CHAPTER III

METHODOLOGY

This chapter provides an overview of the method used for the research study. Under this part of the research method, subjects selected, variables selected, experimental design, test administration and statistical techniques used are described in view of testing the formulated hypothesis.

3.1. SELECTION OF SUBJECTS

The purpose of this research is to find out the combined and isolated effect of yogic practices and yogic diet on selected physiological and psychological variables among obese engineering college women students. To achieve the purpose of this study, eighty obese engineering college women students were selected. Obesity of the subjects were determined through a person's BMI by the following formula:

Metric: $BMI =$ Weight $(kilograms)$ / height^2 $(meters^2)$

For the purpose of this study, women with 30 kg/m^2 and above of Body Mass Index is considered as obese women. The selected subjects were in the age group of 20 to 25 years.

The subjects were randomly divided into four groups and each group contained fifteen subjects. Group I acted as experimental group-one and group-II acted as experimental group-two, group III acted as experimental group III

and group IV acted as control group. Group I under went yogic practices group II underwent yogic diet, group III underwent combination of yogic practices and yogic diet and group IV control group was under the supervision of the investigator and did not undergo any special training during the experimental period of twelve weeks.

The requirement of the experiment procedures, testing as well as exercise schedule were explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. The investigator got individual consent from each subject.

3.2 SELECTION OF VARIABLES

The research scholar reviewed various scientific literature pertaining to the yogic diet and yoga on selected physiological and psychological variables from books, journals, periodicals, magazines and research papers. Taking into consideration of feasibility criteria, availability of instruments and the relevance of the variables of the present study, the following variables were selected.

3.2.1 Dependent Variables

Physiological Variables

1. VO_2 max
2. Breath Holding Time
3. Resting Pulse Rate
4. Vital Capacity

5. Mean Arterial Blood Pressure

Psychological Variables

1. Self Confidence
2. Stress Management
3. Inter Personal Relationship
4. Self Concept
5. Achievement Motivation

3.2.2 Independent Variables

1. Twelve Weeks Yogic Practices
2. Twelve Weeks Yogic diet
3. Twelve Weeks Combined Training Yogic Practices and Yogic Diet

3.3 EXPERIMENTAL DESIGN

The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=80) were randomly assigned to four equal groups of twenty in each. The groups were assigned as Experimental Groups I, II, III and control group respectively. Pre tests were conducted for all the subjects on selected physiological and psychological variables such as VO_2 max, Vital capacity, Breath Holding Time, Resting Pulse Rate, Mean Arterial Blood Pressure, Self Confidence, Stress, Self concept, Achievement motivation and Interpersonal Relationship. The experimental groups participated in

combined and isolated treatments such as, combination of yogasana and yogic diet; yogasana; and yogic diet for a period of twelve weeks.

The post tests were conducted on the above said dependent variables after a period of twelve weeks in the respective treatments. The training programme was scheduled on week days excluding Sundays. The difference between the means on each variable was considered as the effect of respective treatments. To find out the statistical significance, ANCOVA was employed. In all cases 0.05 level was fixed to test the significance.

3.4 PILOT STUDY

A pilot study was conducted to assess the initial capacity of the subjects in order to fix the exercise load. For this purpose ten engineering college students, who were not the subjects for this were selected. During the pilot study phase, the subjects intake capacity, eating habits were studied and yogic diet were tested, apart from fixing up yogasanas suited for obese engineering college women students.

Based on the response of the subjects in the pilot study and during the training, the training schedules for group I, II and group III were constructed. However the individual differences were not considered. This enabled the investigator to adapt suitable training schedule for this study, for the yogic diet, asanass group and combined group.

3.5 CRITERION MEASURES

By glancing the literature, and in consultation with professional experts, the following variables were selected as the criterion measures in this study.

1. VO_2 max was measured through Cooper's 12 Minute Run/Walk Test as suggested by Fox and Mathews (1981)

2. Breath Holding Time was measured using nose clip and stop watch as suggested by Mathew (1988).

3. Resting Heart rate was measured through Digital Heart Rate Measuring Machine, Model No. EW 243, manufactured by National Company, Japan. (Robergs R and Landwehr R 2002)

4. Vital capacity was measured through Spirometer (Fankhauser, D.B. 2002)

5. Mean Arterial Blood pressure was measured through Systolic and Diastolic blood pressure as suggested by Fox and Mathews (1981).

