

CHAPTER - IV

ANALYSIS OF THE DATA AND RESULT OF THE STUDY

4.1 OVERVIEW

This chapter deals with the analysis of data collected from the subjects under study. The purpose of this study was to find out the effect of static and dynamic hatha yoga sadhana on selected socio environmental and pubertal development dimension among preteen girls. To achieve the purpose of the study, 30 preteen pubertal girls from Chennai city were selected as subjects. The three groups namely Experimental group I- Static hatha yoga sadhana, Experimental group II - Dynamic hatha yoga sadhana and Group III – Control group, were analyzed with the difference in the values of pre and post test scores on selected Socio environmental variables: Sedentary behavior, Physical activity, Family cohesion, and Eating attitude and Pubertal development dimension: Dehydroepiandrosterone (DHEA), Luteinizing hormone (LH), Gonadotrophin releasing hormone (GnRH), Follicle stimulating hormone (FSH), and control group with SPSS package. The subjects were selected at random by lot and the groups were equated in relation of factors to be examined. The differences between the means of the three groups in the pre test had been taken into account during the analysis of the post test differences the means.

To achieve the purpose of study the final means when adjusted for difference with the initial means and the adjusted means were derived and tested at 0.05 levels of confidences. To test the significances of changes between the means, ANCOVA test was applied. When the post –test means were significant, the Scheffe’s Post hoc test was administered to find out the paired means significance difference. Thus the obtained results were interpreted with earlier studies and presented in this chapter well along with tables and graphical applications.

4.2 TEST OF SIGNIFICANCE

This is the vital portion of the dissertation in achieving the conclusion by examining the hypotheses. This procedure of testing the hypothesis was done by accepting the hypothesis or rejecting the same in accordance with the result in relation to the level of confidence fixed at 0.05 level. If the obtained value is greater than the table value, hypotheses were accepted to the effect that there existed significant difference among the means of the groups compared and if the obtained value lesser, than there exists no significant difference between the means.

4.3 LEVEL OF SIGNIFICANCE

The subjects were compared on the effect of different yogic practices on selected socio environmental, pubertal development variables among preteen girls. The Analysis of Covariance (ANCOVA) was used to find out significant difference if any, between the group on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance which was considered as appropriate.

4.4 COMPUTATION OF ANALYSIS OF CO VARIANCE AND SCHEFFE'S POST HOC TEST

The following tables illustrate the statistical result of effect of static and dynamic hatha yoga sadhana on selected socio environmental and pubertal development among preteen girls. The ordered adjusted means and differences between the means of the groups under study were given in the following tables.

4.5 RESULTS ON SEDENTARY BEHAVIOR

The socio-environmental variable sedentary behavior was measured through sedentary behavior questionnaire (SBQ) by James F. Sallis 2010. The result on the effect of static and dynamic hatha yoga sadhana on sedentary behavior among preteen girls is presented in Table V.

Table V

**COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST –
TESTS DATA ON SEDENTARY BEHAVIOR OF EXPERIMENTAL AND
CONTROL GROUPS
(Scores in numbers)**

	Static Hatha Yoga Sadhana Group	Dynamic Hatha Yoga Sadhana Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	62.0	61.6	61.8	Between	0.8	2	0.4	0.01
				Within	1146	27	42.44	
Post Test Mean	46.8	44.4	62.2	Between	1865.86	2	932.93	32.82*
				Within	767.6	27	28.42	
Adjusted Post Test Mean	46.81	44.39	62.2	Between	1866.19	2	933.09	31.67*
				Within	766.06	26	29.46	
Mean Diff	15.2	17.2	0.4					

*Significant at 0.05 level Table F-ratio at 0.05 level of confidence for 2 and 27 (df) =3.35,
2 and 26(df) = 3.37

Table V shows that the pre test mean scores of Sedentary behavior of Experimental group I – Static hatha yogic sadhana was 62.0, Experimental group II – Dynamic hatha yogic sadhana was 61.6, Control group III was 61.8. The post test means of Static hatha yogic sadhana, Dynamic hatha yogic sadhana and Control group recorded were 46.8, 44.4 and 62.2 respectively.

The obtained F value on pre test scores 0.01 was lesser than the required F value of 3.35 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 32.82 was greater than the required F value at 3.35. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 31.67 was greater than the required F value at 3.37. This proved that there was a significant reduction in sedentary behavior due to fifteen weeks of Static hatha yogic sadhana and Dynamic hatha yogic sadhana among preteen girls.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table VI.

TABLE - VI
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE
ADJUSTED POST – TEST PAIRED MEANS OF SEDENTARY
BEHAVIOR

(Scores in numbers)

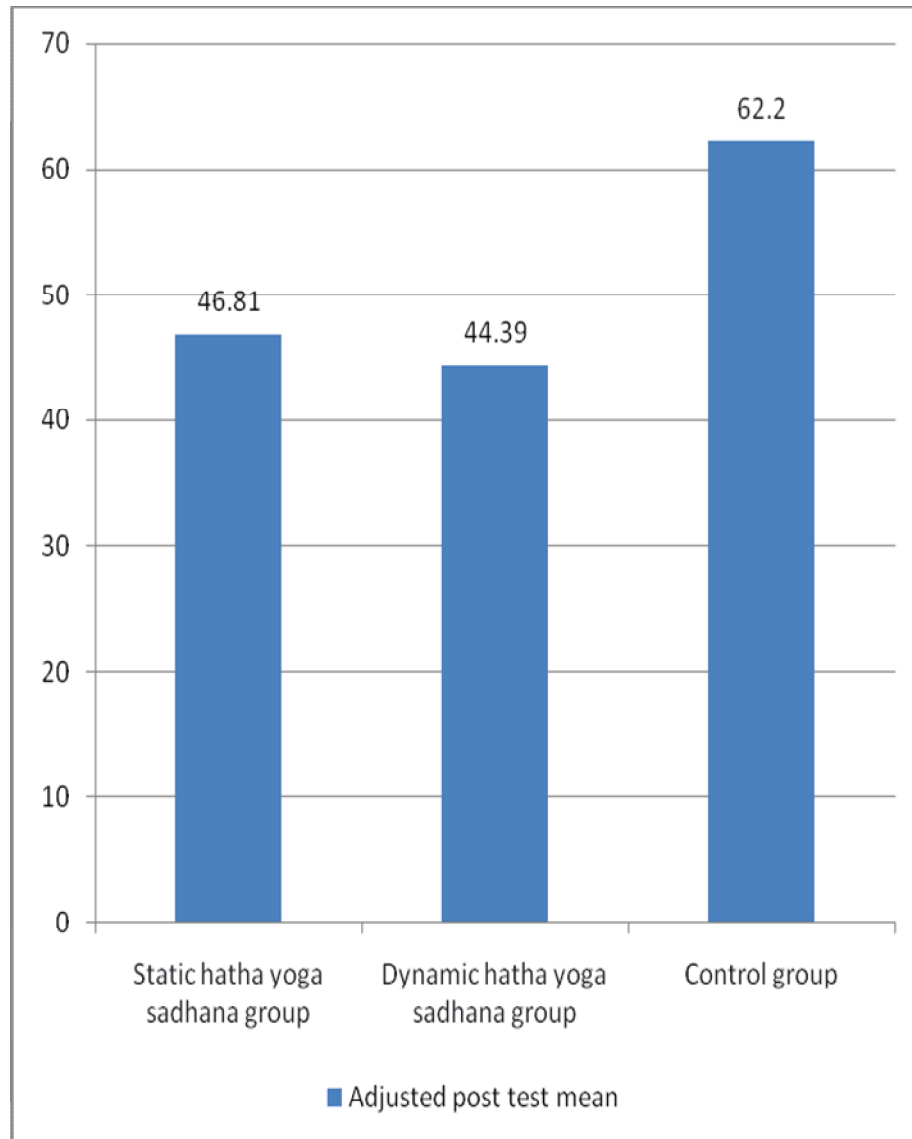
Experimental Group – I (Static Hatha yogic sadhana)	Experimental Group – II (Dynamic Hatha yogic sadhana)	Control Group III	Mean difference	Required C.I
46.81	--	62.20	15.39*	6.30
--	44.39	62.20	17.81*	6.30
46.81	44.39	--	2.41	6.30

* Significant at .05 level

Table-VI shows that there was significant difference between Static hatha yogic sadhana and control group and Dynamic hatha yogic sadhana group and control group and there was no significant difference between experimental groups.

