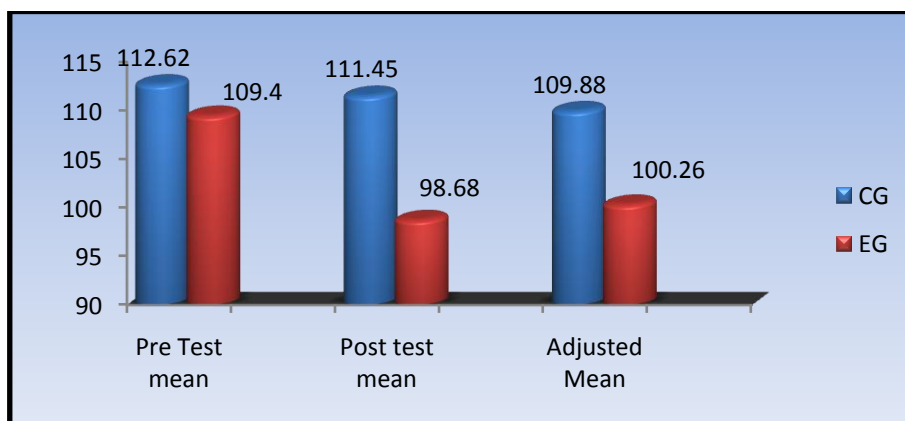
Variables	Variance	CG	EG	Source Of Variance	Sum Of Squares	df	Mean square	“F”
TC	Pre Test mean	160.83	150.25	BG	672.04	1	672.04	1.05
				WG	14037.92	22	638.09	
	Post test mean	163.17	133.92	BG	5133.37	1	5133.37	8.29*
				WG	13624.58	22	619.3	
	Adjusted Mean	158.08	139.00	BG	2084.006	1	2084.006	31.24*
				WG	656.149	21	31.245	

\*Significant at 0.05 level of confidence.

The table value required for significant at 0.05 level confidence for 1 to 22 & 1 to 21 are 4.30 and 4.33, respectively.

The adjusted post mean value of total cholesterol in kalaripayattu training group and control group were 158.08 and 139.00, respectively. The obtained ‘F’ ratio value 31.24 for adjusted post test score on total cholesterol which was more than the required table value 4.33 for df 1 and 21 For significant at 0.05

level confidence on total cholesterol. The results of the study showed that there was a significant difference between the kalaripayattu training and the control group on total cholesterol. The mean values of the kalaripayattu group and the control group on total cholesterol were graphically represented in the figure-I.



**Figure I.** Means values of kalaripayattu training and control group on total cholesterol

**Table II.** Analysis of covariance on fasting blood sugar of both kalaripayattu group and control group

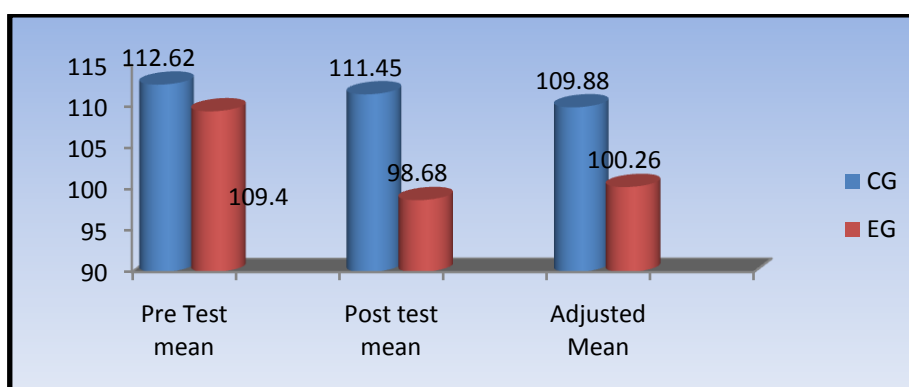
Variables	Variance	CG	EG	Source of Variance	Sum of Squares	df	Mean square	F
FBS	Pre Test mean	112.62	109.4	BG	62.08	1	62.08	0.461
				WG	2963.99	22	134.72	
	Post test mean	111.45	98.68	BG	977.8	1	977.8	6.98*
				WG	3082.89	22	140.13	
	Adjusted Mean	109.88	100.26	BG	543.570	1	543.570	46.95*
				WG	243.137	21	11.578	

\*Significant at 0.05 level of confidence.

The table value required for significant at 0.05 level confidence for 1 to 22 & 1 to 21 are 4.30 and 4.33 respectively.

The adjusted post mean values fasting blood sugar for kalaripayattu training group and control group 109.88 and 100.26, respectively. The obtained 'F' ratio value 46.95 for adjusted post test score on fasting blood sugar which was more than the required table value 4.33 for df 1 and 21. For significant at 0.05 level confidence

on fasting blood sugar. The results of the study indicated that there was a significant difference between the kalaripayattu training and the control group on fasting blood sugar. The mean values of kalaripayattu group and control group on fasting blood sugar were graphically represented in the figure-II.

**Figure II.** Means values of kalaripayattu training and control group on fasting blood sugar

### Discussion and Findings

The results of the study indicate that there is a significant improvement on biochemical variables such as total cholesterol and fasting blood sugar on the kalaripayattu training group when compared to the control group. That means the kalaripayattu training made a significant difference in the biochemical variables among the intercollegiate men basketball players. This study is supported by Sukumar et.al, (2017) which proved that the effect of resistance exercise is a significant difference in the cholesterol among college women. Another supporting study by Roy et.al, (2016) proved that the beneficial effect of bratachari and folk games programme of cholesterol, which significantly gave a positive result of obese adolescent. Sirisha (2015) examined the Effect of Walking on Fasting Blood Sugar in Type 2 Diabetes. The study shows. that the decreased FBS is considered beneficial in the treatment of diabetes mellitus by diabetic person walking for 30 minutes duration. Stanford, (2012) has investigated that the effect of weight loss on fasting blood sugars and haemoglobin

A1c in overweight and obese diabetics and non-diabetics This study demonstrates that diet and exercise in a medically supervised weight loss program can be effective in inducing weight loss, decreasing FBG levels in diabetics and non-diabetics, Meludu (2005) has Conducted the study the Exercise performance in relation to glucose drink and their effect on some biochemical parameters. He suggested that glucose ingestion could be of value in enhancing exercise performance by delaying fatigue in addition to maintaining blood glucose concentration and sparing blood lipids

### Conclusions

The results of the study reveal that there is a significant improvement on biochemical variables such as total cholesterol and fasting blood sugar on the kalaripayattu training group when compared to the control group. These changes are due to training as well as due to participating kalaripayattu training. This training positive change makes basketball players. The

unique profile should be taken into consideration while administering training to the basketball players.

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