6. Self Confidence, Inter Personal Relationship and Stress Management were measured using Personality Development Index Questionnaire developed by Kaliappan, (1993).

7. Achievement Motivation was measured through standard questionnaire developed by Deo Mohan (1972)

8. Self Concept was measured by questionnaire developed by Mukta Rani Rastogi (1979).

3.6 RELIABILITY OF DATA

The reliability of data was ensured by establishing the instrument reliability, tester's competency and subject reliability

3.6.1 Instrument Reliability

Stop watches calibrated to $1/100^{th}$ of a second were used in this study for recording timings and this stop watch times were compared with other watches in different situations and they were considered reliable. A standard steel tape was used to measuring the tests. All the instruments such as biomonitor, Spirometer, Sphygmomanometer, stethoscope and laboratory equipments used were standard and therefore their calibration were accepted accurate enough for the purpose of the study.

All questionnaire administered were standardized ones and being used for research purposes. The reliability determined by the authors of the instruments were taken into consideration and found enough for the purposes of this study.

3.6.2 Tester's Competency

Reliability was established by the test-retest processes. Nine students from all the three groups were tested on selected variables. The repeated measurement of individuals on the same test is done to determine reliability. It is a univariate not a bivariate situation, it makes sense then to use a univariate statistics like the interaclass correlation coefficient (Baumgartner and Jackson, 1975).

As for psychological variables Self Concept, Achievement Motivation, Self Confident, Stress and Interpersonal Relationship, the authors of the questionnaire have determined reliability and the same was adapted for this study and considered as reliable.

The intraclass correlation coefficient obtained for test-retest data are presented in Table I.

Table I

Intra Class Correlation Coefficient of Test – Retest Scores

S.No	Variables	Coefficient of Correlation
	Physiological Variables	
1	VO_2 Max	0.88*
2	Breath Holding Time	0.93*
3	Resting Heart rate	0.92*
4	Vital capacity	0.88*
5	Blood pressure	0.87*

* Significant at 0.05 level

The reliability and validity of the Personality Development Index used to measure Self confidence, Stress Management and Inter Personal Relationship of the obese engineering college women students were determined by the author (Kaliappan, 1993) and reliabilities and validities of Self Concept questionnaire developed by Mukta Rani Rastogi and the Achievement Motivation Questionnaire by Deo Mohan were established by the authors and were treated enough for the purposes of this study.

3.6.3 SUBJECTS RELIABILITY

Subject reliability was determined, as the same subjects were used under similar conditions by the same tester. The co-efficient of reliability were significant at 0.05 level, for the above test under investigation.

3.7 COLLECTION OF DATA

The purpose of the study was to estimate the combined and isolated effect of combined and isolated yogic practices and yogic diet on selected physiological and psychological variables among obese engineering college women students.. For this purpose, the research scholar followed the following procedure.

The subjects of the study were selected at random and divided into four homogeneous groups. Among the four groups, the control group was strictly under control, without undergoing any special activity. The experimental groups were undergone with the experimental treatments.

3.8 EXPERIMENTAL TREATMENT

The experimental groups were well acquainted with their allotted techniques and did only the experimental treatment given to them for a period of twelve weeks under the personal supervision of the researcher.

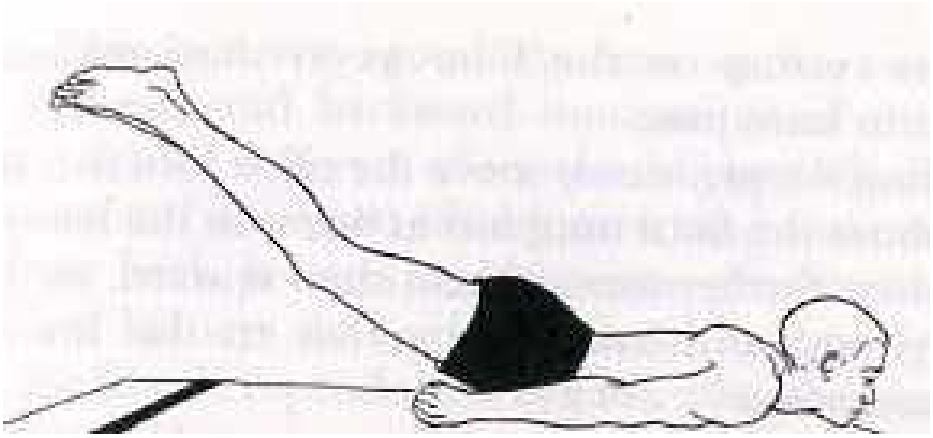
3.8.1 YOGIC PRACTICES

The experimental group I was exposed to the following yogic practices for a period of twelve weeks.

