



Influence of Kalaripayattu Skills with Equipment Training on Selected Physical Fitness Components among Handball Players

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Abstract

The purpose of the study was to find out the Influence of kalaripayattu skills with equipment training on selected physical fitness components namely arm strength, leg strength, maximum power, minimum power, average power and fatigue index among handball players. To achieve the purpose of the study thirty handball players have been randomly selected from various engineering colleges in and around Karur, Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects had past experience of at least three years in handball and only who those represented their respective college teams were taken as subjects. A series of physical fitness components was carried out on each participant. These included arm strength assessed by dip strength, leg strength assessed by 25 meters hopping test, maximum power, minimum power, average power and fatigue index assessed by running based anaerobic sprint test (RAST). The subjects were randomly assigned into two groups of fifteen each, such as control and experimental groups. The experimental group participated in the kalaripayattu skills with equipment training for 3 days a week, one session per day and for 12 weeks each session lasted 90 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between kalaripayattu skills with equipment training group and control group and also kalaripayattu skills with equipment training group showed significant improvement on arm strength, leg strength, maximum power, minimum power, average power, fatigue index and performance when compared to control group.

Keywords: Kalaripayattu, Handball, Strength, Power, Performance.

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Introduction

Kalaripayattu is an Indian martial art. One of the oldest fighting systems in existence, it is now practiced in Kerala, in contiguous parts of Tamil Nadu and among the Malayali community of Malaysia Zarrilli (1998). It was originally practiced in northern and central parts of Kerala and the Tulunadu region of Karnataka. Kalaripayattu includes strikes, kicks, grappling, preset forms, weaponry and healing methods Thomas (2001). Regional variants are classified according to geographical position in Kerala; these are the Northern style from Malabar region in north Kerala, the Central style from inner Kerala and the southern style from Travancore region of south Kerala. Kalaripayattu is a traditional psycho-physiological discipline emanating from Kerala's unique mytho-historical heritage as well as a scientific system of physical culture training. The

historical antecedents of this martial art form combines indigenous Dravidian systems of martial practice such as 'varma ati' or marma adi' with an influence of Aryan brahman culture which migrated southwards down the west coast of India into Kerala. The entrance faces the east. In the south-west corner is a seven-tiered platform called the "poothara", which houses the guardian deity of the kalari. These seven steps symbolise seven abilities each person requires. They include Vigneswa (Strength), Channiga (patience), Vishnu (commanding power), Vadugashcha (the posture), Tadaaguru (training), Kali (the expression) and Vakasta – purushu (sound). Other deities, most of them incarnations of the Bhagavathi or Shiva, are installed in the corners. The martial art of Kalaripayattu also sustains the various dance forms of Kerala such as Teyyam which call for extreme physical stamina. The performing artistes undergo the same training as the kalari combatants. As these dances portray stories of heroes and heroines, the artistes have to learn the skill of using weapons in order to depict mock combats. These performances also require bodily

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flexibility and agility which can be acquired only in a kalari. Thus owing to the close links between this martial art and the dance forms of Kerala, kalaripayattu is an integral part of the cultural heritage of the state (Balakrishnan, 1995).

Methodology

To achieve the purpose of the study thirty handball players have been randomly selected from various engineering colleges in and around Karur, Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects had past experience of at least three years in handball and only who those represented their respective college teams were taken as subjects. A series of physical fitness components was carried out on each participant. These included arm strength assessed by dip strength, leg strength assessed by 25 meters hopping test, maximum power, minimum power, average power and fatigue index assessed by running based anaerobic sprint test (RAST). The subjects were

randomly assigned into two groups of fifteen each, such as control and experimental groups. The experimental group participated in the kalaripayattu skills with equipment training for 3 days a week, one session per day and for 12 weeks each session lasted 90 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups

Results

The findings pertaining to analysis of covariance between experimental group and control group on selected variables have been.

