

CHAPTER - III

METHODOLOGY

Research methodology involves the systematic procedure by which researcher starts from the initial identification of the problem to its final conclusion. The role of the methodology is to carry on the research work in a scientific and valid manner. The purpose of the study was to find out whether there would be any significant influence of combined effect of suryanamaskar with pranayama practices on selected socio psychological variable and learning developmental factors and domestic skill among asperger syndrome children.

The methodology and systematic procedure applied in this research include the process of identification of the research problem to its final conclusion. The aim of methodology applied is to carry on the research work in a scientific and valid manner. The methodology used in this research involved the selection of subjects, selection of the variables; experimental design, and orientation of the subjects, instrument reliability tester reliability, pilot study, test administration and statistical technique employed for analysis of the data.

3.1 SELECTION OF SUBJECTS

For the purpose of the study the investigator has selected 60 asperger syndrome children from were selected randomly from various places at Chennai city, between the age group of 8 to 12 years and they have been divided into four groups of fifteen subjects in each group. All the subjects were assigned to experimental group I, II, III and the other group was Control group.

1. Group I - Suryanamaskar practice Group
2. Group II - Pranayama practice Group
3. Group III - Suryanamaskar & Pranayama practice Group
4. Group IV - Control Group

3.2 SELECTION OF VARIABLES

The investigator reviewed the available scientific literature pertaining to the study from books, journals, periodicals, magazines, research papers and available sources from Tamil Nadu Physical Education and Sports University, University of

Madras and also with help of professional experts in yoga, the following Socio Psychological Variables, Learning developmental factors and Domestic skills Variables were selected.