3.8.1 Salabhasana

The subject was asked to lie flat on the stomach with the hands under the thighs, palms down or hands clenched. Inhale, retain the breath and raise the left leg as high as possible, keeping the knee straight. Exhale while lowering the leg to the floor. Repeat the same movement with the right leg. Inhale, retain the breath inside and slowly raise both legs as high as possible, keeping them straight. Keep the trunk on the floor by pressing the arms and hands against the floor. Maintain this position for five to thirty seconds. Exhale while slowly lowering the legs back to the starting position. (Bihar Yoga, 1964)

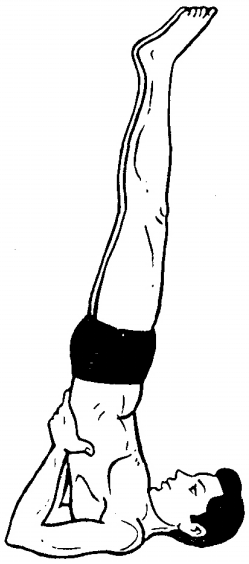
Figure 1: SALABASANA



3.8.2 Sarvangasana

The subject was asked to lie down flat on the back, palms down beside the thighs. Raise the legs with bent knees and slowly roll the back up to the shoulders until the chin touches the chest. Use the hands as a support, resting on the elbows. Straighten the legs vertically. The body should now be at a right angle to the head, neck, shoulders and elbows. The back should be straight, the chin pressing the chest. To return to the lying position, firstly bring the knees down to the forehead, place the hands on the floor, and lower the body and legs slowly to the floor. Hold the breath in while raising and lowering the body. (Bihar Yoga, 1964)

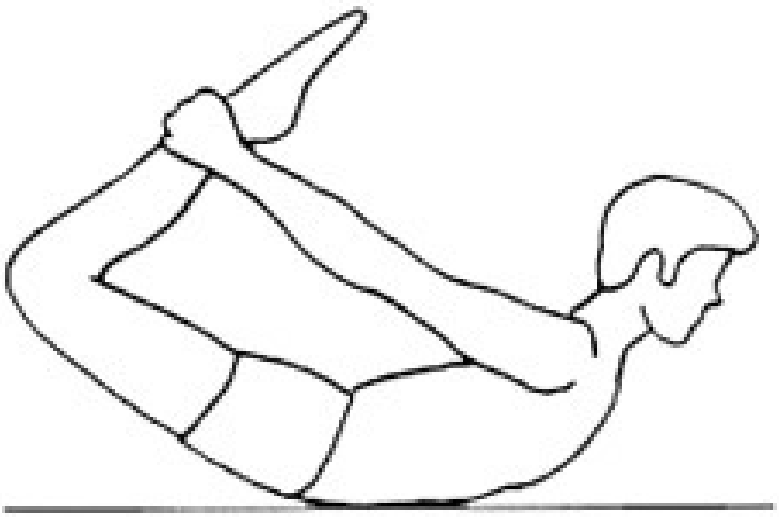
Figure 2: SARVANGASANA



3.8.3 Dhanurasana

Dhanu means bow. Subjects were asked to be on their stomach, fold the legs back ward and catch hold angles with respective hands. To push the heels away form the buttocks and raise the knee and this is from the floor to raise their chin and chest up to look up with out bending elbows to bring the knees together and raise their feet higher to the maximum possible limit by pushing the heels away from the breathing was to be normal to bend the knees lower the entire body to floor and release the hands. They were asked to repeat twice. (Bihar Yoga, 1964).

