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EFFECT OF SHATKARMA, ASANAS AND PRANAYAMS ON PHYSIOLOGICAL VARIABLES AMONG FEMALES

Sushil
Research Scholar,
Dr Hari singh
Supervisor

Shri Krishna University, Chhatarpur (Madhya Pradesh)

Abstract

The objective of the study was to assess the effect of Shatkarma, Asanas and Pranayams on selected Physiological Variables among females. 24 females from Spirit Yoga Centre, New Delhi randomly selected to participate in the study as subjects. The age of subjects was ranging from 25 years to 60 years. Following variables were selected for the study: Body Weight, Body Fat% and Basal Metabolic Rate (BMR). The data was collected by conducting Inbody Body Composition Analyser machine. The reliability of data was established following the instrument's reliability and tester competency. The data was collected before the commencement of training programme that was known as pre-test and thereafter, at the end of 3 months of training program known as post-test 1 and at the end of 6 months of the training programme known as post-test 2. In all, three data collection was executed from the experimental group during the 6 months specific yoga training program. A six months training program was designed to assess the effect of Shatkarma, Asanas and Pranayamas on selected variables. The training was provided to experimental group for 5 days/week for the duration of six months. Descriptive statistics and Repeated Measure MANOVA were applied using SPSS Software to analyse data. The collected data was significantly normalized before further processing. The obtained result shows the significant changes in selected variables i.e. Body Weight, Body Fat% and Basal Metabolic Rate (BMR) due to specific Shatkarma, Asanas and Pranayams training.

Keywords: BMR, WHR

Introduction

Regular practice of variety of Yoga techniques have been shown to lower heart rate and blood pressure in various population (Lakshmikanthan et al. 1979; Mahajan et al. 1999). Yoga exercise are scientific means for strengthen of all living or atrophying muscle fibers and tissues. This system teaches how to a make new life pulsation in active tissues. In this context it much as it is different from other system of exercise in as much as it is different from other system of exercise in as much as it teaches one how to concentrate his attention on the awakened energy which is the direct gives of power, strength and vitality to all the parts of the body. It develops the will power long with bodily strength. This aspect of yoga is technically known as a "ASANAS" which was developed by the hatha yogic into a well-organized system of physical culture. One very important part of yoga is Shatkrma or Shatkriya as described in the yogic texts and is a very precise and systematic science. Shat means six and karma means

action; shatkarma consist of six groups of purification. Main aim of shatkarmais harmony between two major pranic flows ida and pingla, it is the purification of mental , physical , balance.

With keeping the fact in mind that, the wide area of yogic exercises and its effect on various aspect of human body poorly depicted. The research scholar has decided to delimit his research work on *'Shatkarma, Asanas and Pranayams'* and its effect on selected body composition variables i.e. body weight, fat %, and BMR. The following objectives were set for the present study: 1) To assess the health status of the subjects on selected variables i.e. Body Weight, Body Fat % & BMR, 2) To assess the effect of Shatkarma, Asanas and Pranayams on Body Weight of selected female subjects, 3) To assess the effect of Shatkarma, Asanas and Pranayams on Body Fat% of selected female subjects and4) To assess the effect of Shatkarma, Asanas and Pranayams on Basal Metabolic Rate (BMR) of selected female subjects.

Keeping the purpose of the study, the following hypotheses were formulated:

1. It was also hypothesized that there would be significant effect of Shatkarma, Asanas and Pranayams on Body Weight of females.
2. It was also hypothesized that there would be significant effect of Shatkarma, Asanas and Pranayams on Body Fat % of females.
3. It was also hypothesized that there would be significant effect of Shatkarma, Asanas and Pranayams on Basal Metabolic Rate (BMR) of females.

The present study was delimited as:The study was delimited to female subjects only, the study was delimited to teachers aged between 25-60 years of age and the study was further delimited to female subjects of Spirit Yoga center, New Delhi. The findings of this study had to be seen in light of some limitations as well which were as follows:The factors like diet, lifestyle, daily routine habits etc., which may have an effect on the result of the study, was considered as limitation in this study. The meteorological variations such as air temperature, atmospheric pressure, relative humidity etc. during the training period cannot be controlled and their possible influence on the study was recognized as

limitation.Certain factors like past training and genetic factors that have affected the result of the study was also consider as the limitation of the study.Psychological state of the subjects may affect the result of the study. Thus, this was considered as the limitation of study.The intentand motivation of the subjects during training and testing procedure was considered as the limitation.