The obtained adjusted post test mean values were presented through bar diagram in Figure 41.

FIGURE - 41
BAR DIAGRAM SHOWING THE ADJUSTED POST MEAN VALUES OF
EXPERIMENTAL GROUPS I, II AND CONTROL GROUP ON SEDENTARY
BEHAVIOR
(Scores in numbers)



4.5.1 DISCUSSIONS ON THE FINDINGS OF SEDENTARY BEHAVIOR

The results presented in Table V showed that the obtained adjusted means on sedentary behavior among Static hatha yoga sadhana group was 46.81 followed by Dynamic hatha yoga sadhana group with the mean value of 44.39 and control group mean value of 62.2. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.01, 32.82 and 31.67 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.35.

The post hoc analysis through Scheffe's confidence test proved that due to fifteen weeks treatment the Static hatha yoga sadhana and Dynamic hatha yoga sadhana there was significant reduction in sedentary behavior than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Static hatha yoga sadhana and Dynamic hatha yoga sadhana proved that there was no significant difference in the reduction of sedentary behavior among pre teen girls.

4.6 RESULTS ON PHYSICAL ACTIVITY

The socio-environmental variable physical activity was measured through Physical Activity Questionnaire for Children (PAQ-C) Manual by Kowalski, K., Crocker, P., & Donen, R.(1997). The result on the effect of static and dynamic hatha yoga sadhana on physical activity among preteen girls is presented in Table VII.

Table VII

**COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST –
TESTS DATA ON PHYSICAL ACTIVITY OF EXPERIMENTAL AND
CONTROL GROUPS
(Scores in numbers)**

	Static Hatha Yoga Sadhana Group	Dynamic Hatha Yoga Sadhana Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F
Pre Test Mean	16.1	16.7	16.2	Between	2.06	2	1.03	0.14
				Within	202.6	27	7.50	
Post Test Mean	27.8	33.5	16.3	Between	1535.26	2	767.63	50.53*
				Within	410.2	27	15.19	
Adjusted Post Test Mean	27.77	33.53	16.28	Between	1535.56	2	767.78	48.87*
				Within	408.44	26	15.70	
Mean Diff	11.7	16.8	0.1					

*Significant at 0.05 level Table F-ratio at 0.05 level of confidence for 2 and 27 (df) =3.35,
2 and 26 (df) = 3.37

Table VII shows that the pre test mean scores of Physical activity of Experimental group I – Static hatha yogic sadhana was 16.1, Experimental group II – Dynamic hatha yogic sadhana was 16.7, Control group III was 16.2. The post test means of Static hatha yogic sadhana, Dynamic hatha yogic sadhana and Control group recorded were 27.8, 33.5 and 16.3 respectively.

The obtained F value on pre test scores 0.14 was lesser than the required F value of 3.35 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 50.53 was greater than the required F value at 3.35. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 48.87 was greater than the required F value at 3.37. This proved that there was a significant improvement in the participation of physical activity due to fifteen weeks of Static hatha yogic sadhana and Dynamic hatha yogic sadhana among pre teen girls.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table VIII.

TABLE - VIII
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE
ADJUSTED POST – TEST PAIRED MEANS OF PHYSICAL ACTIVITY
(Scores in numbers)

Experimental Group – I (Static Hatha yogic sadhana)	Experimental Group – II (Dynamic Hatha yogic sadhana)	Control Group III	Mean difference	Required C.I
27.64	--	16.34	11.30*	4.58
--	33.62	16.34	17.28*	4.58
27.64	33.62	--	5.97*	4.58

* Significant at .05 level

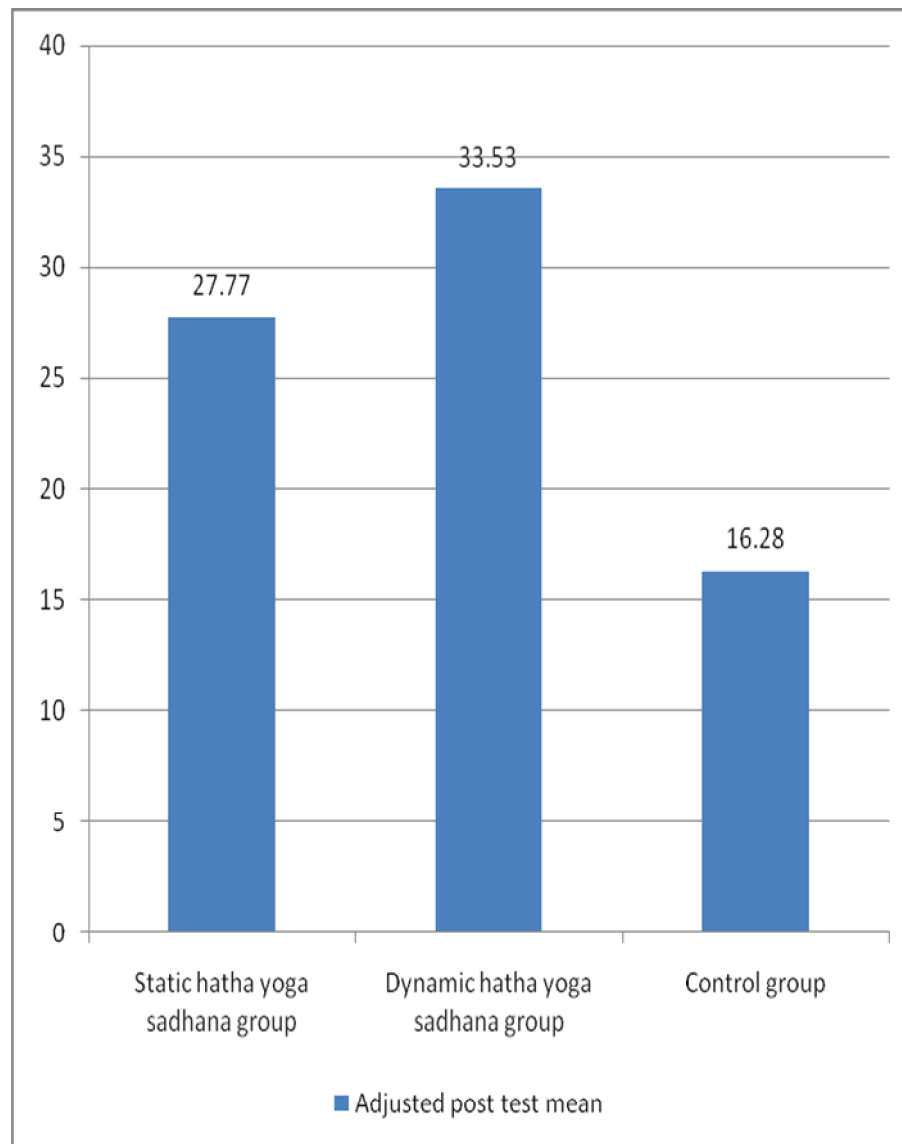
Table-VIII shows that there was significant difference between Static hatha yogic sadhana and control group, Dynamic hatha yogic sadhana group and control group and between experimental groups.

The obtained adjusted post test mean values were presented through bar diagram in Figure 42.