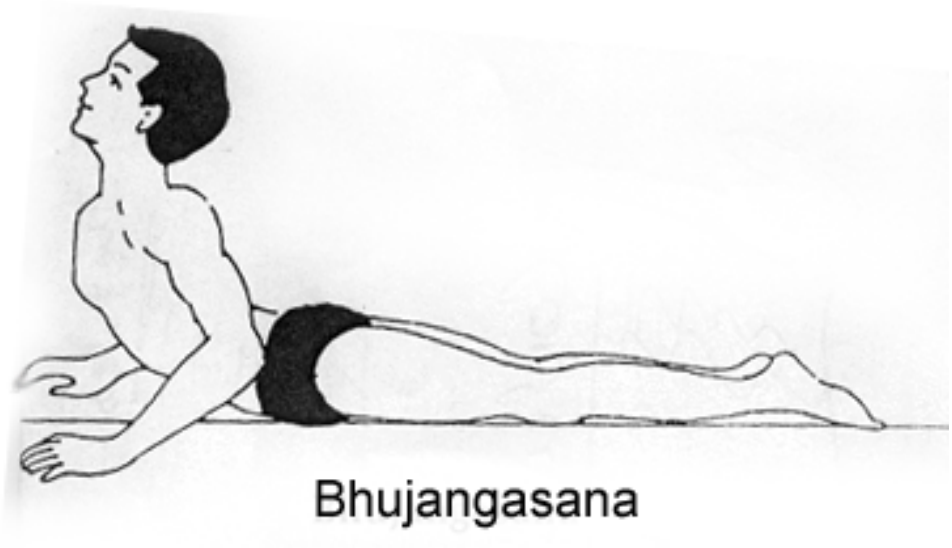
Figure 3: DHANURASANA



3.8.4 Bhujangasana

The subjects were directed to lie down in prone position and to touch the ground with forehead. The palms rested on the ground fingers pointed towards head, placed by the side of the chest and raised the head slowly. Then raised the chest and abdomen only upto chest. Maintain the pose for a few seconds and return to the original position gradually. First touching the forehead. (Bihar Yoga, 1964).

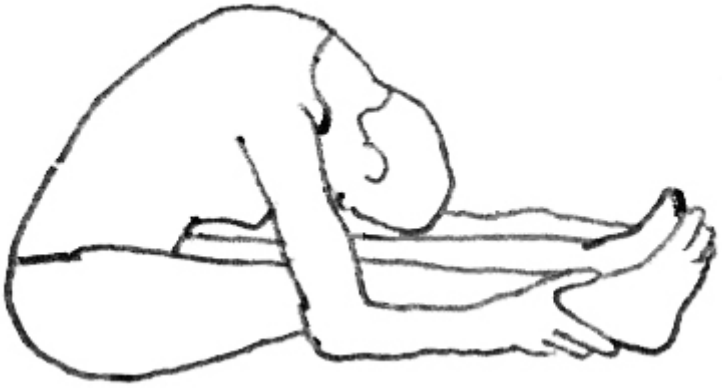
Figure 4: BHUJANGASANA



3.8.5 Pachimotasana

The subjects were instructed to lie supine position and stretch the hands over the head, let the bicels be touching the ears. Raise the head hands on the back together and bend forward. Hold toes with the fingers. Try to touch the knees with face by further bending the head and back. Be in this position for a few seconds and then return to the original position. After practice the subjects were asked to remain in this position for two minutes. (Bihar Yoga, 1964).

Figure 5: PACHIMOTASANA



3.8.6 Ardha Chakrasana (Half Wheel pose)

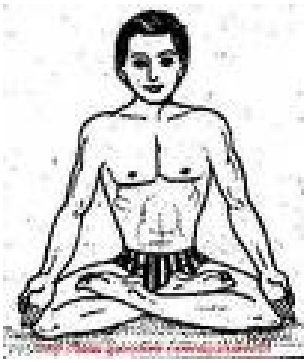
The subject was asked to support at the waist by his palms. Bend backwards from the lumber region. Head bended backwards, stretching the muscles of the neck. Maintained this position for some time and then slowly comeback to the starting position. (Bihar Yoga, 1964)

Figure 6: ARDHA CHAKRASANA (Half Wheel Pose)

3.8.7 Kapalabhati Pranayama

Kapalbhati (Kapala is skull; bhati is light luster) is a milder from Bhastrike Pranayama. In Kapalabhati, the inhalation is slow but the exhalation is vigorous, there is a split second of retention after each exhalation. (Bihar Yoga, 1964)

Figure 7: KAPALABHATI PRANAYAMA



3.8.8 Nadi Sodhana Pranayama

Nadi is a otabular organ of the body like artery or a vein for the passage of prana or energy. A nadi has three layers like an insulated electric wire. The inner most layer is called sirsa, the middle layer damani and the entire organ as well as the out layer is called nadi.