3.2.1 INDEPENDENT VARIABLES

1. Suryanamaskar practice
2. Pranayama practice
3. Suryanamaskar with pranayama practice

3.2.2 DEPENDENT VARIABLES

1. SOCIO PSYCHOLOGICAL VARIABLES

- a. Motivation
- b. Achievement
- c. Self esteem

2. LEARNING DEVELOPMENTAL FACTORS

- a. School performance
- b. Speech and language
- c. Life events

3. DOMESTIC SKILLS VARIABLES

- a. Hygiene
- b. Health
- c. Dressing mannerism

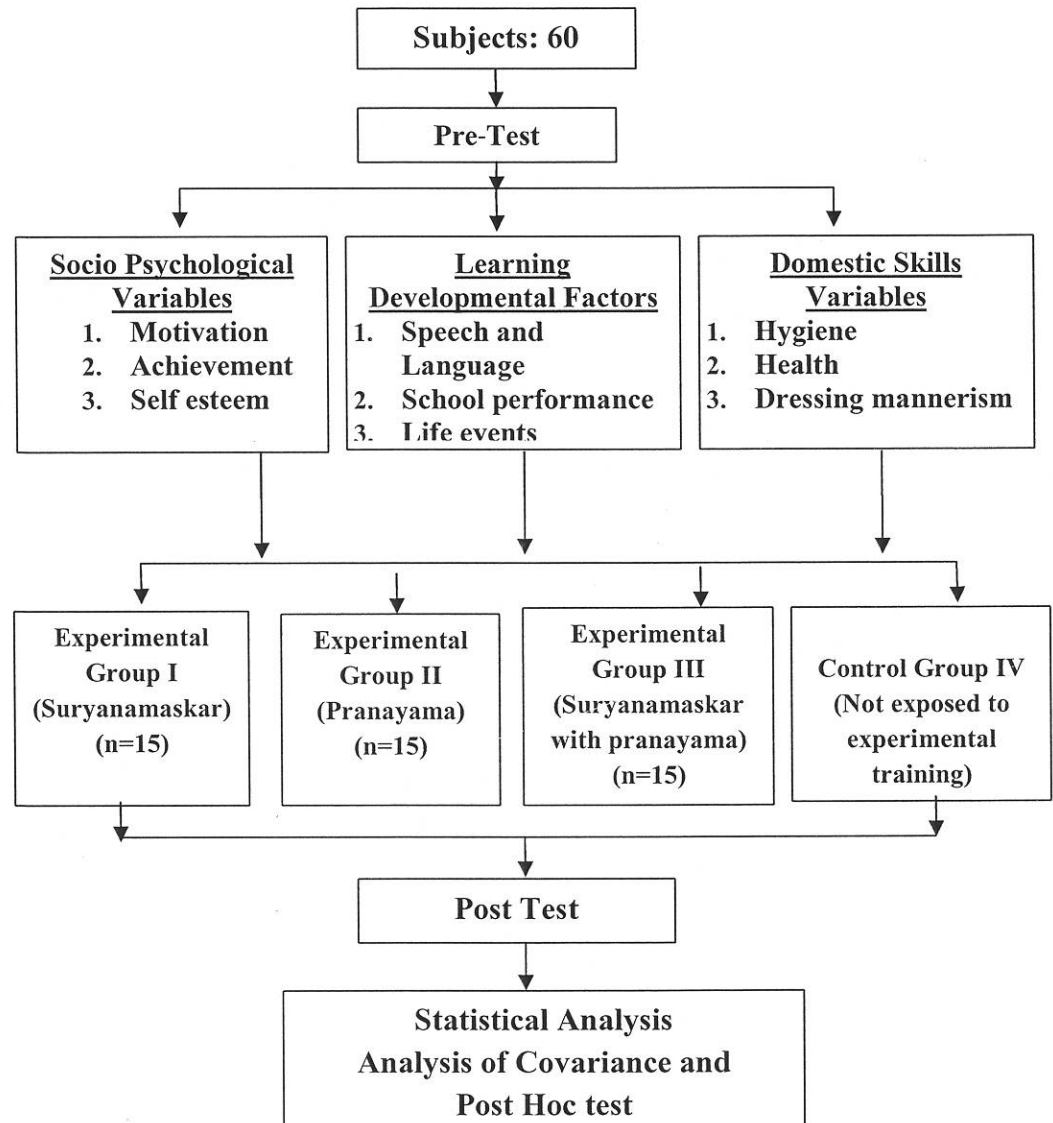
3.3 EXPERIMENTAL DESIGN

The study was formulated as a true random research group design consisting of a pre test and post test. For the purpose of the study the subjects of sixty asperger syndrome children between the age group of 8 to 12 years were selected and divided into four groups - experimental group I, II, III and Control group. All the groups were tested on selected variables before the practice. After the test scores recorded the experimental groups underwent practice as follows

1. Group I -15 Subjects were practiced on Suryanamaskar.
2. Group II -15 Subjects were practiced on Pranayama.
3. Group III -15 Subjects were practiced on Suryanamaskar with pranayama.
4. Group IV - 15 subjects are under the Control Group.

The experimental group was given practice for twelve weeks from Monday to Friday (five days a week). The post test scores were also recorded on selected Socio Psychological Variables, Learning developmental factors and Domestic skills Variables, and both pre and post tests mean values were compared for analysis using statistical technique of analysis of covariance (ANCOVA)

3.4 PILOTSTUDY



The pilot study was conducted with five asperger syndrome children before the actual practice started to assess the initial capacity of the subjects and in order to fix the load on the both the experimental group and the difficulties were rectified. Based on the response of the subjects in the pilot study and the calculated intra- class correlation of the pilot study found that they were within the reach of the individual's capacity and

showed that there was significant changes in health related variables. This enabled the investigator to undertake the practice schedule for the purpose of research.

3.5 SUBJECTS ORIENTATION

Prior to the administration of the test, a detailed discussion was carried out with the subjects about the practice procedure and techniques, its benefits and limitations by the researcher. Before the scientific test administration, procedure was explained in detail and proper understanding, co-operation for reliability of the data.

3.6 CRITERION MEASURES

By glancing the literature and in consultation with professional and experts the following criterion measure were selected for measuring the variables in the study

Table I

CRITERION MEASURES AND QUESTIONNAIRE / TEST USED

S.No	Criterion Measures	Questionnaire / Test Used
Socio Psychological Variables		
1	Motivation	Children motivation Questionnaire designed by Jenifer Archer (1994)
2	Achievement	Children achievement Questionnaire designed by Robert Crosnoe and Eric Dion (2010)
3	Self esteem	Children self-esteem Questionnaire designed by gray little, Williams V.S.L, & Hancock (1997)
Learning developmental factors		
5	Speech and language	Children speech and language Questionnaire designed by Ellen m.kelly, Tedra A.Walden (2013)
6	School performance	Children school performance Questionnaire designed by Muakpan, EE Ekanen (2010)
7	Life events	Children speech and life events questionnaire designed by Himalini Varma (1995)
Domestic skills Variables		
8	Hygiene	Children hygiene questionnaire designed by Malabirhan Asssef (2014)
9	Health	Children health questionnaire designed by Abhaya. V.Kalkarni (1999)
10	Dressing mannerism	Children dressing mannerism questionnaire designed by Himali Varma (1995)

