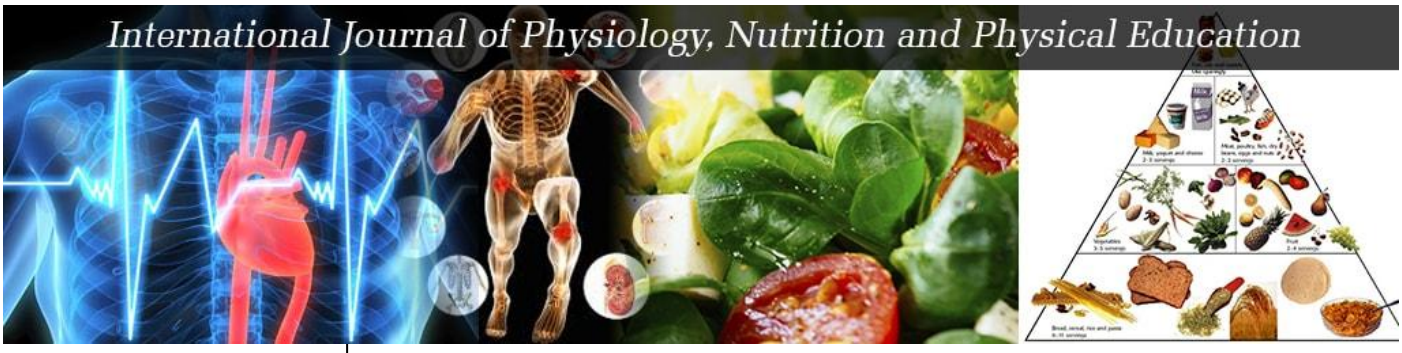

ISSN: 2456-0057
IJPNPE 2017; 2(2): 430-433
© 2017 IJPNPE
www.journalofsports.com
Received: 02-05-2017
Accepted: 04-06-2017

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Effect of Kalaripayattu training and physical exercise training on selected physical variables among inter-collegiate basketball players

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Abstract
The purpose of the present study was to determine the effect of Kalaripayattu training programme on selected physical variables among inter-collegiate men basketball players. To achieve the purpose of the present study, forty-five inter-collegiate basketball players were selected from the affiliated colleges of Kerala University, Thiruvananthapuram, Kerala. The subjects were randomly selected and their age ranged from 18 -23 years. The selected groups were divided into three groups, Kalaripayattu training group, physical exercise group and control group. The experimental group I (KPG) consisted of fifteen basketball players and they underwent the medium of Kalaripayattu selected skill training. The experimental group II (PEG) consisted of fifteen Basketball players and they underwent the medium of physical exercise training and group III acted as control group. The duration of the training period was restricted to twelve weeks. Kalaripayattu training and physical exercise training considered as independent variables. The physical variables (agility and flexibility) were known as dependent variables. The statistical technique covariance ANCOVA was used to analyze the pre-test and post-test data of Kalaripayattu training group and physical exercise group. The results showed that the Kalaripayattu training group and the physical exercise group had improved the level of the selected physical variables compared with the control group.

Keywords: Kalaripayattu training, agility, flexibility.

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 can give more health benefits Kalaripayattu is a traditional martial art of Kerala, popular in Malabar regions. It makes the body to respond quickly and stimulate body parts, movements, flexibility and many other bodily benefits related to health. It provides a good stretching exercise. It 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 (Luijendijk, 2006). Physical Exercise is useful in preventing or treating coronary heart disease, osteoporosis, weakness, diabetes, obesity, and depression. Range of motion is one aspect of exercise important for increasing or maintaining joint function. Strengthening exercises provide appropriate resistance to the muscles to increase endurance and strength. Cardiac rehabilitation exercises are developed and individualized to improve the cardiovascular system for prevention and rehabilitation of cardiac disorders and diseases. A well-balanced exercise program can improve general health, build endurance, and slow many of the effects of aging. The benefits of exercise not only improve physical health, but also enhance emotional well-being.

Statement of the Problem
The purpose of the study is to find out the effect of Kalaripayattu Training and Physical Exercise Training on Selected Physical Variables among Inter-collegiate Men Basketball Players

Hypothesis
It was hypothesised that the Kalaripayattu training programme and physical exercise would

improve the selected physical variables among inter-collegiate basketball players.

Methodology

The purpose of the study is to find out the effect of Kalaripayattu training and physical exercise on selected physical variables among inter-collegiate men basketball players. To achieve the purpose of this study, forty-five basketball players were selected from affiliated colleges of the Kerala University, Thiruvananthapuram. The subjects were randomly selected and their age ranged from 18 to 23 years. The selected subjects were divided into three equal groups of fifteen each namely, experimental group I (KPG) experimental group II (PEG) and control group III (CG). Data were analyzed by using covariance (ANCOVA). Statistical significance was fixed at 0.05 levels. The physical variables and tests used are presented in below.

Selection of Variables and Test

S. No	Variables	Test /Instruments	Unit of Measure
1	Agility	Shuttle Run	Seconds
2	Flexibility	Sit and Reach	Centimetre

Analysis and Interpretation

The influence of Kalaripayattu training and physical exercise on physical parameters was analysed separately and the data is presented below.