FIGURE - 42

BAR DIAGRAM SHOWING THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL GROUPS I, II AND CONTROL GROUP ON PHYSICAL ACTIVITY

(Scores in numbers)



4.6.1 DISCUSSIONS ON THE FINDINGS OF PHYSICAL ACTIVITY

The results presented in Table VII showed that the obtained adjusted means on physical activity among Static hatha yoga sadhana group was 27.77 followed by Dynamic hatha yoga sadhana group with the mean value of 33.53 and control group mean value of 16.28. The difference among pre test scores Post test scores and adjusted mean cores of the subjects were statistically treated using ANCOVA and F values obtained were 0.14, 50.53 and 48.87 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.35.

The post hoc analysis through Scheffe`s confidence test proved that due to fifteen weeks treatment the Static hatha yoga sadhana and Dynamic hatha yoga sadhana there was significant improvement in physical activity than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Static hatha yoga sadhana and Dynamic hatha yoga sadhana proved that there was significant difference in the improvement in the participation of physical activity. And it was proved that the dynamic hatha yoga sadhana was better than static hatha yoga sadhana in improving the participation in physical activity.

4.7 RESULTS ON FAMILY COHESION

The socio-environmental variable family cohesion was measured through Family Cohesion by Moos, R. H. (1974). The result on the effect of static and dynamic hatha yoga sadhana on family cohesion among preteen girls is presented in Table IX.

Table IX

**COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST –
TESTS DATA ON FAMILY COHESION OF EXPERIMENTAL AND
CONTROL GROUPS
(Scores in numbers)**

	Static Hatha Yoga Sadhana Group	Dynamic Hatha Yoga Sadhana Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F
Pre Test Mean	3.4	3.1	3	Between	0.86	2	0.43	0.43
				Within	27.3	27	1.01	
Post Test Mean	6	7.2	3.3	Between	79.8	2	39.9	49.65*
				Within	21.7	27	0.80	
Adjusted Post Test Mean	5.8	7.2	3.37	Between	76.37	2	38.18	59.81*
				Within	16.6	26	0.64	
Mean Diff	2.6	4.1	0.3					

*Significant at 0.05 level Table F-ratio at 0.05 level of confidence for 2 and 27 (df) =3.35,
2 and 26(df) = 3.37

Table IX shows that the pre test mean scores of Family cohesion of Experimental group I – Static hatha yogic sadhana was 3.4, Experimental group II – Dynamic hatha yogic sadhana was 3.1, Control group III was 3. The post test means of Static hatha yogic sadhana, Dynamic hatha yogic sadhana and Control group recorded were 6, 7.2 and 3.3 respectively.

The obtained F value on pre test scores 0.43 was lesser than the required F value of 3.35 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 49.65 was greater than the required F value at 3.35. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 59.81 was greater than the required F value at 3.37. This proved that there was a significant improvement in the family cohesion due to fifteen weeks of Static hatha yogic sadhana and Dynamic hatha yogic sadhana among preteen girls.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table X.

TABLE - X
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED
POST – TEST PAIRED MEANS OF FAMILY COHESION
(Scores in numbers)

Experimental Group – I (Static Hatha yogic sadhana)	Experimental Group – II (Dynamic Hatha yogic sadhana)	Control Group III	Mean difference	Required C.I
5.90	--	3.37	2.53*	0.93
--	7.23	3.37	3.86*	0.93
5.90	7.23	--	1.33*	0.93

* Significant at .05 level

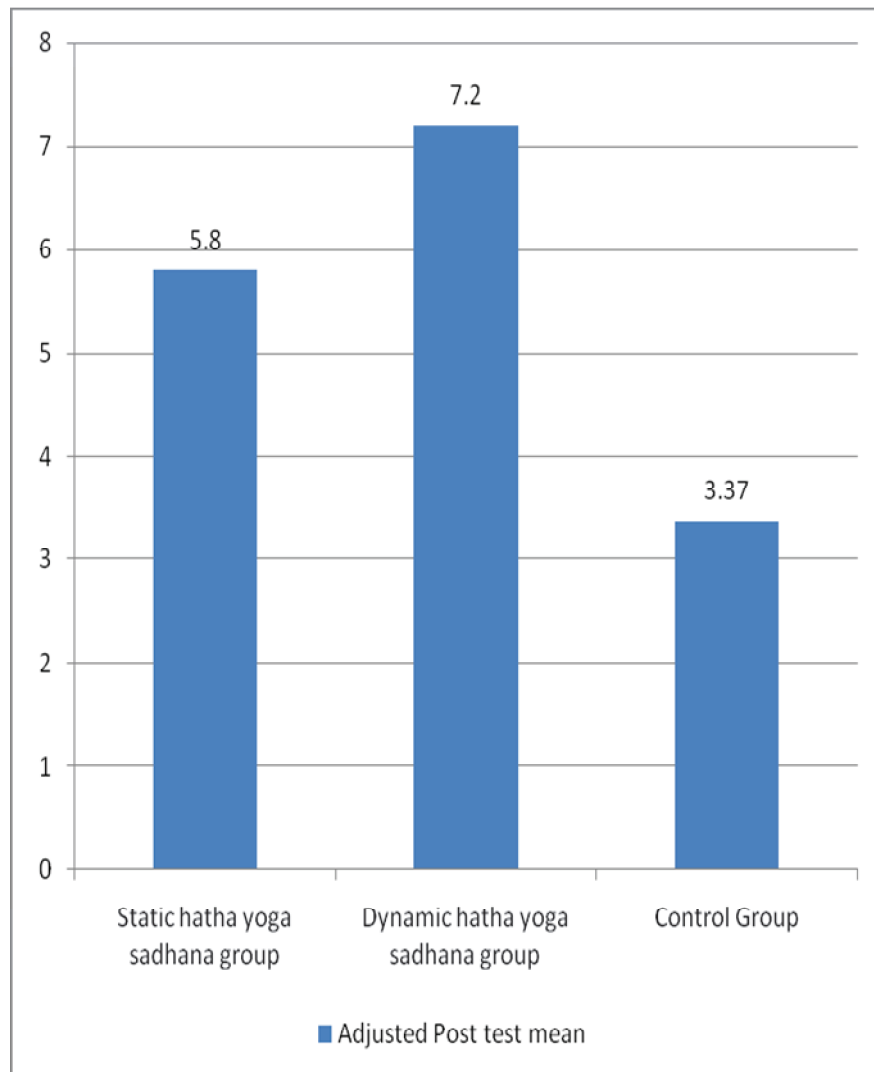
Table-X shows that there was significant difference between Static hatha yogic sadhana and control group, Dynamic hatha yogic sadhana group and control group and between experimental groups.

The obtained adjusted post test mean values were presented through bar diagram in Figure 43.

FIGURE - 43

BAR DIAGRAM SHOWING THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL GROUPS I, II AND CONTROL GROUP ON FAMILY COHESION

(Scores in numbers)



4.7.1 DISCUSSIONS ON THE FINDINGS OF FAMILY COHESION

The results presented in Table IX showed that the obtained adjusted means on family cohesion among Static hatha yoga sadhana group was 5.8 followed by Dynamic hatha yoga sadhana group with the mean value of 7.2 and control group mean value of 3.37. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.43, 49.65 and 59.81 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.35.

The post hoc analysis through Scheffe's confidence test proved that due to fifteen weeks treatment the Static hatha yoga sadhana and Dynamic hatha yoga sadhana there was significant improvement in family cohesion than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Static hatha yoga sadhana and Dynamic hatha yoga sadhana proved that there was significant difference in the improvement of family cohesion and it was proved that Dynamic hatha yoga sadhana was better than Static hatha yoga sadhana in improving the family cohesion.

