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Effects of Silambam and Karate with Yogic Training on Agility and Arm Explosive Power of Collegiate Male Students

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Abstract:
The purpose of the study was to find out the effects of silambam and karate with yogic training on agility and arm explosive power of collegiate male students. 100 students were selected from Karpagam University as a subject for this study. The subjects age: body weight; height (21 ± 2.3 years; 65 ± 5.4; 166 ± 4.5 cm) respectively. The subjects were randomly divided into five equal groups with each group consisting of 20 subjects. Group-I underwent silambam training, Group-II underwent karate training. Group – III underwent silambam with yogic training, Group – IV underwent karate with yogic training, Group- V act as control group, they were not given any special treatment. The experimental period was 12 weeks. Pre-test and posttest were taken before and after the training programme. The selected physical variables were agility and arm explosive power. During the intervention phase, a modified training program was offered by a well-trained silambam coaches to the experimental group under the supervision of the researcher at Karpagam University in Tamilnadu. All participants were encouraged to continue their standard physical activities and routine procedures. The intervention phase 12 weeks and included evening 60 minutes silambam, karate and yogic coaching classes for five days in a week. To find out the significant Effects of silambam karate with yogic training on selected physical variable of agility and arm explosive power. The ANCOVA statistical technique was used to find the mean difference between the groups on physical variables of agility and arm explosive power. The results of the study revealed a significant group × test interaction ($p < 0.05$). Follow-up analyses indicated that while group differences in physical variables existed between the five groups of the pre-test. In posttest all the experimental groups were found to have significantly ($p < 0.05$) better performance on the physical variables than the control group. The findings of the present study suggest that silambam with yogic training improved the physical variables on agility and arm explosive power of collegiate Male silambam players.

Key words*: STG-silambam training group, KTG-karate training group, SWYTG-silambam with yogic training group, KWYGT-karate with yogic training group, CG-control group, agility, arm explosive power, appendix-I – silambam skills*

1. Introduction

Sports are an integral part of the system of education. Training is a system of process in which Male silambam players improve their fitness to meet the demands of their sport. Training uses both general and specific exercises to develop the Male silambam players for their sport. In this training, the effort is normally performed more efficiently operating the Male silambam players. The plyometric training system can provide great amounts of energy but this system fatigues quickly. People participating in speed or power events like silambam, football and basketball are very familiar with this form of energy production.

2. Methodology

The purpose of the study was to find out the effects of silambam and karate with yogic training on selected physical variables on agility and arm explosive power of collegiate male students. One hundred students from Karpagam University volunteered to take part in this study. The subjects age: body weight; height (21 ± 2.3 years; 65 ± 5.4; 166 ± 4.5 cm) respectively. To ensure the quality, the samples were selected by a general observation criterion. Before the actual training, the subjects were clearly explained about the methods & procedures of silambam, karate and yogic training. The selected subjects (N=100) were randomly divided into five groups equally of which experimental Group I (n=20) underwent Silambam Training Group (STG), Group II (n=20) underwent Karate training group (KTG), Group III (n=20) underwent Silambam with Yoga Training Group (SWYPG), Group IV (n=20) underwent

Karate With Yoga Training Group and Group V (n=20) Control Group (CG) did not undergo any specific training. All the four experimental groups were to be treated with their respective training programs. The scheduled program was one hour per day in the evening of five days per week for a period of twelve weeks. To find out the significant effects of aerobic and anaerobic training on selected agility, analysis of covariance (ANCOVA) was computed (Clarke and Clarke, 1972) for the data collected aerobic, anaerobic, combined and control groups during pretest and posttest separately for each variable. Further to state, since five groups were involved, whenever the F ratio was significant, Scheffe's post hoc test was used determine which of the paired mean differed significance 0.05 was fixed.

Silambam skills Training	**I –IV Weeks**	**V- VIII Weeks**	**IX – XII Weeks**
Step movements			
Aru varisai, Thisai varisai	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Idathu kiruki varisai	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Valathu kiruki varisai	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Idathu valathu kiruki	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
varisai	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Stick movements			
Inward, outward and	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
head rotation	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Aruppu, vettu, kuthu	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Pinnal korvai(first)	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Pammal korvai(second)	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Pathungal korvai(third)	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30

Table 1: Silambam Training Schedule

*Note: *= Reputation, Δ = sets, £ = total time Duration, ¥ = rest between sets, warm up 10 minute, Warm down 5 minutes.*

Silambam skills Training	**I –IV Weeks**	**V- VIII Weeks**	**IX – XII Weeks**
Punch-stomach,face,lower	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
neck cut, lower-side,	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Block –Side, Upper, lower	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Kick-Face, Stomach, lower	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Diving–Single,double hand	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Drag jump,	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Sparing -Single, Double	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Leg Raising, Block outer,	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Forward, backward moves	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Double Block, kicks	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30

Table 2: Karate Training Schedule

Note: *= Reputation, Δ = sets, £ = total time Duration, ¥ = rest between sets, warm up 10 minute, Warm down 5 minutes.