Table I. Criterion measures

S.No	Criterion measure	Test items	Unit of measurement
1	Arm Strength	Dip Strength	1/10th of a second
2	Leg Strength	25 Meters Hopping Test	1/10th of a second
3	Maximum power	Running based anaerobic sprint test (RAST)	Watts
4	Minim power		
5	Average power		
6	Fatigue index		Watts/sec

Table II. Descriptive analysis of selected physical fitness components among control and experimental groups

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Arm Strength	CG	26.06	0.59	27.06	1.03	27.04
		KSWET	26.20	0.56	28.46	0.63	28.48
2	Leg Strength	CG	4.18	0.18	4.23	0.14	4.22
		KSWET	4.17	0.17	4.43	0.18	4.44
3	Maximum power	CG	629.06	23.48	630.66	19.81	630.40
		KSWET	638.86	29.29	660.40	30.98	660.66
4	Minim power	CG	358.60	29.67	358.26	28.18	360.95
		KSWET	367.80	17.87	393.53	27.31	390.85
5	Average power	CG	464.20	32.95	465.06	23.29	464.9
		KSWET	459.73	20.38	490.93	20.33	491.0
6	Fatigue index	CG	8.79	1.11	8.34	0.74	8.35
		KSWET	8.51	0.81	7.83	0.55	7.83

CG= Control group

KSWET= Kalaripayattu skills with equipment training

The tables-II the pre, post-test means, standard deviations and adjusted means on selected physical fitness components of male handball players were numerical presented. The analysis of

covariance on selected variables of control group and Kalaripayattu skills with equipment training group is presented in table – III.

Table III. Computation of analysis of covariance on selected physical fitness components among handball players

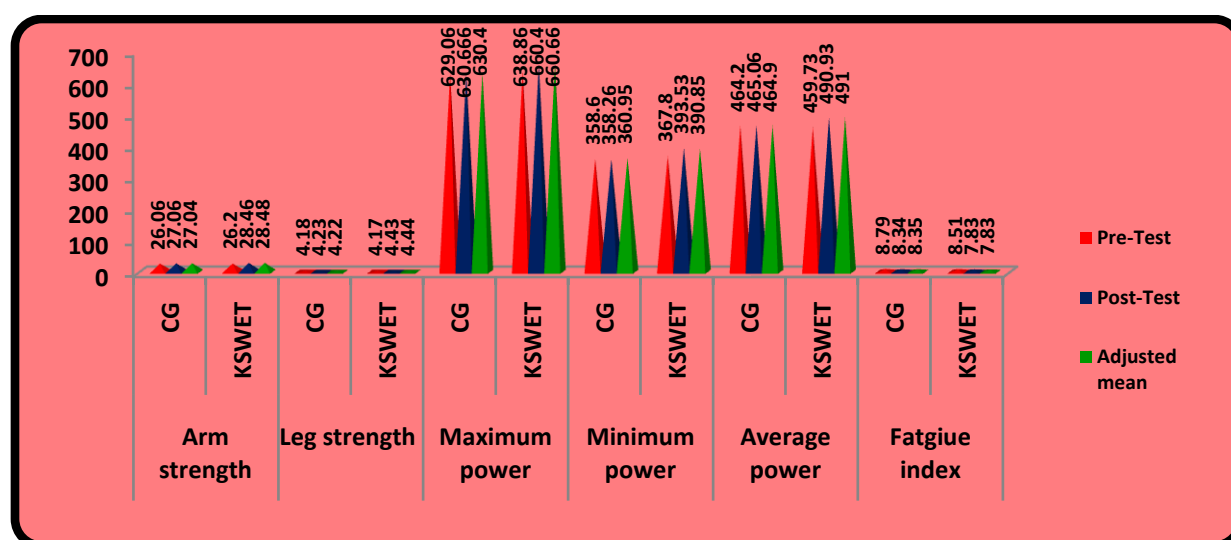
S.No	variables	Test	Sum of variance	Sum of squares	df	Mean square	F ratio
1	Arm Strength	Pre-test	Between groups	0.13	1	0.13	0.40
			Within groups	9.33	28	0.33	
		Post-test	Between groups	14.70	1	14.70	19.91*
			Within groups	20.667	28	.738	
		Adjusted means	Between sets	15.232	1	15.232	20.54*
			Within sets	20.01	27	0.74	
2	Leg Strength	Pre-test	Between groups	0.00	1	0.00	0.01
			Within groups	0.87	28	0.03	
		Post-test	Between groups	0.32	1	0.32	12.11*
			Within groups	0.75	28	0.02	
		Adjusted means	Between sets	0.33	1	0.33	13.19*
			Within sets	0.681	27	0.02	
3	Maximum power	Pre-test	Between groups	720.300	1	720.300	1.022
			Within groups	19730.66	28	704.66	
		Post-test	Between groups	6630.53	1	6630.53	9.80*
			Within groups	18942.933	28	676.53	
		Adjusted means	Between sets	6624.65	1	6624.65	9.47*
			Within sets	18886.43	27	699.497	
4	Minim power	Pre-test	Between groups	634.80	1	634.80	1.05
			Within groups	16806.00	28	600.21	
		Post-test	Between groups	9328.03	1	9328.03	12.10*
			Within groups	21568.66	28	770.31	
		Adjusted means	Between sets	6461.09	1	6461.09	11.00*
			Within sets	15850.308	27	587.048	
5	Average power	Pre-test	Between groups	149.633	1	149.633	0.19
			Within groups	21023.33	28	750.83	
		Post-test	Between groups	5018.13	1	5018.13	10.49*
			Within groups	13383.86	28	477.99	
		Adjusted means	Between sets	5064.98	1	5064.98	10.25*
			Within sets	13336.15	27	493.93	
6	Fatigue index	Pre-test	Between groups	0.56	1	0.56	0.59
			Within groups	26.76	28	0.95	
		Post-test	Between groups	1.95	1	1.956	4.54*
			Within groups	12.05	28	0.43	
		Adjusted means	Between sets	1.96	1	1.96	4.41*
			Within sets	12.03	27	0.44	