4.8 RESULTS ON EATING ATTITUDE

The socio-environmental variable eating attitude was measured through Children's Eating Attitude Test (ChEAT) by Garner et al. (1982). The result on the effect of static and dynamic hatha yoga sadhana on eating attitude among preteen girls is presented in Table XI.

Table XI

**COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST –
TESTS DATA ON EATING ATTITUDE OF EXPERIMENTAL AND
CONTROL GROUPS
(Scores in numbers)**

	Static Hatha Yoga Sadhana Group	Dynamic Hatha Yoga Sadhana Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F
Pre Test Mean	33.5	34	33.8	Between	1.26	2	0.6	0.01
				Within	1202.1	27	44.5	
Post Test Mean	55.7	62.4	33.9	Between	4441.27	2	2220.63	72.82*
				Within	823.4	27	30.49	
Adjusted Post Test Mean	55.65	62.43	33.90	Between	4444.07	2	2222.04	73.23*
				Within	788.88	26	30.34	
Mean Diff	22.2	28.4	0.1					

*Significant at 0.05 level Table F-ratio at 0.05 level of confidence for 2 and 27 (df) =3.35,
2 and 26(df) = 3.37

Table XI shows that the pre test mean scores of Eating attitude of Experimental group I – Static hatha yogic sadhana was 33.5, Experimental group II – Dynamic hatha yogic sadhana was 34, Control group III was 33.8. The post test means of Static hatha yogic sadhana, Dynamic hatha yogic sadhana and Control group recorded were 55.7, 62.4 and 33.9 respectively.

The obtained F value on pre test scores 0.01 was lesser than the required F value of 3.35 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 72.82 was greater than the required F value at 3.35. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 73.23 was greater than the required F value at 3.37. This proved that there was a significant improvement in the eating attitude due to fifteen weeks of Static hatha yogic sadhana and Dynamic hatha yogic sadhana among preteen girls.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XII.

TABLE - XII
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED
POST – TEST PAIRED MEANS OF EATING ATTITUDE

(Scores in numbers)

Experimental Group – I (Static Hatha yogic sadhana)	Experimental Group – II (Dynamic Hatha yogic sadhana)	Control Group III	Mean Difference	Required C.I
55.65	--	33.91	21.75*	6.40
--	62.44	33.91	28.53*	6.40
55.65	62.44	--	6.78*	6.40

* Significant at .05 level

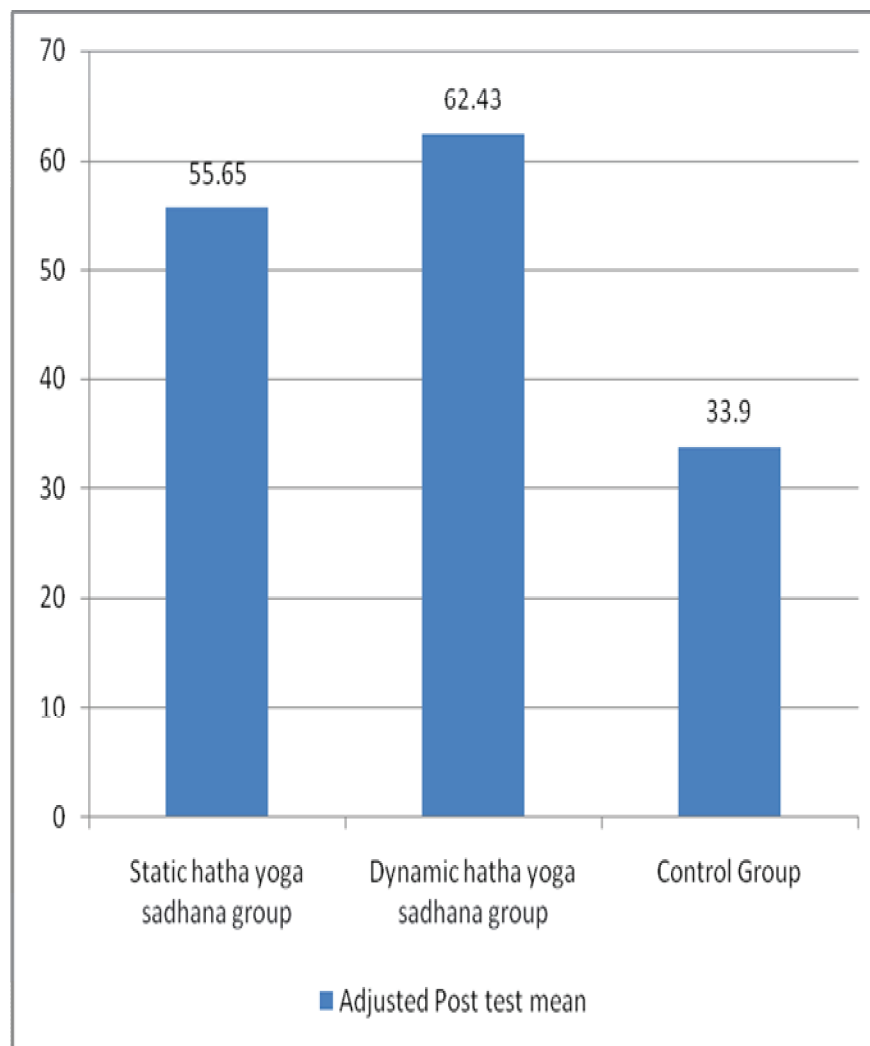
Table-XII shows that there was significant difference between Static hatha yogic sadhana and control group, Dynamic hatha yogic sadhana group and control group and between experimental groups.

The obtained adjusted post test mean values were presented through bar diagram in Figure 44.

FIGURE - 44

BAR DIAGRAM SHOWING THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL GROUPS I, II AND CONTROL GROUP ON EATING ATTITUDE

(Scores in numbers)



4.8.1 DISCUSSIONS ON THE FINDINGS OF EATING ATTITUDE

The results presented in Table XI showed that the obtained adjusted means on eating attitude among Static hatha yoga sadhana group was 55.65 followed by Dynamic hatha yoga sadhana group with the mean value of 62.43 and control group mean value of 33.90. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.01, 72.82 and 73.23 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.35.

The post hoc analysis through Scheffe`s confidence test proved that due to fifteen weeks treatment the Static hatha yoga sadhana and Dynamic hatha yoga sadhana there was significant improvement in eating attitude than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Static hatha yoga sadhana and Dynamic hatha yoga sadhana proved that there was significant difference in the improvement of eating attitude and it was proved that Dynamic hatha yoga sadhana was better than Static hatha yoga sadhana in improving the eating attitude.

4.9 RESULTS ON DEHYDROEPIANDROSTERONE (DHEA)

The Pubertal development dimension variable Dehydroepiandrosterone (DHEA) was measured through blood test. The result on the effect of static and dynamic hatha yoga sadhana on Dehydroepiandrosterone (DHEA) among preteen girls is presented in Table XIII.

Table XIII

**COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST –
TESTS DATA ON DEHYDROEPIANDROSTERONE (DHEA) OF
EXPERIMENTAL AND CONTROL GROUPS**

(Scores in ug/dl)

	Static Hatha Yoga Sadhana Group	Dynamic Hatha Yoga Sadhana Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	148.3	147.4	147.3	Between	6.06	2	3.03	0.65
				Within	126.6	27	4.69	
Post Test Mean	173.4	180.4	149.1	Between	5397.27	2	2698.63	73.18*
				Within	995.7	27	36.88	
Adjusted Post Test Mean	172.63	180.72	149.55	Between	5205.02	2	2602.51	83.68*
				Within	808.61	26	31.10	
Mean Diff	25.1	33	1.8					

*Significant at 0.05 level Table F-ratio at 0.05 level of confidence for 2 and 27 (df) =3.35,
2 and 26(df) = 3.37

Table XIII shows that the pre test mean scores of Dehydroepiandrosterone (DHEA) of Experimental group I – Static hatha yogic sadhana was 148.3, Experimental group II – Dynamic hatha yogic sadhana was 147.4, Control group III was 147.3. The post test means of Static hatha yogic sadhana, Dynamic hatha yogic sadhana and Control group recorded were 173.4, 180.4 and 149.1 respectively.