Table I: Analysis of covariance on agility of kalaripayattu training, physical exercise and control group (scores in seconds)

Variance	CG	KPG	PEG	Source of Variance	Sum Of Squares	Df	Mean Square	F- Ratio
Pre Test Mean	12.61	12.67	12.62	Between Groups	0.037	2	0.018	0.006
				Within Groups	124.783	42	2.971	
Post Test Mean	12.66	10.47	11.98	Between Groups	37.387	2	18.694	9.24*
				Within Groups	84.927	42	2.022	
Adjusted Post-Test Mean	12.67	10.44	11.99	Between Groups	39.129	2	19.565	51.01*

*Significant at 0.05 level of confidence.

* (The table values required for significance at 0.05 level of confidence for 2 & 42 and 2 & 41 are 3.22 and 3.23 respectively

Table-I shows that the analysed data on Agility through control group, Kalaripayattu training group and physical exercise group. The pre-test means of Agility were 12.61 (control group), 12.67 (Kalaripayattu training group) and 12.62 (Physical exercise group). The obtained F-ratio of pre-test was 0.006 and the table F-ratio was 3.22. Hence, the pre-test was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. The post-test mean of Agility were 12.66 (control group), 10.47 (Kalaripayattu training group) and 11.98 (Physical exercise group). The obtained F-ratio of post test was 9.24 and the table F-ratio was 3.22. Hence, the post-test was significant at 0.05 level of confidence for the degree of freedom 2 and 42. The adjusted post-test means of Agility were 12.68 (control group), 10.45 (Kalaripayattu training group) and 11.99 (Physical exercise group). The obtained F-ratio of adjusted post-test was 51.01 and table F-ratio was 3.23. Hence, the adjusted post-test was significant at 0.05 level of confidence for the degree of freedom 2 and 41. The result showed that there was significant change among three groups were after 12 weeks of trainings.

Since three groups were compared whenever they obtained 'F' ratio for adjusted post test means was found to be significant, the Scheffe's post-hoc test has been applied to find the paired mean difference and it was presented in table-II

Table II: Computation of Scheffe's Post-Hoc Test Ordered Adjusted Final Mean Difference of Agility

Mean Value			Mean Deference	CI Value
CG	KPG	PEG		
12.68	10.45	-----	2.23*	0.58
12.67	-----	11.99	0.68*	
-----	10.45	11.99	1.54*	

*Significant Level = 0.05 Table

Table-II Reveals that the Scheffe's Post-hoc Test of adjusted final mean difference of Agility for different groups. The difference between the adjusted means for the control group and Kalaripayattu training group was 2.23 control group and physical exercise group was 0.68 Kalaripayattu training group and physical exercise group was 1.54 respectively and the Scheffe's Post-hoc test CI value result was 0.58. As the value is less than the mean difference for all the three comparisons, the difference is significant.

Table III: Analysis of Covariance on Flexibility of Kalaripayattu Training, Physical Exercise and Control Group (Scores In Centimeters)

Variance	CG	KPG	PEG	Source of Variance	Sum Of Squares	Df	Mean Square	F- Ratio
Pre Test Mean	21.80	22.87	22.20	Between Groups	8.711	2	4.356	0.69
				Within Groups	266.533	42	6.346	
Post Test Mean	21.87	26.80	23.67	Between Groups	186.978	2	93.489	17.41*
				Within Groups	225.467	42	5.368	
Adjusted Post-Test Mean	22.27	26.32	23.74	Between Groups	122.248	2	61.124	57.55*
					43.546	41	1.062	

*Significant at 0.05 level of confidence.

* (The table values required for significance at 0.05 level of confidence for 2 & 42 and 2 & 41 are 3.22 and 3.23 respectively

Result on Flexibility

Table-III shows the analyzed data on Flexibility through control group, Kalaripayattu training group and physical exercise group. The pre-test means of Flexibility were 21.80 (control group), 22.87 (Kalaripayattu training group) and 22.20 (physical exercise group). The obtained F-ratio of pre-test was 0.69 and the table F-ratio was 3.22. Hence, the pre-test was insignificant at 0.05 level of confidence for the

degree of freedom 2 and 42.this shows that the post-test mean of flexibility were 21.87 (control group), 26.80 (Kalaripayattu training group) and 23.67 (physical exercise group). The obtained F-ratio of post-test was 17.41 and the table F-ratio was 3.22. Hence, the post-test was significant at 0.05 level of confidence for the degree of freedom 2 and 42. The adjusted post-test mean of Flexibility were 22.27 (control group), 26.32 (Kalaripayattu training group) and 23.74 (physical exercise group). The obtained F-ratio of adjusted post-test was 57.55 and table F-ratio was 3.23. Hence, the adjusted post-test was significant at 0.05 level of confidence for the degree of freedom 2 and 41.The result showed that there was a significant change among three groups were after 12 weeks of trainings.