Silambam skills Training	**I –IV Weeks**	**V- VIII Weeks**	**IX – XII Weeks**
Step movements			
Aru varisai,Thisai varisai	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Idathu,Valathu	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
kirukivarisai	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Aruppu, vettu, kuthu	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Pinnal korvai(first)	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Yogic practices			
Thadasana	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Badmasana	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Ushtrasana	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Pranayama	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Savasana	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30

Table 3: Silambam with Yogic Training Schedule

*Note: *= Reputation, Δ = sets, £ = total time Duration, ¥ = rest between sets, warm up 10 minute, Warm down 5 minutes.*

Silambam skills Training	I –IV Weeks	V- VIII Weeks	IX – XII Weeks
Step movements			
Punch-stomach,face,lower	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
neck cut, lower-side,	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Block –Side, Upper, lower	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Kick-Face, Stomach, lower	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Diving–Single,double hand	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Yogic practices			
Thadasana	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Badmasana	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Ushtrasana	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Pranayama	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30
Savasana	*6Δ5£60¥30	*8Δ5£60¥30	*10Δ4£60¥30

Table 4: Karate with Yogic Training Schedule

*Note: *= Reputation, Δ = sets, £ = total time Duration, ¥ = rest between sets, warm up 10 minute, Warm down 5 minutes.*

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEDM	't'-ratio
STG	18.05 ±0.74	17.44 ±0.48	0.60	0.089	6.73*
KTG	18.06 ±0.81	17.62 ±0.81	0.44	0.019	22.29*
SWYTG	18.05 ±0.84	16.60 ±0.64	1.39	0.09	14.24*
KWYTG	18.02 ±0.52	17.30 ±0.46	0.71	0.06	11.14*
CG	18.01 ±0.64	17.99 ±0.62	0.02	0.01	2.03

Table 5: Significance of Mean Gains /Losses between Pre and Post Test of STG, KTG, SWYTG, KWYTG and CG on Agility of Collegiate Male Students

**Significant At 0.05 Level*

Table – 5 indicates the obtained't' ratios for STG, KTG, SWYTG, KWYTG and CG on agility of collegiate male students. The obtained't'- ratios were 6.73 (STG), 22.29(KTG), 14.24 (SWYTG), 11.14 (KWYTG) and 2.03 (CG). The obtained't' ratios on agility were greater than the critical value of 2.09 except CG and degrees of freedom 19. It was observed that the mean gains and losses made from pre-test and post-test were statistically significant resulting that twelve weeks practice of silambam training produced significant improvement in agility of STG (0.60 $p<0.05$), KTG (0.44 $p<0.05$), SWYTG(1.39 $p<0.05$), KWYTG (0.71 $p<0.05$) and CG (0.02 $p<0.05$) from the performance of baseline.

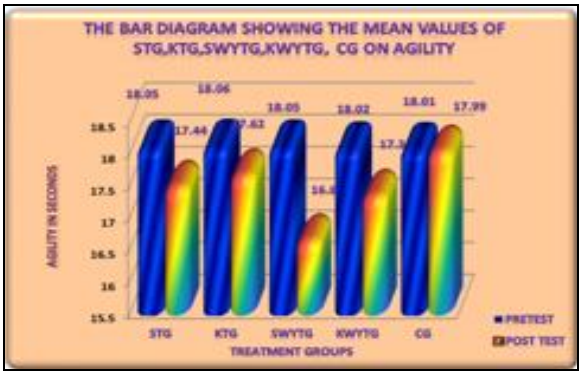

Figure 1

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEDM	't'-ratio
STG	8.41 ±0.92	9.53 ±0.88	1.12	0.032	34.78*
KTG	8.39 ±0.83	9.01 ±0.82	0.62	0.028	21.63*
SWYTG	8.40 ±0.70	13.00 ±0.65	4.60	0.13	34.33*
KWYTG	8.45 ±0.70	11.49 ±1.01	3.04	0.16	18.67*
CG	8.45 ±0.84	8.48 ±0.83	0.03	0.014	2.04

Table 6: Significance of Mean Gains /Losses between Pre and Post Test of STG, KTG, SWYTG, KWYTG and CG on Arm Explosive Power of Collegiate Male Students