Though, the present study was confined to only Shatkarma and its impact on selected Health Variables, still it may have significance in various manners.The study would profile the lifestyle and health behaviors of female subjects.The study would provide relevant information of health status of female subjects and would be eye opener for society or health experts regarding the prevailing trend of individual behaviour and its health consequences.The study would enable better policy framing health promotion measures in general.The study will serve as a motivational force to the general population to minimize the problems related to various health factors. The result of the study will be helpful for the women's which are related to the other field.The Study would provide relevant data for comparative survey of similar nature on wider population.

PROCEDURE AND METHODOLOGY

Selection of the Subjects

24 females from Spirit Yoga Centre, New Delhi randomly selected to participate in the study as subjects. The age of subjects was ranging from 25 years to 60 years.

Collection of data

The data for the purpose of the study was collected from the female subjects of Spirit Yoga Centre, New Delhi. The data was collected before the commencement of training programmethat was known as pre-test and thereafter, at the end of 3 months of training program known as post-test 1 and at the end of 6 months of the training programme known as post-test 2. In all, three data collection was executed from the experimental group during the 6 months specific yoga training program.

Criterion Measures

S.no	Item	Equipment/ test	Unit
1	Body Weight	Body Composition Analyzer Machine	Kg
2	Body Fat%	Body Composition Analyzer Machine	%
3	Basal metabolic Rate (BMR)	Body Composition Analyzer Machine	Kcal

Administration of training program

A six months training program was designed to assess the effect of Shatkarma, Asanas and Pranayamas on selected variables. The training was provided to experimental group for 5 days/week for the duration of six months. As research topic suggests, the study consists three types of exercise namely Shatkarma, Asanas and Pranayamas.

Statistical Techniques

The data was collected from female subjects of Spirit Yoga Centre, New Delhi and used for the statistical treatment that specifies descriptive statistics. Various information was presented in graphical format such as Bar graph, Line graph, Pie Chart etc. when and wherever required. In order to describe the status of health condition of subjects, descriptive statistics (mean, standard deviation) was calculated. Data distribution was assessed by evaluating skewness and kurtosis along with histogram, Q-Q Plot and Box Plot diagrams. Shapiro-Wilk test was conducted for normality test and non-normality was fixed wherever required. After randomization of the data, parametric test i.e. Repeated Measure MANOVA was applied and effect of selected yogic exercises was assessed on health variables. All the statistical test was applied using SPSS (version 16) software. In all the cases of inferential statistics, 0.05 level of significance was fixed to test the hypothesis.

RESULT AND DISCUSSION

The main purpose of the present study was to study the effect of selected yogic exercises i.e. Shatkarma, Asanas and Pranayams on selected health variables i.e. Body Weight, Body Fat %, & BMR. For the said purpose, 24 females were selected on random basis and provided Shatkarma, Asanas and Pranayams training for the period of 6 months. The minimum age of participant in the group was 26 yrs. Whereas, maximum age in the same was recorded to be 59 yrs. The mean value of age was found to be 39.72 ± 10.135. The mean value for height and weight of the same subjects were found to be 163.42 ± 5.02 and 85.596 ± 10.68 respectively.

Descriptive Statistics for selected variables

	PRE-TEST		AFTER 3 MONTHS		AFTER 6 MONTHS	
	MEAN	SD	MEAN	SD	MEAN	SD
BODY WEIGHT	85.59	10.68	84.50	10.24	84.10	9.84
BODY FAT %	42.58	7.21	40.98	6.69	39.33	6.49
BASAL METABOLIC RATE	1419.5	56.25	1433.73	54.98	1448.83	52.44

The body weight status of female subjects selected for the studyfor pre-testwas recorded to be 85.59 ± 10.68. After 3 months of training, the mean value body weight status was reduced to 84.50 kg with SD of 10.24. By the end of 6 months of specific yogic training, the mean value for the same was 84.10 ± 9.84. Similarly, the body fat % status of female subjects selected for the study for pre-test was recorded to be 42.58 ± 7.21. After 3 months of training, the mean value of the same was reduced to 40.98 with SD of 6.69. By the end of 6 months of specific yogic training, the mean value for the same was 39.33 ± 6.49. Lastly, the basal metabolic rate status of female subjects selected for the study for pre-test was recorded to be 1419.5 ± 56.25. After 3 months of training, the mean value

of the same was improved to 1433.73 with SD of 54.98. By the end of 6 months of specific yogic training, the mean value for the same was 1448.83 ± 52.44.

During the processing of data, it was found that certain variables were not normally distributed. The non-normality was assessed with the help of skewness and kyphosis data. The result was also verified with help of Shapiro-wilk test for normality along with various normality graph analysis. In case of non-normality in data distribution, it was fixed by randomization and reverified with same statistical techniques. Once the processed data fulfilled the pre-requisite assumptions, the repeated measure MANOVA technique was applied. The obtained results are shown below.