Sodhana means purifying or cleaning, so the object or nadi sodhana pranayama is the purification of the nerves. A little obstruction in a water pipe can cutoff the supply completely. A little obstruction in the nerves can cause great discomfort and paralyze a limb organ. (Bihar Yoga, 1964).

Figure 8: NADI SODHANA PRANAYAMA

3.8.9 Shavasana

The subject was asked to lie on the back with the feet comfortably apart. The spinal column is straight but not rigid and the arms rest on the floor about 15cm away from the body with the palms up. The head is in line with the spine and the eyes and mouth are gently closed. Let the whole body relax completely so that it feels heavy like a statue. Do not move any part of the body. Become aware of the breath and let it become rhythmic and natural. Begin to count the breaths. The natural breath flowing in and then out is one round of the breath.

This may be repeated as long as desired, or one may choose to do 21 rounds, or any particular number of rounds. Remember it is the natural breathing rhythm that one is counting. If it relaxes and becomes deeper, that too is the natural breathing rhythm.

Figure 9: SHAVASANA

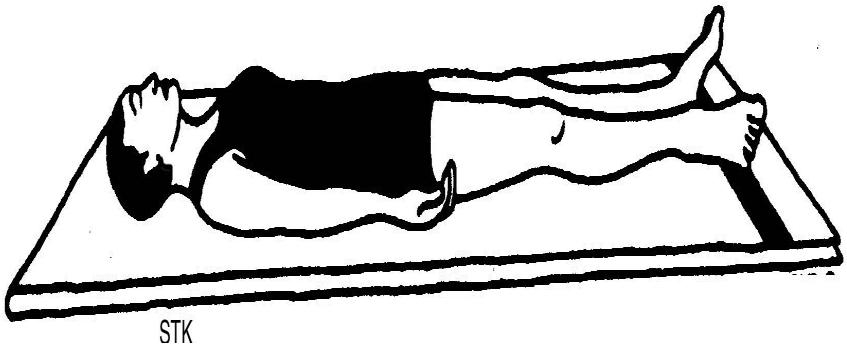


Table II

YOGIC PRACTICES FOR TWELVE WEEKS

S.No	Yogic Practices	Duration
1	Loosening Exercises	3 minutes
2	Ardha Chakrasana	3 minutes
3	Sarvangasana	1-2 minutes
4	Dhanurasana	1- 2 minutes
5	Bhujangasana	1- 2 minutes
6	Pachimotasana	1- 2 minutes
7	Salapasana	1-2 minutes
8	Kapalbhati Pranayama	1- 2 minutes
9	Nadi Sodhana Pranayama	1- 2 minutes
10	Savasana	1- 2 minutes

3.8.2 YOGIC DIET

The Yoga Diet is a way to find ideal weight and achieve emotional and spiritual balance by redefining your relationship with food. It's a branch of Yoga all on its own (called Anna Yoga) and it’s not a diet in the sense of counting calories or complicated menu planning. The Yoga Diet does not require one to feel hungry or go without.

The yogis of ancient times knew this, and many classical yogic texts, such as the Hatha Yoga Pradipika, contain advice on a yogic diet.

Yogic Diet is traditionally classified according to its effect on the body and mind, using the three Gunas: Sattva (the quality of love, light and life), Raja (the quality of activity and passion, lacking stability) and Tamas (the quality of darkness and inertia, dragging us into ignorance and attachment). Based on the above considerations, the Yogic Diet prescribed for the experimental period of twelve weeks is given in Table III.

TABLE III : YOGIC DIET CHART

Water Intake Should be 8 glasses per day

Bed Time Morning - Water

Morning Break Fast: Vegetable Soup

1. Idli 2 with Roasted Bengal grams Chutny

   Or 3 Idli with other Chutney

2. Dosai – 3 without oil roasted Bengal

   Grams chutney or Dosai 1½ with oil with coconut chutney.