3.7 RELIABILITY OF DATA

The reliability of data was ensured by using standard instrument and by establishing tester competency and reliability of the test. The investigator took all the measurements with the intense of other professionals from a recognized laboratory with regard psychological questionnaires

3.8 RELIABILITY OF INSTRUMENT

Standardized equipment was used for the testing procedure. The equipments were obtained from a recognized laboratory and their calibrations were accepted as enough for the purpose of the study. The instruments used Standard / modified test for measuring, motivation, achievement, self esteem, speech and language, school performance, life events, hygiene, health and dressing mannerism questionnaire designed.

3.9 TESTERS' RELIABILITY

The reliability of data together with the reliability of the tester was ensured by appointing an authorized personal from a standard questionnaire. The investigator took all the precaution with regard to all variables test. Before conducting the test the researcher discussed about the testing procedure with concerned guide and staff members and got sufficient experience the test.

3.10 SUBJECT'S RELIABILITY

The test and retest also conducted to the same subjects under similar condition by the same tester.

3.11 TESTER'S COMPETENCY

The intra class correlation coefficient obtained for test-retest data are presented in Table II.

Table II
INTRA CLASS CORRELATION COEFFICIENT OF TEST – RETEST
SCORES

S.No	VARIABLES	COEFFICIENT OF CORRELATION
1.	Motivation	97*
2.	Achievement	98*
3.	Self esteem	97*
4.	Speech and language	97*
5.	School performance	98*
6.	Life events	97*
7.	Hygiene	98*
8.	Health	97*
9.	Dressing mannerism	98*

*Significant at 0.05 level

Reliability was established by the test-retest processes. Thirty asperger syndrome children were tested on selected variables. The repeated measurement of individuals on the same test is done to determine reliability.

3.12 PRACTICE PROGRAMME

The subjects were selected at random and were divided into four groups and the group I was given with suryanamaskar, group II was given with pranayama, group III was given suryanamaskar with pranayama for duration of one hour from Monday to Friday (5 days a weeks) for twelve weeks, and the group IV which is Control group was not given any experimental practices.

PRACTICE SCHEDULE

Table III

**SURYANAMASKAR PRACTICES
(EXPERIMENTAL GROUP – I) I TO IV WEEKS**

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	10 minutes
	Suryanamaskar	3 rounds	
2	Pranamasana		3 minutes
3	Hastautthasana		3 minutes
4	Padahastasana		3 minutes
5	Ashwasanchalanasana		3 minutes
6	Parvatasana		3 minutes
7	Astanganamaskar		3 minutes
8	Bhujanaasana		3 minutes
9	Parvatasana		3 minutes
10	Ashwasanchalanasana		3 minutes
11	Padahastasana		3 minutes
12	Hastauthasana		3 minutes
13	Pranamasana		3 minutes
14	Relaxation	1 time	15minutes

Table IV
SURYANAMASKAR PRACTICES
(EXPERIMENTAL GROUP - I) V TO VIII WEEKS

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	10 minutes
	Suryanamaskar	6 rounds	
2	Pranamasana		3 minutes
3	Hastautthasana		3 minutes
4	Padahastasana		3 minutes
5	Ashwasanchalanasana		3 minutes
6	Parvatasana		3 minutes
7	Astanganamaskar		3 minutes
8	Bhujanaasana		3 minutes
9	Parvatasana		3 minutes
10	Ashwasanchalanasana		3 minutes
11	Padahastasana		3 minutes
12	Hastauthasana		3 minutes
13	Pranamasana		3 minutes
14	Relaxation	1 time	15minutes

Table V
SURYANAMASKAR PRACTICES
(EXPERIMENTAL GROUP - I) IX TO XII WEEKS

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	10 minutes
	Suryanamaskar	9 rounds	
2	Pranamasana		3 minutes
3	Hastautthasana		3 minutes
4	Padahastasana		3 minutes
5	Ashwasanchalanasana		3 minutes
6	Parvatasana		3 minutes
7	Astanganamaskar		3 minutes
8	Bhujanaasana		3 minutes
9	Parvatasana		3 minutes
10	Ashwasanchalanasana		3 minutes
11	Padahastasana		3 minutes
12	Hastauthasana		3 minutes
13	Pranamasana		3 minutes
14	Relaxation	1 time	15minutes