Multivariate test was executed to assess the multivariate analysis of variance for all the selected variables. It is clearly shown in the table (along the "**Wilks' Lambda**" row) that p = **.000**. Since .000 is **less than** .05 (i.e., it satisfies $p < .05$), the repeated measures MANOVA **is** statistically significant. In other words, there **is** a difference in the selected variables combined – body weight, fat%, and BMR – over time – before the commencement of training program, after 3 months of training and after 6 months of training – when a specific yogic exercise programme is introduced.

MAUCHLEY'S TEST

	Mauchly's W	Approx. Chi-Square	df	Sig.
BODY WEIGHT	.364	22.220	2	.000
BODY FAT %	.549	13.205	2	.001
BASAL METABOLIC RATE	.657	9.242	2	.010

Firstly,the test for sphericity was executed to assess the equality in variance in obtained data at different points of time i.e. pre-test, after 3 months of training and after 6 months of training for all the selected variables. Unfortunately, result obtained in case of all variables were found significant (P=0.00) at 0.05 level. It validates

that statistical test i.e. Repeated Measure Multivariate Analysis of Variance (MANOVA). The result found here shows that the variances of the differences between all combinations of the groups are equal. therefore, on the basis of result, we were not able to rely individually on the test above. As the sphericity of test was violated, it was corrected by making appropriate adjustment to the degree of freedom of the F-test. Thereafter, f-test and pairwise comparison were executed which has shown below.

F-TEST

	F	Sig.
BODY WEIGHT	1.604E3	.000
BODY FAT %	1.015E3	.000
BASAL METABOLIC RATE	1.737E4	.000

The F-test calculation for selected variables i.e. Body Weight status, Body Fat %, Body Mass Index, Waist-Hip Ratio and Basal Metabolic Rate of female subjects in experimental group have shown in table above. Here, the obtained results werepresented significant resultfor F-value as their p-value were equal to 0.00 (which is less than 0.05 level of significance) represented the significant difference in the case of all selected variables. The presented result proves the efficiency of Shatkarma, Asanas and Pranayams training in order to improve the status of Body weight, body fat%, body mass index, waist-hip ratio and basal metabolic rate among selected subjects.

WITHIN SUBJECT CONTRAST TEST

	Type III Sum of Squares	df	Mean Square	F	Sig.
BODY WEIGHT	27.150	1	27.150	11.680	.002
BODY FAT %	130.680	1	130.680	214.535	.000
BASAL METABOLIC RATE	10320.896	1	10320.896	44.281	.000

The within subject contrast test was executed to assess the trend of changes occurred in selected variables i.e. Body Weight status, Body Fat %, and Basal Metabolic Rate due to Shatakarma, Asanas and Pranayams training program

over a period of 6 months. Here, we can see within subject contrast calculations for all selected variables were found to have the linear component which was significant for main factor i.e. testing as their P-value was found less than 0.05 level of significance. On the basis of obtained result, it can be stated that 6 months of Shatakarma, Asanas and Pranayams training program might lead to linear changes in above mentioned variable i.e. Body Weight status, Body Fat %, and Basal Metabolic Rate

CONCLUSIONS AND RECOMMENDATIONS

On the basis of objectives of the study and result obtained after statistical application, the following conclusions were drawn:

1. It was concluded that there is a significant effect of Shatkarma, Asanas and Pranayams on Body Weight of females.
2. It was concluded that there is a significant effect of Shatkarma, Asanas and Pranayams on Body Fat % of females.
3. It was concluded that there is a significant effect of Shatkarma, Asanas and Pranayams on Basal Metabolic Rate (BMR) of females.
4. It was concluded that there is a significant linear improvement due to Shatkarma, Asanas and Pranayams on Body Weight of females.
5. It was concluded that there is a significant linear improvement due to Shatkarma, Asanas and Pranayams on Body Fat % of females.
6. It was concluded thatthere is a significant linear improvement due to Shatkarma, Asanas and Pranayams on Basal Metabolic Rate (BMR) of females.

Above mentioned conclusions and finding has revealed many facts and filled the gap in information available regarding role of yogic exercises for betterment of psychological health of college students. Now, following recommendations are made with future research perspective:

- Similar study can be taken on male subjects as well.
- It was recommended that similar study can be carried out on profession wise as well.
- Similar study can also be conducted on a bigger population.
- A study can be conducted with including more health and body composition variables.
- Further, prediction research can be conducted to identify the health variables that should be stressed for better health condition.
- Similarly, research on factor analysis can be conducted to identify the psychological variables contributing the most to our health condition.

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