3. Chapathi without oil 2 with potato

   /channa or Chapathi 1½ with oil

4. Bread 4 slice with Jame 1 tsp / egg 1

   (boild)

5. Uppuma 1 cup with chutney

6. Pongal – 1 cum with chutney

7. Poori 2 oil pressed out with a paper with channa

Mid Morning Lime Juice 1 cup with 1 tsp with sugar / any Other juice 1 cup etc

Lunch Rice (75 g) – 1 bowl
Sambar ½ cup – 1 cup
Rasam ½ cup
Curd ½ cup
Veg 1 ½ cup / Greens ½ Cup

Evening Tiffin Fruits 2 /Banana 2

Dinner Rice 50 g (3/4 bowl)
Sambar, Rasam / Curd, Veg ½ cup

Bed time Night Water

RESTRICTIONS

1. Restrict intakes of Banana, Custard Apple, Mango, grapes and dried fruits
2. Avoid in between meals
3. Use half salt in cooking and salted foods like pickles, chips etc.
4. Avoid Malted drinks like Horlicks, Boost, Bournvita, Viva Milo, Milk producers etc.
5. Avoid carbonated bottle drinks like coke, Limca, Pepsi, Mranda, and Fanta
6. Avoid cream on the milk
7. Avoid butter, cheese, ghee and direct fat.
8. Avoid direct sugar, use hold sugar in coffee, tea etc avoid sweets, candy, cake, pastries etc.
9. Take restricted amount of rice or any cereal.

INCLUDE

1. Plenty of water 8 – 10 glass a day
2. Plenty of green leafy vegetables and fruits
3. Include cabbage daily in your diet
4. Chew your food to a pulp and milky liquid until it practically swallows itself.
5. Never eat until hungry

With the assistance of the Dieticians, care was taken that to limit the daily intake of the subjects within the following limits.

NUTRIENTS

Carbohydrate	-60%
Fat	-30%
Protein, Vitamin, Mineral, Water	-10%

Whole grain, Pulses, Nuts, Vegetables, Dairy product, Fruits.

Grains	-30%
Dairy product	-20%
Vegetables and fruits	-27%
Nuts	-5%
Pulses, Cooling oil, Fat	-18%

3.8.3 COMBINED GROUP

The experimental group III was given both yoga asanas and yogic diet . The subjects of combined group were given yogasanas as shown in Table II and asked to follow yoga diet as detailed in Table III. Group IV was treated as control group. After a experimental period of 12 weeks, the subjects' scores of physiological and psychological variables were collected and compared with that of their initial level.

3.9 TEST ADMINISTRATION

3.9.1 VO_2 MAX
(COOPER'S 12 MINUTES RUN/WALK TEST)

Purpose

To measure the VO_2 max.

Equipments Used

400 mts track, stopwatch and whistle.

Procedure

The subjects were assigned to each spotter. The subjects started behind a line and upon the starting signal, run and / or walk as many laps possible around the track within 12 minutes. The spotters maintained a count of each lap. When the signal to stop is given the subject stop working/running. The spotter immediately ran to the subject and recorded the distance.

Scoring

The score in meters in determined by multiplying the number of laps completed, plus the number of segments of an lap, plus the meters stopped off between a particular segment. (Johnson and Nelson, 1982)

The VO_2 max in ml/min/kg was calculated based on the formulae suggested by Cooper (1960) was:

$$\mathrm{VO_2\ max} = \frac{d_{12} - 505}{45}$$

Where, d_{12} is the distance (in meters) covered in 12 minutes.

3.9.2 BREATH HOLDING TIME

Purpose

The purpose of this test was to measure the breath holding time.

Equipments

For recording the breath holding time, a stop watch ($1/10^{th}$ of second) and nose clip were used.

` **Procedure**

The subject was instructed to stand at ease and to inhale deeply after which he holds his breath for a length of time possible by him. A nose clip was placed on nose to avoid letting the air through nostrils. The duration from the time of holding his breath until the movement he let air out was clocked by

using the stop watch to the nearest one tenth of a second as breath holding time. The co-operation of the subject to let out the air by opening the mouth was sought to clock the exact breath holding time.