The obtained F value on pre test scores 0.65 was lesser than the required F value of 3.35 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 73.18 was greater than the required F value at 3.35. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 83.68 was greater than the required F value at 3.37. This proved that there was a significant improvement in Dehydroepiandrosterone (DHEA) due to fifteen weeks of Static hatha yogic sadhana and Dynamic hatha yogic sadhana among preteen girls.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XIV.

TABLE - XIV
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED
POST – TEST PAIRED MEANS OF DEHYDROEPIANDROSTERONE (DHEA)
(Scores in ug/dl)

Experimental Group – I (Static Hatha yogic sadhana)	Experimental Group – II (Dynamic Hatha yogic sadhana)	Control Group III	Mean Difference	Required C.I
172.63	--	149.55	23.08*	6.47
--	180.72	149.55	31.18*	6.47
172.63	180.72	--	8.09*	6.47

* Significant at .05 level

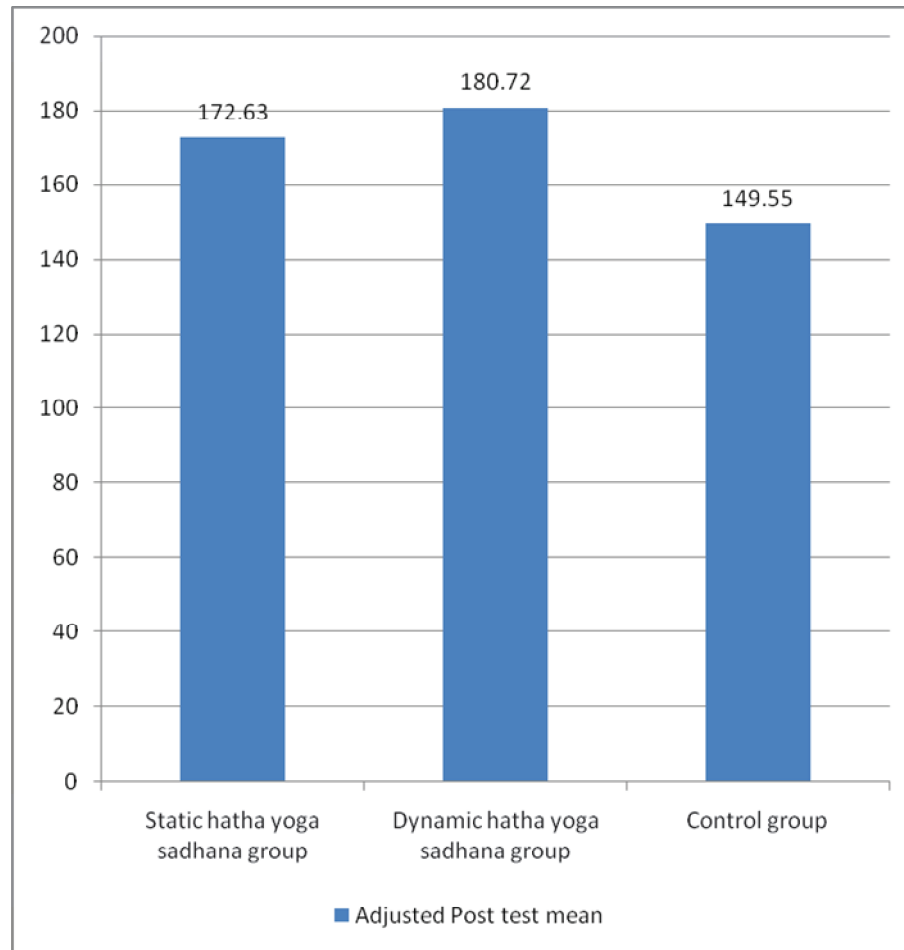
Table-XIV shows that there was significant difference between Static hatha yogic sadhana and control group, Dynamic hatha yogic sadhana group and control group and between experimental groups.

The obtained adjusted post test mean values were presented through bar diagram in Figure 45.

FIGURE - 45

BAR DIAGRAM SHOWING THE ADJUSTED POST TEST MEAN VALUES
OF EXPERIMENTAL GROUPS I, II AND CONTROL GROUP ON
DEHYDROEPIANDROSTERONE (DHEA)

(Scores in ug/dl)



4.9.1 DISCUSSIONS ON THE FINDINGS OF DEHYDROEPIANDROSTERONE (DHEA)

The results presented in Table XIII showed that the obtained adjusted means on Dehydroepiandrosterone (DHEA) among Static hatha yoga sadhana group was 172.63 followed by Dynamic hatha yoga sadhana group with the mean value of 180.72 and control group mean value of 149.55. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.65, 73.18 and 83.68 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.35.

The post hoc analysis through Scheffe's confidence test proved that due to fifteen weeks treatment the Static hatha yoga sadhana and Dynamic hatha yoga sadhana there was significant improvement in Dehydroepiandrosterone (DHEA) than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Static hatha yoga sadhana and Dynamic hatha yoga sadhana proved that there was significant difference in the improvement of Dehydroepiandrosterone (DHEA) and it was proved that Dynamic hatha yoga sadhana was better than Static hatha yoga sadhana among preteen girls.

4.10 RESULTS ON LUTEINIZING HORMONE (LH)

The Pubertal development dimension variable Luteinizing hormone (LH) was measured through Blood test. The result on the effect of static and dynamic hatha yoga sadhana on Luteinizing hormone (LH) among preteen girls is presented in Table XV.

Table XV

**COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST –
TESTS DATA ON LUTEINIZING HORMONE (LH) OF EXPERIMENTAL
AND CONTROL GROUPS**

(Scores in IU/L)

	Static Hatha Yoga Sadhana Group	Dynamic Hatha Yoga Sadhana Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F
Pre Test Mean	8.14	8	8.04	Between	0.10	2	0.05	0.59
				Within	2.36	27	0.09	
Post Test Mean	7.15	6.91	7.85	Between	4.77	2	2.39	17.32*
				Within	3.72	27	0.14	
Adjusted Post Test Mean	7.07	6.96	7.86	Between	4.85	2	2.42	37.64*
				Within	1.68	26	0.06	
Mean Diff	0.99	1.09	0.19					

*Significant at 0.05 level Table F-ratio at 0.05 level of confidence for 2 and 27 (df) =3.35,
2 and 26(df) = 3.37

Table XV shows that the pre test mean scores of Luteinizing hormone (LH) of Experimental group I – Static hatha yogic sadhana was 8.14, Experimental group II – Dynamic hatha yogic sadhana was 8, Control group III was 8.04. The post test means of Static hatha yogic sadhana, Dynamic hatha yogic sadhana and Control group recorded were 7.15, 6.91 and 7.85 respectively.

The obtained F value on pre test scores 0.59 was lesser than the required F value of 3.35 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 17.32 was greater than the required F value at 3.35. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 37.64 was greater than the required F value at 3.37. This proved that there was a significant reduction in Luteinizing hormone (LH) due to fifteen weeks of Static hatha yogic sadhana and Dynamic hatha yogic sadhana among preteen girls.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XVI.