Table VI
PRANAYAMA PRACTICES
(EXPERIMENTAL GROUP - II) I TO IV WEEKS

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	5 minutes
	Pranayama	3 rounds	
2	Yogic breathing		10 minutes
3	Pranava		10 minutes
4	Alternative breathing		10 minutes
5	Bhramari		10 minutes
6	Relaxation	1 time	15 minutes

Table VII
PRANAYAMA PRACTICES
(EXPERIMENTAL GROUP - II) V TO VIII WEEKS

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	5 minutes
	Pranayama	6 rounds	
2	Yogic breathing		10 minutes
3	Pranava		10 minutes
4	Alternative breathing		10 minutes
5	Bhramari		10 minutes
6	Relaxation	1 time	15 minutes

Table VIII
PRANAYAMA PRACTICES
(EXPERIMENTAL GROUP - II) IX TO XII WEEKS

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	5 minutes
	Pranayama	9 rounds	
2	Yogic breathing		10 minutes
3	Pranava		10 minutes
4	Alternative breathing		10 minutes
5	Bhramari		10 minutes
6	Relaxation	1 time	15 minutes

Table IX
SURYANAMASKAR WITH PRANAYAMA PRACTICES
(EXPERIMENTAL GROUP - III) I TO IV WEEKS

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	5 minutes
	Suryanamaskar	3 rounds	
2	Pranamasana		3 minutes
3	Hastautthasana		3 minutes
4	Padahastasana		3 minutes
5	Ashwasanchalanasana		3 minutes
6	Parvatasana		3 minutes
7	Astanga namaskar		3 minutes
8	Bhujanaasana		3 minutes
9	Parvatasana		3 minutes
10	Ashwasanchalanasana		3 minutes
11	Padahastasana		3 minutes
12	Hastauthasana		3 minutes
13	Pranamasana		3 minutes
	Pranayama	3 rounds	
14	Yogic breathing		2 minutes
15	Pranava		2 minutes
16	Alternative breathing		2 minutes
17	Bhramari		2 minutes
18	Relaxation	1 time	10 minutes

Table X
SURYANAMASKAR WITH PRANAYAMA PRACTICES
(EXPERIMENTAL GROUP - III) V TO VIII WEEKS

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	5 minutes
	Suryanamaskar	6 rounds	
2	Pranamasana		3 minutes
3	Hasta utthasana		3 minutes
4	Padahastasana		3 minutes
5	Ashwa sanchalanasana		3 minutes
6	Parvatasana		3 minutes
7	Astanga namaskar		3 minutes
8	Bhujanaasana		3 minutes
9	Parvatasana		3 minutes
10	Ashwa sanchalanasana		3 minutes
11	Padahastasana		3 minutes
12	Hasta utthasana		3 minutes
13	Pranamasana		3 minutes
	Pranayama	6 rounds	
14	Yogic breathing		2 minutes
15	Pranava		2 minutes
16	Alternative breathing		2 minutes
17	Bhramari		2 minutes
18	Relaxation	1 time	10 minutes

Table XI
SURYANAMASKAR WITH PRANAYAMA PRACTICES
(EXPERIMENTAL GROUP - III) IX TO XII WEEKS

Sl. No	Yogic Practices	Round	Total duration
1	Loosening exercises	1 round	5 minutes
	Suryanamaskar	9 rounds	
2	Pranamasana		3 minutes
3	Hasta utthasana		3 minutes
4	Padahastasana		3 minutes
5	Ashwa sanchalanasana		3 minutes
6	Parvatasana		3 minutes
7	Astanga namaskar		3 minutes
8	Bhujanaasana		3 minutes
9	Parvatasana		3 minutes
10	Ashwa sanchalanasana		3 minutes
11	Padahastasana		3 minutes
12	Hasta utthasana		3 minutes
13	Pranamasana		3 minutes
	Pranayama	9 rounds	
14	Yogic breathing		2 minutes
15	Pranava		2 minutes
16	Alternative breathing		2 minutes
17	Bhramari		2 minutes
18	Relaxation	1 time	10 minutes