Table – 6 indicates the obtained't' ratios for STG, KTG, SWYTG, KWYTG and CG on agility of collegiate male students. The obtained't'- ratios were 34.78 (STG), 21.63(KTG), 34.33 (SWYTG), 18.67 (KWYTG) and 2.04 (CG). The obtained't' ratios on agility were greater than the critical value of 2.09 except CG and degrees of freedom 19. It was observed that the mean gains and losses made from pre-test and post-test were statistically significant resulting that twelve weeks practice of silambam, karate, yogic training produced significant improvement in agility of STG (1.12 $p<0.05$), KTG (0.62 $p<0.05$), SWYTG(4.60 $p<0.05$), KWYTG (3.04 $p<0.05$) and CG (0.03 $p<0.05$) from the performance of baseline.

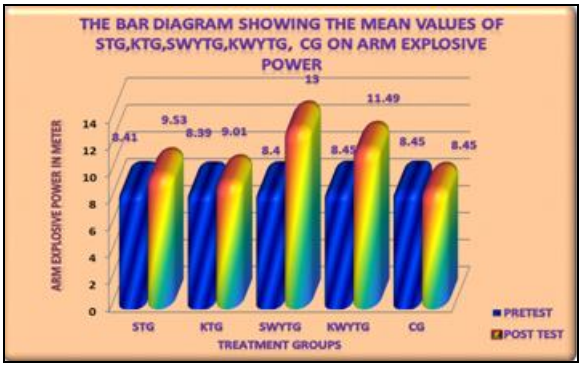

Figure 2

Variables	Source of variance	Sum of Square	df	Means Square	'F' ratio
Agility –Pre Test (in seconds)	Between Groups	0.035	4.00	0.00	**0.017**
	Within Groups	50.04	95.00	0.52	
Arm Explosive Power – Pre Test (in meters)	Between Groups	0.06	4.00	0.01	**0.025**
	Within Groups	62.24	95.00	0.65	
Agility – Post Test (in seconds)	Between Groups	18.95	4.00	4.73	**12.26***
	Within Groups	36.71	95.00	0.38	
Arm Explosive Power Post Test (in meters)	Between Groups	66.12	4.00	16.53	**36.36***
	Within Groups	43.18	95.00	0.45	

Table 7: Analysis of Variance on Pre-Test and Post Test Means Among The STG, KTG, SWYTG, KWYTG and CG on Agility and Arm Explosive Power of Collegiate Male Students

Table – 7 reveals the obtained 'F' values on pre-test means among the five groups. The obtained 'F' ratios were: 0.017(agility), 0.025(arm explosive power). The 'F' values observed on these variables were not significant since it fails to reach the critical ratio of

2.73 for degree of freedom 4, 95 at 0.05 levels. Based on the results it is inferred that the mean differences among the five groups of Silambam Training Group (STG), Karate Training Group (KTG), Silambam With Yogic Training Group(SWYTG), Karate With Yogic Training Group(KWYTG), Control Group(CG) on agility and arm explosive power were found to be insignificant. Thus this analysis confirms the random assignment of subjects into five groups were successful.

The obtained 'F' ratios of post-test means were: 12.26 (agility), 36.36 (arm explosive power). The observed F-values on post-test means among the groups of STG, KTG, SWYTG, KWYTG, CG on agility and arm explosive power were found to be higher than the required critical value 2.73 at 0.05 level of confidence for df 4,95. The results of agility and arm explosive power produced significantly different improvements among themselves.

Variables	Source of variance	Sum of Square	Df	Means Square	'F' ratio
Agility (in seconds)	Between Groups	19.56	4.00	4.89	75.54*
	Within Groups	6.08	94.00	0.06	
Arm Explosive Power (in meters)	Between Groups	69.22	4.00	17.30	68.25*
	Within Groups	23.83	94.00	0.25	

Table 8: Analysis o f Co-Variance on Adjusted Post-Test Means Among The STG, KTG, SWYTG, KWYTG and CG on Agility and Arm Explosive Power of Collegiate Male Students

The F-ratio obtained from testing the adjusted post-test means among the Five groups on Agility and arm explosive power were shown in table - 8. The obtained 'F' ratios were: 75.54 (agility), 68.25 (arm explosive power). The observed F-values on adjusted post-test means among the groups of Silambam Training Group(STG), Karate Training Group(KTG), Silambam With Yogic Training Group(SWYTG), Karate With Yogic Training Group(KWYTG), Control Group(CG) on Agility and arm explosive power were found to be higher than the required critical value 2.73 at 0.05 level of confidence for df 4,94. It is concluded that there is a significant mean differences among the four treatment groups in developing the Agility and arm explosive power. In order to find out which intervention programme used in the present study is the source for the significance of adjusted means was tested by Schefee's post hoc test.