TABLE - XVI
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED
POST – TEST PAIRED MEANS OF LUTEINIZING HORMONE (LH)
(Scores in IU/L)

Experimental Group – I (Static Hatha yogic sadhana)	Experimental Group – II (Dynamic Hatha yogic sadhana)	Control Group III	Mean difference	Required C.I
7.08	--	7.87	0.79*	0.29
--	6.97	7.87	0.90*	0.29
7.08	6.97	--	0.11	0.29

* Significant at .05 level

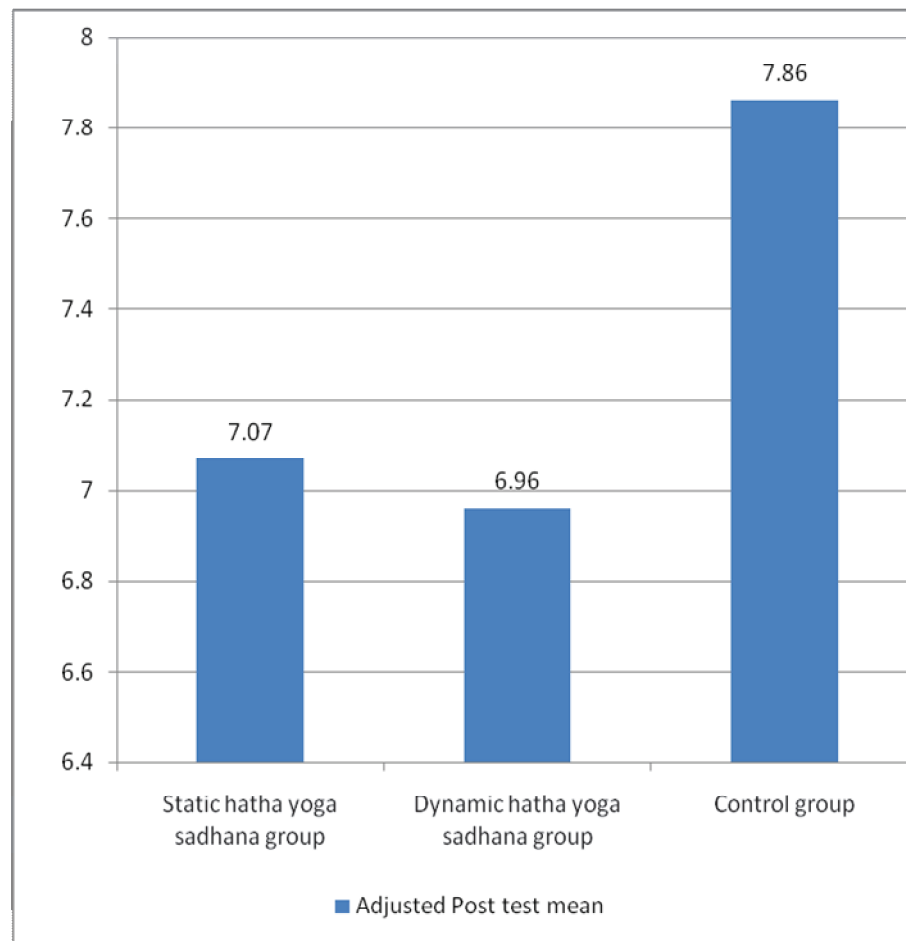
Table-XVI shows that there was significant difference between Static hatha yogic sadhana and control group and Dynamic hatha yogic sadhana group and control group and there was no significant difference between experimental groups.

The obtained adjusted post test mean values were presented through bar diagram in Figure 46.

FIGURE - 46

BAR DIAGRAM SHOWING THE ADJUSTED POST TEST MEAN VALUES
OF EXPERIMENTAL GROUPS I, II AND CONTROL GROUP ON
LUTEINIZING HORMONE (LH)

(Scores in IU/L)



4.10.1 DISCUSSIONS ON THE FINDINGS OF LUTEINIZING HORMONE(LH)

The results presented in Table XV showed that the obtained adjusted means on Luteinizing hormone (LH) among Static hatha yoga sadhana group was 7.07 followed by Dynamic hatha yoga sadhana group with the mean value of 6.96 and control group mean value of 7.86. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.59, 17.32 and 37.64 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.35.

The post hoc analysis through Scheffe's confidence test proved that due to fifteen weeks treatment the Static hatha yoga sadhana and Dynamic hatha yoga sadhana there was significant reduction in Luteinizing hormone (LH) than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Static hatha yoga sadhana and Dynamic hatha yoga sadhana proved that there was no significant difference in the reduction of Luteinizing hormone (LH) among preteen girls.

4.11 RESULTS ON GONADOTROPHIN RELEASING HORMONE (GnRH)

The Pubertal development dimension variable Gonadotrophin releasing hormone (GnRH) was measured through Blood test. The result on the effect of static and dynamic hatha yoga sadhana on Gonadotrophin releasing hormone (GnRH) among preteen girls is presented in Table XVII.

Table XVII

COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST – TESTS DATA ON GONADOTROPHIN RELEASING HORMONE (GnRH) OF EXPERIMENTAL AND CONTROL GROUPS

(Scores in IU/I)

	Static Hatha Yoga Sadhana Group	Dynamic Hatha Yoga Sadhana Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	1.37	1.48	1.41	Between	0.06	2	0.03	0.51
				Within	1.63	27	0.06	
Post Test Mean	2.12	2.25	1.47	Between	3.49	2	1.75	22.22*
				Within	2.12	27	0.08	
Adjusted Post Test Mean	2.16	2.21	1.48	Between	3.31	2	1.66	33.61*
				Within	1.28	26	0.04	
Mean Diff	0.75	0.77	0.06					

*Significant at 0.05 level Table F-ratio at 0.05 level of confidence for 2 and 27 (df) =3.35,
2 and 26(df) = 3.37

Table XVII shows that the pre test mean scores of Gonadotrophin releasing hormone (GnRH) of Experimental group I – Static hatha yogic sadhana was 1.37, Experimental group II – Dynamic hatha yogic sadhana was 1.48, Control group III was 1.41. The post test means of Static hatha yogic sadhana, Dynamic hatha yogic sadhana and Control group recorded were 2.12, 2.25 and 1.47 respectively.

The obtained F value on pre test scores 0.51 was lesser than the required F value of 3.35 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 22.22 was greater than the required F value at 3.35. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 33.61 was greater than the required F value at 3.37. This proved that there was a significant reduction in Gonadotrophin releasing hormone (GnRH) due to fifteen weeks of Static hatha yogic sadhana and Dynamic hatha yogic sadhana among preteen girls.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XVIII

TABLE - XVIII
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED
POST – TEST PAIRED MEANS OF GONADOTROPHIN RELEASING
HORMONE (GnRH)
(Scores in IU/l)

Experimental Group – I (Static Hatha yogic sadhana)	Experimental Group – II (Dynamic Hatha yogic sadhana)	Control Group III	Mean difference	Required C.I
2.16	--	1.48	0.68*	0.26
--	2.21	1.48	0.73*	0.26
2.16	2.21	--	0.05	0.26