3.13 PRACTICE PROCEDURE

3.13.1 PAWANAMUKTASAN (SUKSHMA VYAYAMA)

Programme based on the recommendations of Bihar School of Yoga was given to Experimental Group I

ANKLE BENDING



Figure 1

- Sit on the floor, legs outstretched on the floor. The fingers should point out of the hips or lean back against a wall.
- Bend the right foot back toward the body.
- While exhaling point the right foot and toes forward and down.
- On inhale, bring the foot back toward you.
- Repeat 10 times.
- Do the same with the left foot. One can make two rounds of this
- Exercise and after some practice, exercise both foot at the same time.

ANKLE ROTATION

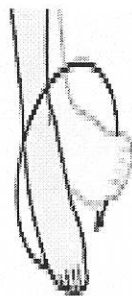


Figure 2

- Sit on the floor or lean back against a wall. Extend the legs fully in front.
- Tightly roll the Yoga Mat or Yoga Blanket and put it under the knees, then place the palms on the floor. The fingers must be pointing towards the hips.
- Breathing freely and slowly, bends the right foot creating a right angle with the floor. Slowly rotate the foot clockwise for about 10-15 times then rotate it counterclockwise. Do not allow the knees to move.

WRIST BENDING

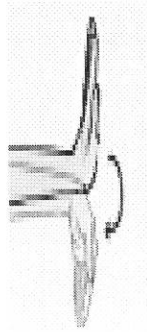


Figure 3

- Sit comfortably on the floor or Yoga Mat.
- At shoulder height and parallel to the floor, straighten the hand in front.
- Turn the palm down and extend the fingers and thumb forward and close together.
- Inhale while bending the hand at the wrist backward as if pressing hard against an object.

HAND CLENCHING

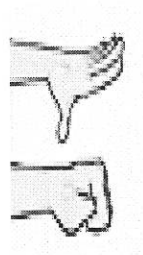


Figure 4

- Do a seated pose where one feels most comfortable or sit straight on a chair. Bring the arm in front at shoulder level, keeping it straight and parallel to the floor.
- Make a fist with the thumb side up, thumb inserted into the other fingers.
- Open the hand with inhale then stretch all your five fingers. Fold the hand back into a fist as you exhale, thumb tucked in.
- Repeat this exercise for about 8 times then do the same with the other hand. After some practice, one may be able to do Hand Clenching on both hands at the same time.

NECK EXERCISE



Figure 5

- Bend the head forward, chin on chest, then back to original position.
- Bend to the right, then back to the original position.
- Bend backward, then back to the original position.
- Bend to the left, and then back to the original position.
- Bend forward, chin on chest, move from right to the left, then move from left to right.

SHOULDER LIFTS



Figure 6

- Do this exercise slowly and keep your spine straight and your neck relaxed.
- Raise your right shoulder, and then drop it down.
- Raise your left shoulder, and then drop it down.
- Raise both shoulders at once, and then drop them down again.

SHOULDER STRETCHES

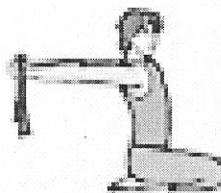


Figure 7

- Sit in any comfortably erect position
- Hold the strap and straighten the arms forward. With inhale, move the arms up until they are overhead, and with exhale bring them down behind.
- Coordinate this movement with breathing, making the movement smooth.
- Make sure the strap is sufficiently long and hands sufficiently far apart, so that one can keep the arms straight.

3.13.2 SURYANAMASKAR (SUN SALUTATION)

PRANAMASANA

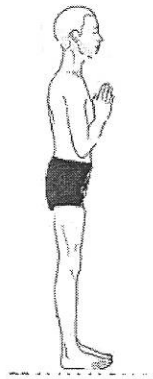


Figure 8

- Stand upright and relaxed with hands folded.
- Breathing Normal
- Chant Om Kameshvaryai Namaha

HASTAUTTHASASANA

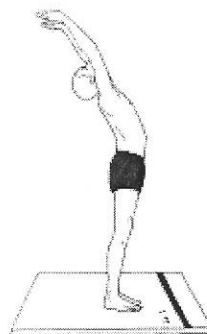


Figure 9

- Bend head and body back with arms raised
- Breathing Inhale
- Chant Om Bhagamalinyai Namaha