(The table values required for significance at 0.05 level of confidence for 1 & 28 and 1 & 27 are 4.20 and 4.21 respectively).

In the above table the results of analysis of covariance on arm strength, leg strength, maximum power, minimum power, average power and fatigue index. The obtained 'F' ratio of 0.40, 0.11, 1.02, 1.0, 0.19 and 0.59 for pre-test scores was less than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on arm strength, leg strength, maximum power, minimum power, average power and fatigue index. The obtained 'F' ratio 19.91, 12.11, 9.80, 12.10, 10.49 and 4.54 for post-test means was greater than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on arm strength, leg strength, maximum power, minimum

power, average power, fatigue index and 5000 mts run. The obtained 'F' ratio of 20.54, 13.19, 9.17, 11.06, 10.25 and 4.41 for adjusted post-test means was greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence on arm strength, leg strength, maximum power, minimum power, average power and fatigue index. The result of the study indicated that there was a significant difference among the adjusted post test means of Kalaripayattu skills with equipment training and control group on arm strength, leg strength, maximum power, minimum power, average power and fatigue index.

Figure I. The pre, post and adjusted mean values of selected variables of both control and experimental groups among handball players.



Discussion of findings

The results of the study indicate that the experimental group which underwent Kalaripayattu skills with equipment training had showed significant improved in the selected variables namely such as arm strength, leg strength, maximum power, minimum power, average power and fatigue index, when compared to the control group. The control did not show significant improvement in any of the selected variables. The results of this investigation are also supported by the following studies of Kannan pugazhendi, (2008) has contribute a article on martial arts of South India in Jopess. Udhaya Shankar and Sivaji, (2013) opined that Kalaripayattu is the ideal training for any Indian school child to develop all the motor qualities like speed, strength, power, agility, endurance, coordination, balance, timing and reflexes.

Conclusions

From the analysis of data, the following conclusions were drawn.

1. The experimental group handball players showed significant improvement in all the selected physical fitness components such as arm strength, leg strength, maximum power, minimum power, average power and fatigue index.
2. The control group handball players did not show significant improvement in any of selected variables.

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