* Significant at .05 level

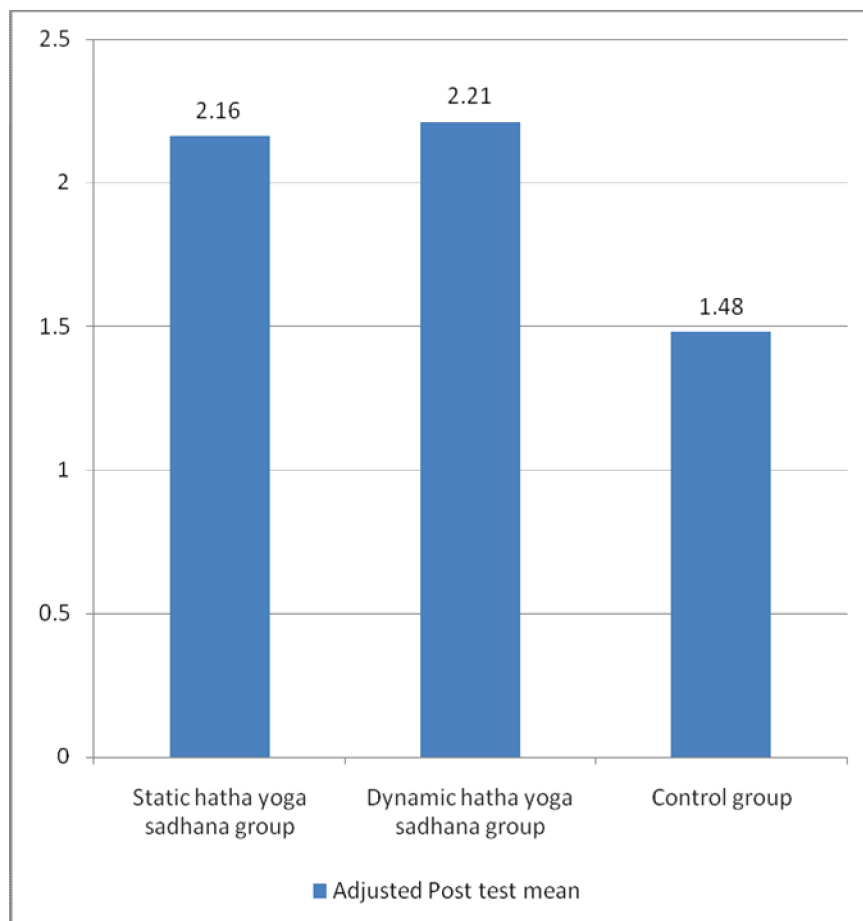
Table-XVIII shows that there was significant difference between Static hatha yogic sadhana and control group, Dynamic hatha yogic sadhana group and control group and there was no significant difference between experimental groups.

The obtained adjusted post test mean values were presented through bar diagram in Figure 47.

FIGURE - 47

BAR DIAGRAM SHOWING THE ADJUSTED POST TEST MEAN VALUES
OF EXPERIMENTAL GROUPS I, II AND CONTROL GROUP ON
GONADOTROPHIN RELEASING HORMONE (GnRH)

(Scores in IU/I)



4.11.1 DISCUSSIONS ON THE FINDINGS OF GONADOTROPHIN RELEASING HORMONE (GnRH)

The results presented in Table XVII showed that the obtained adjusted means on Gonadotrophin releasing hormone (GnRH) among Static hatha yoga sadhana group was 2.16 followed by Dynamic hatha yoga sadhana group with the mean value of 2.21 and control group mean value of 1.48. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.51, 22.22 and 33.61 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.35.

The post hoc analysis through Scheffe's confidence test proved that due to fifteen weeks treatment the Static hatha yoga sadhana and Dynamic hatha yoga sadhana there was significant reduction in Gonadotrophin releasing hormone (GnRH) than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Static hatha yoga sadhana and Dynamic hatha yoga sadhana proved that there was significant difference in the reduction of Gonadotrophin releasing hormone (GnRH) and it was proved that Dynamic hatha yoga sadhana was better than Static hatha yoga sadhana among preteen girls.

4.12 RESULTS ON FOLLICLE STIMULATING HORMONE (FSH)

The Pubertal development dimension variable Follicle stimulating hormone (FSH) was measured through Blood test. The result on the effect of static and dynamic hatha yoga sadhana on Follicle Stimulating Hormone (FSH) among preteen girls is presented in Table V.

Table XIX

**COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST –
TESTS DATA ON FOLLICLE STIMULATING HORMONE (FSH) OF
EXPERIMENTAL AND CONTROL GROUPS**

(Scores in mIU/ml)

	Static Hatha Yoga Sadhana Group	Dynamic Hatha Yoga Sadhana Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	8.85	8.76	8.91	Between	0.11	2	0.05	0.11
				Within	13.79	27	0.51	
Post Test Mean	6.68	7.71	8.79	Between	22.26	2	11.13	16.47*
				Within	18.25	27	0.67	
Adjusted Post Test Mean	6.67	7.78	8.73	Between	21.16	2	10.57	39.53*
				Within	6.96	26	0.26	
Mean Diff	2.17	1.05	0.12					

*Significant at 0.05 level Table F-ratio at 0.05 level of confidence for 2 and 27 (df) =3.35,
2 and 26(df) = 3.37

Table XIX shows that the pre test mean scores of Follicle stimulating hormone (FSH) of Experimental group I – Static hatha yogic sadhana was 8.85, Experimental group II – Dynamic hatha yogic sadhana was 8.76, Control group III was 8.91. The post test means of Static hatha yogic sadhana, Dynamic hatha yogic sadhana and Control group recorded were 6.68, 7.71 and 8.79 respectively.

The obtained F value on pre test scores 0.11 was lesser than the required F value of 3.35 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal.

The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 16.47 was greater than the required F value at 3.35. This proved that the differences between the post test mean at the subjects were significant.

Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 39.53 was greater than the required F value at 3.37. This proved that there was a significant reduction in the Follicle stimulating hormone (FSH) due to fifteen weeks of Static hatha yogic sadhana and Dynamic hatha yogic sadhana among preteen girls.

Since significant improvement were recorded. The results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XX

TABLE - XX

**SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED
POST – TEST PAIRED MEANS OF FOLLICLE STIMULATING HORMONE
(FSH)**

(Scores in mIU/ml)

Experimental Group – I (Static Hatha yogic sadhana)	Experimental Group – II (Dynamic Hatha yogic sadhana)	Control Group III	Mean difference	Required C.I
6.67	--	8.73	2.06*	0.60
--	7.78	8.73	0.94*	0.60
6.67	7.78	--	1.11*	0.60

* Significant at .05 level

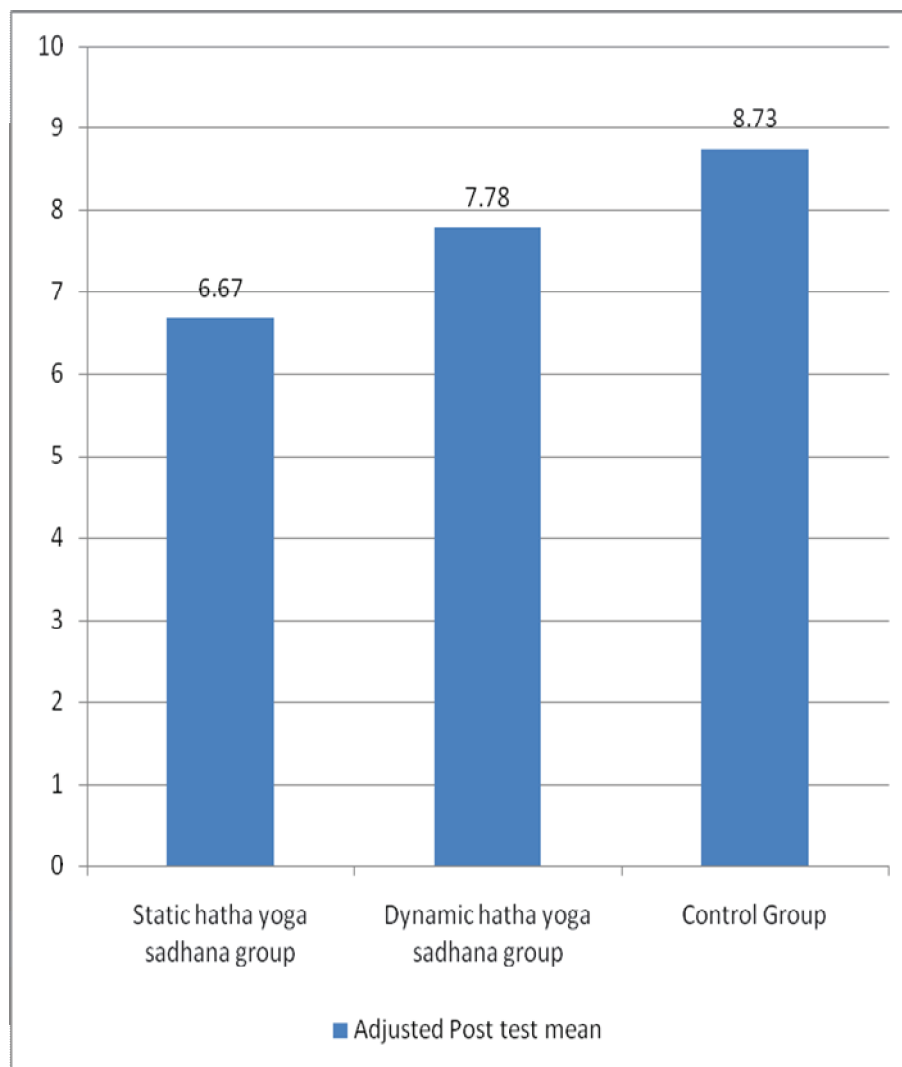
Table - XX shows that there was significant reduction between Static hatha yogic sadhana and control group and Dynamic hatha yogic sadhana group and control group and between experimental groups.