PADAHASTANASANA

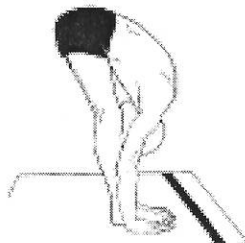


Figure 10

- Bend forward palms on the floor knees locked.
- Breathing exhale
- Chant Om Nityaklinmayai Namaha

ASHWASANCHALASANA

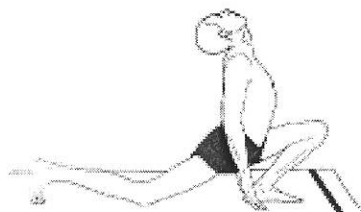


Figure 11

- Right foot back and left foot forward between hands
- Chant Om Bherudayai namaha
- Breath inhale

PARVATASANA

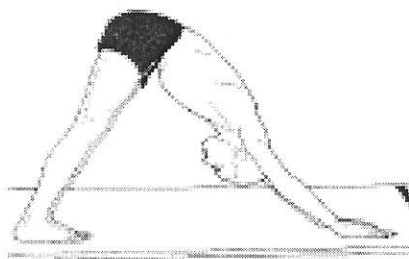


Figure 12

- Press palms on the floor raise hips at angle with the floor
- Chant Om Vajreshvaryai namaha
- Breath Exhale

ASHTANGA NAMASKAR

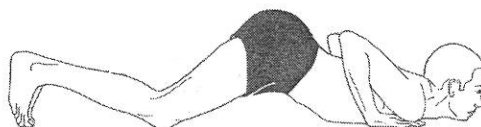


Figure 13

1. Drop knees chest and chin on the floor, hip little up.
2. Chant Om Dutyai Namaha
3. Breath outside Breath retain

BHUJANGASANA

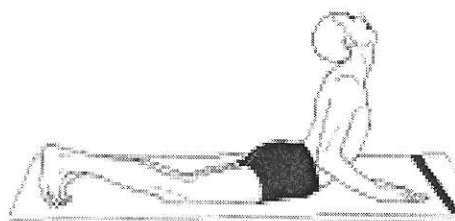


Figure 14

- Lift the head up and bend all the way back
- Om Tvaritayai Namah
- Breath inhale

PARVATASANA

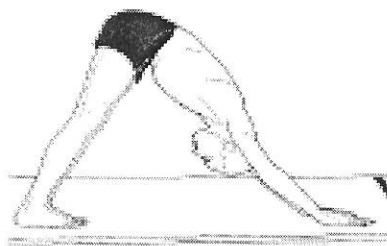


Figure 15

- Press palms on the floor, raise hips at angle with the floor.
- Om kulasundaryai Nanaha
- Breath exhale

ASHWASANCHALASANA

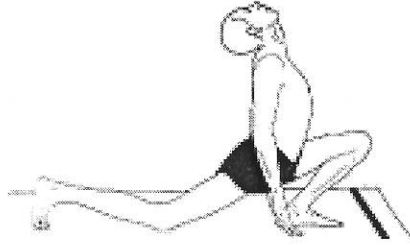


Figure 16

- Right foot back and left foot forward between hands
- Om Nithyayi Namaha
- Breath inhale

PADAHASTANASANA

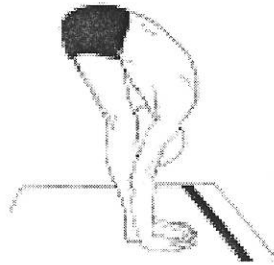


Figure 17

- Bend forward palms on the floor knees locked.
- Om Vijayayi Namaha
- Breath inhale

HASTAUTTHANASANA

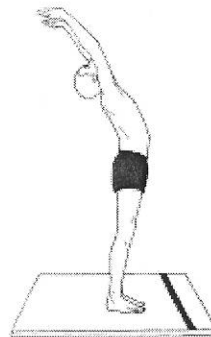


Figure 18

- Bend head and body back with arms raised
- Om Sarvamangalayai Namaha
- Breath inhale

PRANAMASANA



Figure 19

- Stand upright and relaxed with hands folded.
- Om Jvalamalininyai Namaha
- Breath exhale