Since three groups were compared whenever they obtained 'F' ratio for adjusted post-test means was found to be significant, the Scheffe's post-hoc test has been applied to find the paired mean difference and it was presented in table-V

Table V: Computation of Scheffe's Post-Hoc Test Ordered Adjusted Final Mean Difference of Flexibility

Mean Value			Mean Deference	CI Value
CG	KPG	PEG		
22.271	26.323	-----	4.05*	0.96
22.271	-----	23.74	1.05*	
-----	26.323	23.74	2.58*	

*Significant Level = 0.05 Table

Table-V shows the Scheffe's Post-hoc Test of adjusted final mean difference of Flexibility for different groups. The difference between the adjusted means for the control group and Kalaripayattu training group was 4.052 control group and physical exercise group was 1.052 Kalaripayattu training group and physical exercise group was 2.583 respectively and the Scheffe's Post-hoc test CI value result was 0.96. As the value is less than the mean difference for all the three comparisons, the difference is significant.

The mean values of Kalaripayattu group, physical exercise group and control group on agility and flexibility were graphically represented in the figure-I and figure-II respectively

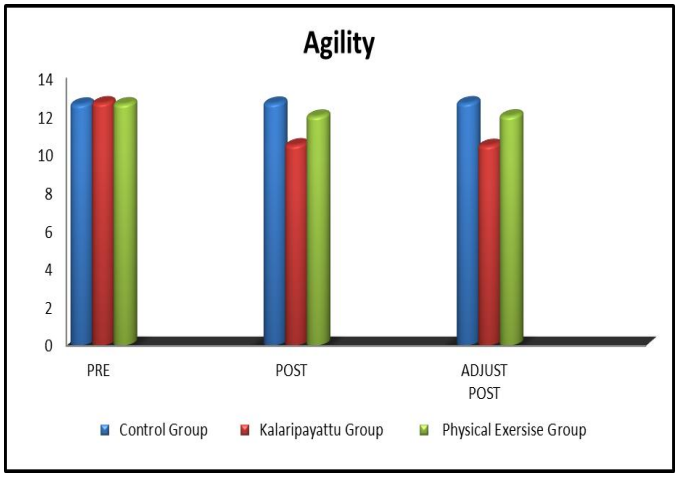

Fig I: Mean Values of Control Group Kalaripayattu Training and Physical Exercise Group on Agility

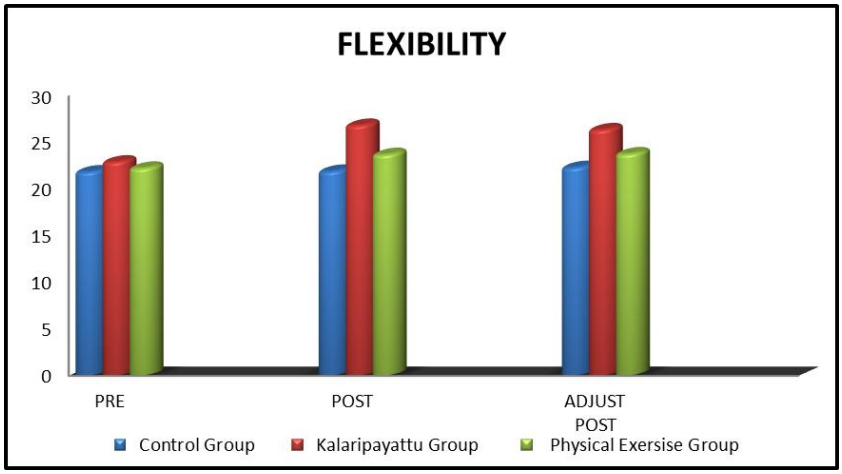

Fig I: Mean values of control group Kalaripayattu training and physical exercise group on flexibility

Discussion on Findings

The results of the study indicate that the Kalaripayattu training group and physical exercise group were significantly improved the agility and flexibility it may be due to the nature of the training of Kalaripayattu and physical exercise which have influenced to increase the physical variables level and performance of basketball players. Further finding of the study showed that the control group didn't changes physical variables. However the experimental group I had more effect on improved the agility and flexibility than the experimental group II. This study is supported by (Sukumar *et al.*, 2017) [9] which resulted that Effect of plyometric exercises improved the agility among the netball players. Krasilshchikov *et al.*, (2010) proved that the effects of pre-season resistance training significantly affected agility of female University softball players. This study is supported by (Jyoti et.al, 2016) [7] which resulted that the effect of callisthenic and aerobic exercises improved the flexibility of primary school students. Narender *et al.*, (2016) [8] Proved that the effect of 8-week flexibility training in the developement of flexibility 20 sports persons who were selected as subjects adopting convenient sampling.

Conclusions

From the above findings and with the limitation of the present study the following conclusion was drawn.

1. There was a significant difference on agility and flexibility has been observed following 12 weeks of Kalaripayattu training and physical exercise when compared to the control group.
2. When comparing the two experimental groups, the Kalaripayattu training was significantly better than physical exercise in increasing agility and flexibility.

3. This training inspires changes in physical variables such as agility and flexibility among the inter-collegiate men basketball players.

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