Scoring

The time is recorded in seconds and the beset of two trials were recorded (Mathew, 1988).

3.9.3 RESTING PULSE RATE

Purpose

To measure the resting heart rate of each subject per minute

Equipments

Digital Heart Rate Measuring Machine, Model No. EW 243, manufactured by National Company, Japan.

Procedure

The pulse rate of all the subjects were recorded in a sitting position, in the morning between 6 and 6.30 a.m. Before taking heart rate the subjects were asked to relax for about 30 minutes.

Then the subjects were instructed to sit in a back supported chair and maintain in a slight incline position and placed his left hand on the table. Next the researcher was collected Heart Rate by using Digital Heart Rate measuring

machine which was placed in the chest level on a table. In this way the researcher was measured the heart rate of the subject.

Scoring

The number of pulse beats per minute were recorded as the scores. (Robergs R and Landwehr R 2002)

3.9.4 VITAL CAPACITY

Purpose

Determination of vital capacity

Equipments

Spiro meter, chair, and nose clips.

Procedure

The vital capacity of the subject was determined by the Spiro meter in sitting position. The subject was allowed to inspire the maximum amount of air voluntarily and then he was asked to blow into the dry Spiro meter to the maximum extent. While taking the test the nose of the subject was clipped using a nose clip.

Scoring

The vital capacity of the subject was obtained from the movement of circular volume indicator which was set at '0' before the vital capacity measure was taken. The result was recorded in milliliter. (Fankhauser, D.B. 2002)

3.9.5 MEAN ARTERIAL BLOOD PRESSURE

Purpose:

The purpose of this test was to measure mean arterial blood pressure at rest.

Equipment:

Sphygmomanometer and stethoscope.

Procedure:

A sphygmomanometer and a stethoscope were used to measure blood pressure (systolic and diastolic).The subjects were asked to be in sitting position through out the study.

The left upper arm of the subjects was encircled by an inflatable rubber bag which was connected to pressure pump and manometer. By pumping air, the pressure in the bag was rapidly raised approximately to 200 mmHg. Which was sufficient to completely obliterate the brachial artery so that no blood comes through and the radial pulse disappeared. The pressure was then lowered to a point where the pulse could be felt by using a stethoscope, pulsating of the brachial artery at the bend of the elbow could be distinctly heard. At this particular point pressure shown on the dial was considered to be the systolic pressure.

The pressure on the brachial artery was then gradually reduced until the arterial pulse rate beats could be distinctly heard and particular point at which the sound disappeared was taken as the diastolic pressure.

Then these two measures put into the calculation, that is, mean arterial blood pressure, using the formula as suggested by **Fox and Mathews (1981).**

$$MAP \simeq \frac{(2 \times DP) + SP}{3}$$

3.10.1 MEASUREMENT OF PSYCHOLOGICAL VARIABLES

Personality Development Index (PDI) developed by Kaliappan (1993) to measure the ten dynamic dimensions were used for this study.

Description of the Questionnaire

The personality Development Index consists of 85 items, which were ranged on the basis of five point scale. They are 1. Strongly disagree 2. Disagree, 3. Uncertain 4. Agree and 5. Strongly agree.

The items in the personality development index are classified as follows:

Table IV

Showing the Factors and Statements Assessing Selected Psychological Variables

S.NO	PSYCHOLOGICAL VARIABLES	STATEMENTS
1	Social Concern	1,11,21,31,41,51,61 and 67
2	Emotional Adjustment	2,12,22,32,42,52,62,68,71,74,76,78,80,82,84 and 85
3	Assertiveness	3,13,23,33,43,53 and 63
4	Value and Culture	4,14,24,34,44,65,69,72,75,79 and 81
5	Leadership	5,15,25,35,45 and 55
6	Communication Skill	6,16,26, 36,45 and 56
6	Self Awareness	7,17,27,37,47, and 57
8	Self Confidence	8,18,28,38,48, and 58
9	Interpersonal Relationship	9,19,29,39,49,59 and 65
10	Stress Management	10,20, 30,40,50,60,66,70,73,77 and 83

Procedure

For the purposes of this study, the researcher intended to measure selected psychological variables Self confidence, Inter Personal Relationship and Stress Management. The research administered the entire questionnaire consisting of 85 statements before the experiment among all the three groups, which formed the pre test scores of the selected psychological variables. After the experimental period the same questionnaire was administered and the scores collected formed post test scores.