PRANAYAMA

YOGIC BREATHING

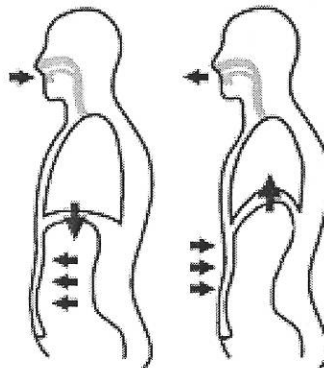


Figure 20

- Step 1 - Sit comfortably with your back relatively straight.
- Step 2 - Begin by observing the natural inhalation and exhalation of your breath without changing anything.
- Step 3 - Inhale through the nose, filling the belly up with air. Feel the expansion of the belly. Exhale through the nose, expelling the air from the belly.
- Step 4 - Repeat this deep belly breathing for about five breaths.
- Step 5 - When the belly is full, draw in a little more breath and let that air expand into the rib cage causing the ribs to widen apart.
- Step 6 - On the exhale, let the air go first from the rib cage, letting the ribs slide closer together, and then let the air go from the belly, drawing the navel back towards the spine.

Step 7 - Repeat this deep breathing into the belly and rib cage for about five breaths.

Step 8 - On the next inhalation, fill the belly and rib cage up with air as described above. Then draw in just a little more air and let it fill the upper chest, all the way up to the collarbone, causing the area around the heart expand and rise.

Step 9 - On the exhalation, let the breath go first from the upper chest, allowing the heart center to sink back down. Then from the rib cage, letting the ribs slide closer together.

Step 10 - Finally, let the air go from the belly, drawing the navel back towards the spine. Continue for about 10 breaths.

PRANAVA PRANAYAMAM

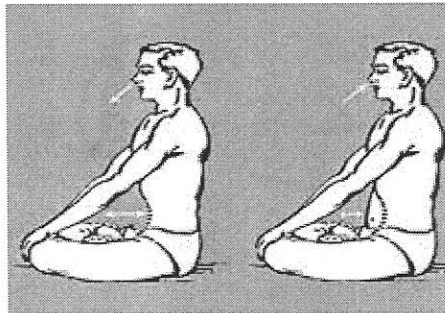


Figure 21

Step 1 - Inhale by first expanding the abdomen and then the chest in one slow, smooth motion until the maximum possible amount of air has been drawn into the lungs.

Step 2 - Then exhale and allow the air to passively escape from the lungs by canting OM.

Step 3 - This should be accompanied by a feeling of letting go and relaxation.

Step 4 - Inhalation is active, exhalation is passive.

Step 5 - The whole movement should be smooth (no jerks) from the abdomen to the chest, like a wave.

ALTERNATE NOSTRIL BREATHING

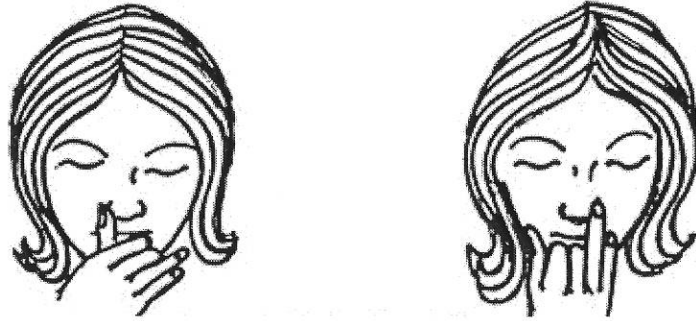


Figure 22

- Step 1 - Sit in any comfortable asanas with spine erect, eyes closed.
- Step 2 - Close the right nostril, with the thumb.
- Step 3 - Inhale through the left nostril, and then close the left nostril
- Step 4 - Exhale through the right nostril.
- Step 5 - Inhale through the right nostril, and then close the right nostril
- Step 6 - Exhale through the left nostril.
- Step 7 - Continue doing 10 to 15 rounds.

BHRAMARI



Figure 23

- Step 1 - Sit in any comfortable asanas with spine erect
- Step 2 - Plug the ears with the thumb finger and other four finger on the eyes, nose and near mouth.(Shanmukhi mudra)
- Step 3 - Release a murmuring sound like that of a humming bee as you exhale slowly.
- Step 4 - Repeat for 10 to 15 rounds.

RELAXATIONS

- Become aware of the whole body which is resting comfortably and beginning to relax.
- Listen to the few rounds of “Om kara” chanting feeling the relaxation and resonance.