STG	KTG	SWYEG	KWYEG	CG	M.D	Confidence Interval Value
17.43	17.60				0.17	**0.23**
17.43		16.65			0.78*	**0.23**
17.43			17.32		0.11	**0.23**
17.43				18.01	0.58*	**0.23**
	17.60	16.65			0.95*	**0.23**
	17.60		17.32		0.28*	**0.23**
	17.60			18.01	0.41*	**0.23**
		16.65	17.32		0.79*	**0.23**
		16.65		18.01	1.48*	**0.23**
			17.32	**18.01**	**0.69***	**0.23**

Table 9: The Scheffe's Post Hoc Test for the Differences between Adjusted Post Means of STG, KTG, SWYEG, KWYEG and CG on Agility
** Significant at0.05 level of confidence*

Table - 9 shows the post hoc analysis obtained on adjusted post test means. The mean difference required for the confidential interval to be significant was 0.23. It was observed that the silambam with yogic training group significantly improved the agility better than the karate with yogic training group, Silambam training group, Karate training and control group. The karate with yogic training group significantly improved the agility better than the Silambam training group, Karate training and control group. Silambam training group significantly improved the agility better than the Karate training and control group. The Karate training significantly improved the agility better than the control group.

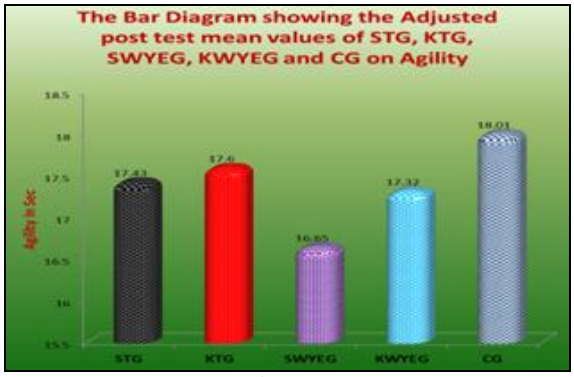

Figure 3

STG	KTG	SWYEG	KWYEG	CG	M.D	Confidence Interval Value
9.15	8.72				0.43	**0.45**
9.15		10.70			1.55*	**0.45**
9.15			9.85		0.70*	**0.45**
9.15				8.37	0.78*	**0.45**
	8.72	10.70			1.98*	**0.45**
	8.72		9.85		1.13*	**0.45**
	8.72			8.37	0.35	**0.45**
		10.70	9.85		0.85*	**0.45**
		10.70		8.37	2.33*	**0.45**
			9.85	**8.37**	**1.48***	**0.45**

Table 10: The Scheffe's Post Hoc Test for the Differences between Adjusted Post Means of STG, KTG, SWYEG, KWYEG and CG on Arm Explosive Power
** Significant at0.05 level of confidence*

Table -10 shows the post hoc analysis obtained on adjusted post test means. The mean difference required for the confidential interval to be significant was 0.45. It was observed that the silambam with yogic training group significantly improved the arm explosive power better than the karate with yogic training group, Silambam training group, Karate training and control group. The karate with yogic training group significantly improved the arm explosive power better than the Silambam training group, Karate training and control group. Silambam training group significantly improved the arm explosive power better than the Karate training and control group. The Karate training significantly improved the arm explosive power better than the control group.

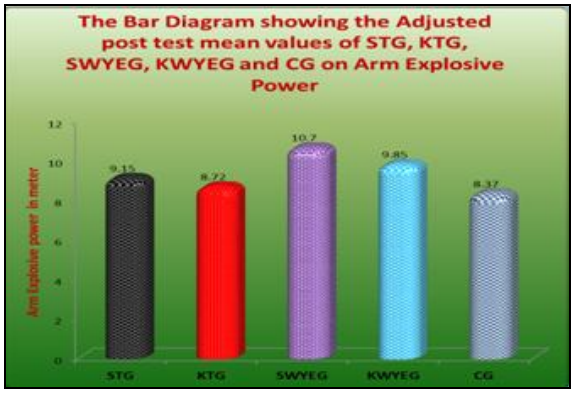

Figure 4

3. Result and Discussion

3.1. Agility

The silambam with yogic training, karate with yogic training, silambam training, karate training significantly improved the agility from pre test to post test. The agility increased in the silambam training group from pre test (18.05 ±0.74) to post test (17.44 ±0.48); Karate training group from pre test (18.06 ±0.81) to post test (17.62 ± 0.81), Silambam with yogic training group from pre test (18.05 ± 0.84) to post test (16.60 ± 0.64), Karate with yogic training group from pre test (18.02 ± 0.52) to post test (17.30 ± 0.46) the agility significantly improved pre test to post test in all four experimental groups with no changes in control group.