Scoring

The following score key was used for assessing the psychological variables:

Response	**Score**
Strongly Disagree	1
Disagree	2
Uncertain	3
Agree	4
Strongly Agree	5

Reverse scoring were made for the following statements:

2,4,11,12,15,17,21,24,32,44,45,47,52,55,62,69,71,72,74,76,79,80,81,82,84 and 85.

Thus, the scoring for the selected psychological variables were made as detailed in Table V

Table V

Showing the Psychological Variables, Statement Numbers and the Minimum and Maximum Score

S.NO	**PSYCHOLOGICAL VARIABLES**	**STATEMENTS**	**NO. OF STATEMENTS**	**SCORES**	
				Mini-mum	**Maxi mum**
1	Self Confidence	8,18,28,38,48, and 58	6	6	30
2	Interpersonal Relationship	9,19,29,39,49,59 and 65	7	7	35
3	Stress Management	10,20,30,40,50,60,66,70,73,77 and 83	11	11	55

3.10.2 DEO-MOHAN ACHIEVEMENT MOTIVATION SCALE

The standard psychology tool device by Deo-Mohan (1972) was used to measure achievement motivation. This test consist of 50 questions includes both positive and negative statement. Each statement consist of five responses: Always, Frequently, Sometimes, Rarely, Never. The respondent made a tick mark (√) on any one of the responses that fit to them best.

Scoring

The scale was scored with the help of a scoring key. A separate scoring method was followed for positive and negative statements. The score obtained for both positive and negative statements were added and it was treated as individual score. The total score constitutes the Achievement Motivation score.

Table VI

Scoring Key for Achievement Motivation

SL:NO	RESPONSES	SCORE FOR POSITIVE STATEMENT	SCORE FOR NEGATIVE STATEMENT
1	Always	4	0
2	Frequently	3	1
3	Sometimes	2	2
4	Rarely	1	3
5	Never	0	4

Positive statements question numbers

2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15, 16, 23, 24, 25,26, 27, 28, 29, 30, 31, 33, 35, 36. 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49 & 50.

Negative statement question numbers

1, 12, 13, 14, 17, 18, 19, 20, 21, 22, 32, 34, 37.

3.10.3 SELF CONCEPT

Self concept questionnaire constructed by Mukta Rastogi (1979) was used in this study. The questionnaire consists of twenty statements which included both positive and negative statements, with a response from any five answer, namely, strongly agree, agree, undecided, disagree and strongly disagree. The scale was scored with the help of the scoring key. A separate scoring method was followed for positive and negative statements.

S. No	Responses	Scores for Positive Statements	Scores for Negative statements
1	Strongly Agree	5	1
2	Agree	4	2
3	Undecided	3	3
4	Disagree	2	4
5	Strongly Disagree	1	5

Self-concept scale consists of both positive and negative statements. The following are the numbers of the statement that are positive and negative.

Positive Numbers: 1,3,4,9,11,12,17,18,19

Negative Numbers 2,5,6,7,8,10,13,14,15,16, 20

Scoring

The scores obtained for both positive and negative statements were added to determine the individual score. The total scores reflected the individuals self concept with high scores showing higher self concept level.

3.11 STATISTICAL ANALYSIS

The collected data on the four groups on selected physiological and psychological variables VO_2max, Vital capacity, resting pulse rate, breath holding time, mean arterial blood pressure, self concept, achievement motivation, self confidence, stress and inter personal relationship due combined and isolated yogasanas, yogic diet were statistically analysed using Analysis of Covariance (ANACOVA) as recommended by Clarke and Clarke (1972) and Best and Khan (1986). In all the cases 0.05 level was fixed as level of significance which was considered as appropriate. When significant differences obtained between the groups, the results were further analysed by Scheffe's Post Hoc Test and multiple paired comparisons were made. To test if significant differences between the groups and to determine which group performed better.

The methodology adopted in this study is presented through a Flow Chart in Figure 10.

FIGURE 10: FLOW CHART SHOWING THE METHODOLOGY ADOPTED IN THIS STUDY