The obtained adjusted post test mean values were presented through bar diagram in Figure 48

FIGURE 48

BAR DIAGRAM SHOWING THE ADJUSTED POST TEST MEAN VALUES OF EXPERIMENTAL GROUPS I, II AND CONTROL GROUP ON FOLLICLE STIMULATING HORMONE (FSH)

(Scores in mIU/ml)



4.12.1 DISCUSSIONS ON THE FINDINGS OF FOLLICLE STIMULATING HORMONE (FSH)

The results presented in Table XIX showed that the obtained adjusted means on Follicle stimulating hormone (FSH) among Static hatha yoga sadhana group was 6.67 followed by Dynamic hatha yoga sadhana group with the mean value of 7.78 and control group mean value of 8.73. The difference among pre test scores Post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.11, 16.47 and 39.53 respectively. It was found that obtained F value on pre test score was not significant at 0.05 level of confidence as the obtained value was lesser than the required table value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.35.

The post hoc analysis through Scheffe's confidence test proved that due to fifteen weeks treatment the Static hatha yoga sadhana and Dynamic hatha yoga sadhana there was significant reduction in Follicle stimulating hormone (FSH) than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely Static hatha yoga sadhana and Dynamic hatha yoga sadhana proved that there was no significant difference in the reduction of Follicle stimulating hormone (FSH) among preteen girls.

4.13 DISCUSSION ON HYPOTHESES

- 1) It was hypothesized that there would be a significant reduction in the socio environmental dimension namely 'Sedentary Behavior' due to Static and Dynamic hatha yoga sadhana practices among preteen girls.

According to Table V it was proved that there was significant reduction in the sedentary behavior due to Static and Dynamic hatha yoga sadhana practices and hence the first research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 2) It was hypothesized that there would be a better significant reduction in the socio environmental dimension namely 'Sedentary Behavior' due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice among preteen girls.

Table VI it was proved that there was no significant difference in reduction of sedentary behavior due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice and hence the second research hypothesis was rejected and null hypothesis accepted at 0.05 level of confidence.

- 3) It was hypothesized that there would be a significant improvement in the socio environmental dimension namely 'Physical Activity' due to Static and Dynamic hatha yoga sadhana practices among preteen girls.

Table VII it was proved that there was significant improvement in the physical activity due to Static and Dynamic hatha yoga sadhana practices and hence the third research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 4) It was hypothesized that there would be a better significant improvement in the socio environmental dimension namely 'Physical Activity' due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice among preteen girls.

Table VIII it was proved that there was better significant improvement in Physical activity due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice and hence the fourth research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 5) It was hypothesized that there would be a significant improvement in the socio environmental dimension namely 'Family Cohesion' due to Static and Dynamic hatha yoga sadhana practices among preteen girls.

Table IX it was proved that there was significant improvement in the family cohesion due to Static and Dynamic hatha yoga sadhana practices and hence the fifth research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 6) It was hypothesized that there would be a better significant improvement in the socio environmental dimension namely 'Family Cohesion' due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice among preteen girls.

Table X it was proved that there was better significant improvement in family cohesion due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice and hence the sixth research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 7) It was hypothesized that there would be a significant improvement in the socio environmental dimension namely 'Eating attitude' due to Static and Dynamic hatha yoga sadhana practices among preteen girls.

Table XI it was proved that there was significant improvement in eating attitude due to Static and Dynamic hatha yoga sadhana practices and hence the seventh research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 8) It was hypothesized that there would be a better significant improvement in the socio environmental dimension namely 'Eating Attitude' due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice among preteen girls.

Table XII it was proved that there was better significant improvement in eating attitude due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice and hence the eighth research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 9) It was hypothesized that there would be a significant improvement in the pubertal developmental dimension namely 'Dehydroepiandrosterone (DHEA)' due to Static and Dynamic hatha yoga sadhana practices among preteen girls.

Table XIII it was proved that there was significant improvement in the Dehydroepiandrosterone (DHEA) due to Static and Dynamic hatha yoga sadhana practices and hence the ninth research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 10) It was hypothesized that there would be a better significant improvement in the pubertal developmental dimension namely 'Dehydroepiandrosterone (DHEA)' due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice among preteen girls.

Table XIV it was proved that there was no significant difference in the improvement of Dehydroepiandrosterone (DHEA) due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice and hence the tenth research hypothesis was rejected and null hypothesis accepted at 0.05 level of confidence.

- 11) It was hypothesized that there would be a significant reduction in the pubertal developmental dimension namely 'Luteinizing Hormone (LH)' due to Static and Dynamic hatha yoga sadhana practices among preteen girls.

Table XV it was proved that there was significant reduction in the Luteinizing hormone (LH) due to Static and Dynamic hatha yoga sadhana practices and hence the eleventh research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 12) It was hypothesized that there would be a better significant reduction in the pubertal developmental dimension namely 'Luteinizing Hormone (LH)' due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice among preteen girls.

Table XVI it was proved that there was no significant difference in the reduction of Luteinizing hormone (LH) due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice and hence the twelfth research hypothesis was rejected and null hypothesis accepted at 0.05 level of confidence.

- 13) It was hypothesized that there would be a significant reduction in the pubertal developmental dimension namely 'Gonadotrophin releasing hormone (GnRH)' due to Static and Dynamic hatha yoga sadhana practices among preteen girls.

Table XVII it was proved that there was significant reduction in the Gonadotrophin releasing hormone (GnRH) due to Static and Dynamic hatha yoga sadhana practices

and hence the thirteenth research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 14) It was hypothesized that there would be a better significant reduction in the pubertal developmental dimension namely 'Gonadotrophin releasing hormone (GnRH)' due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice among preteen girls.

Table XVIII it was proved that there was better significant reduction in Gonadotrophin releasing hormone (GnRH) due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice and hence the fourteenth research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 15) It was hypothesized that there would be a significant reduction in the pubertal developmental dimension namely 'Follicle Stimulating Hormone (FSH)' due to Static and Dynamic hatha yoga sadhana practices among preteen girls.

Table XIX it was proved that there was significant reduction in the Follicle stimulating hormone (FSH) due to Static and Dynamic hatha yoga sadhana practices and hence the fifteenth research hypothesis was accepted and null hypothesis rejected at 0.05 level of confidence.

- 16) It was hypothesized that there would be a better significant reduction in the pubertal developmental dimension namely 'Follicle Stimulating Hormone (FSH)' due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice among preteen girls.

Table XX it was proved that there was no significant difference in the reduction of follicle stimulating hormone (FSH) due to Dynamic hatha yoga sadhana practice than the Static hatha yoga sadhana practice and hence the sixteenth research hypothesis was rejected and null hypothesis accepted at 0.05 level of confidence.