The present study demonstrated that an increase in agility of 3.32%, 2.44%, 7.70%, 3.94% and 0.11% and estimated with sit and reach test for silambam training, karate training, silambam with yogic training, karate with yogic training, and control group respectively. The silambam with yogic training group improved the agility by 7.70% better than the karate with yogic training group 3.94%, silambam training group 3.32%, karate training group 2.44% and control group 0.11%. The karate with yogic training group improved the agility better than silambam training group 3.32% karate training group 2.44% and control group. Silambam training group improved the agility better than the karate training group 2.44% and control group. Karate training group improved the agility better than the control group. Vishaw Gaurav(2011) conducted a study on Effects of Hatha Yogic Training improved agility.

3.2. Arm Explosive Power

The silambam with yogic training, karate with yogic training, silambam training, karate training significantly improved the arm explosive power from pre test to post test. The arm explosive power increased in the silambam training group from pre test (8.41 ±0.92) to post test (9.53 ±0.88); Karate training group from pre test (8.39 ±0.83) to post test (9.01 ± 0.82), Silambam with yogic training group from pre test (8.40 ± 0.70) to post test (13.00 ± 0.65), Karate with yogic training group from pre test (8.45 ± 0.70) to post test (11.49 ± 1.01) the arm explosive power significantly improved pre test to post test in all four experimental groups with no changes in control group.

The present study demonstrated that an increase in arm explosive power of 13.32%, 7.39%, 34.76%, 25.98% and 0.36% and estimated with sit and reach test for silambam training, karate training, silambam with yogic training, karate with yogic training, and control group respectively. The silambam with yogic training group improved the arm explosive power by 34.76% better than the karate with yogic training group 25.98%, silambam training group 13.32%, karate training group 7.39% and control group 0.36%. The karate with yogic training group improved the arm explosive power better than silambam training group 13.32% karate training group 7.39% and control group. Silambam training group improved the arm explosive power better than the karate training group 7.39% and control group. Karate training group improved the arm explosive power better than the control group. Vishaw Gaurav(2011) conducted a study on Effects of Hatha Yogic Training improved explosive power.

4. Conclusion

Silambam with yogic training improved the agility, arm explosive power better than the karate with yogic training, silambam training karate training of collegiate male students.

Appendix –I

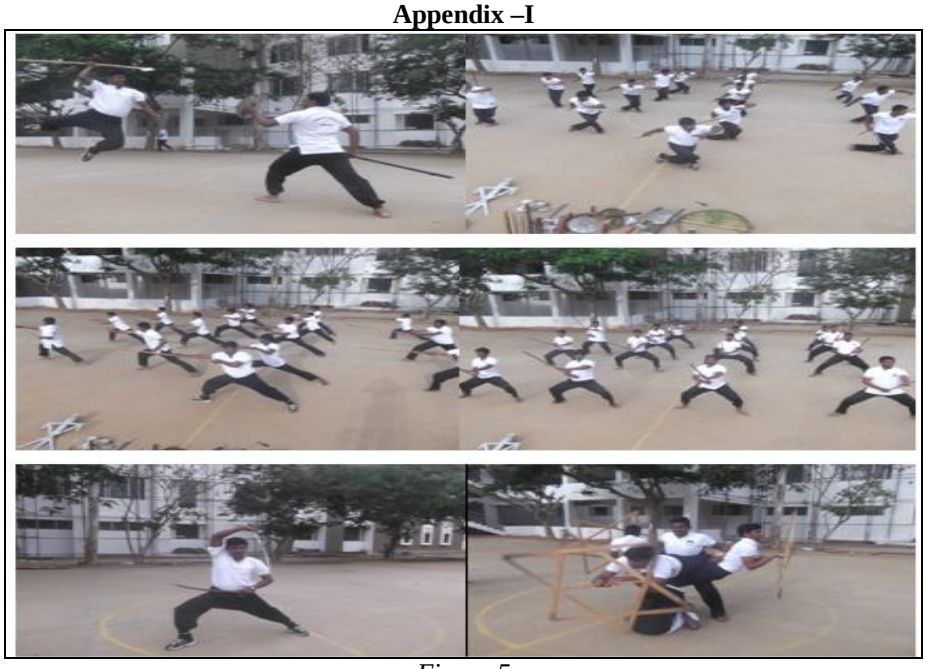

Figure 5

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