RESOLVE

- Time for making a resolve.

ROTATION OF CONCIOUSNESS

- Rotation of the awareness on the body parts – right side, left side, back, front and major parts.

BRETAHING

- Counting of breath in descending order and relaxing more with each count down.

IMAGE VISUALIZATION

- Taking the awareness away from the body and visualizing a few relaxing imageries.

RESOLVE REPEATATION

- Repeat the resolve with Shraddha.

FINISH

- Bring the feet together. Palms by the side of the body. Gently roll over to one side and sit up in any comfortable position and finish the practice with Om kara chanting followed by a prayer. Gently open the eyes.

3.14 TEST ADMINISTRATION

The following criterion measures were chosen for testing hypothesis.

3.14.1 SOCIO PSYCHOLOGICAL VARIABLES**3.14.1.1 MOTIVATION**

- Purpose** : The purpose of this test is to measure the motivation level of the subjects.
- Equipment** : Children motivation Questionnaire designed by Jenifer Archer (1994)
- Procedure** : The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the

questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 12 statements, each statement describe some experience about childhood level motivation. Each statement was evaluated on given three options. The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate option

- Scoring** : 1 point - never true,
2 points - seldom true
3 points - always true
Items 2, 10 are reverse scored. Give “never true” 3 point,
“Seldom true” 2 points, “always true” 1 point. The high number of score denotes the high motivation
- Norms** : 1 - 12 = poor motivation
13- 24= borderline motivation
25- 36= high motivation

3.14.1.2 ACHIEVEMENT

- Purpose** : The purpose of this test is to measure the achievement level of the subjects.
- Equipment** : Children achievement Questionnaire designed by Robert Crosnoe and Eric Dion (2010)
- Procedure** : The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 10 statements, each statement describe some experience about childhood level achievement. Each statement was evaluated on given four options. The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate option

- Scoring** : 1 point – Strongly Disagree
 2 points – Disagree
 3 points – Agree
 4 points – Strongly Agree
 Items 6, 7, are reverse scored. Give “Strongly Disagree” 4 point, “Disagree” 3 points, “Agree” 2 points, and “Strongly Agree” 1 point. The high number of score denotes the high achievement
- Norms** : 1-12 = poor achievement
 13- 24= borderline achievement
 25- 40= high achievement

3.14.1.2 SELF ESTEEM

- Purpose** : The purpose of this test is to measure the self esteem level of the subjects.
- Equipment** : Children self-esteem Questionnaire designed by Gray Little, Williams V.S.L, & Hancock (1997)
- Procedure** : The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 10 statements, each statement describe some experience about childhood level self esteem. Each statement was evaluated on given four options. The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate option
- Scoring** : 1 point – Strongly Disagree
 2 points – Disagree
 3 points – Agree
 4 points – Strongly Agree
 Items 2 ,5,6 ,9 are reverse scored. Give “Strongly Disagree” 4 point, “Disagree” 3 points, “Agree” 2 points, and “Strongly Agree” 1 point. The high number of score denotes the high

	Self esteem
Norms	: 1-12 = poor self esteem 13- 24= borderline self esteem 25- 40= high self esteem

3.14.2 LEARNING DEVELOPMENTAL FACTOR

3.14.2.1 SPEECH AND LANGUAGE

Purpose	: The purpose of this test is to measure the speech and language level of the subjects.
Equipment	: Children speech and language Questionnaire designed by Ellen M.Kelly, Tedra A.Walden (2013)
Procedure	: The questionnaire administered in group setting and the subject's parents were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 9 statements, each statement describe some experience about childhood level of speech and language. Each statement was evaluated on given three options. The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate option
Scoring	: 1= strongly disagree 2= Agree 3= strongly agree The high number of score denotes the Speech and language
Norms	: 1-9 = very poor Speech and language 10- 18= poor Speech and language 19 – 27= high Speech and language

3.14.2.2 SCHOOL PERFORMANCE

Purpose	: The purpose of this test is to measure the school performance level of the subjects.
Equipment	: Children school performance Questionnaire designed by Muakpan, EE Ekanen (2010)

- Procedure** : The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 15 statements, each statement describe some experience about childhood level school performance. Each statement was evaluated on given five options. The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate option
- Scoring** : 1= never true
2= seldom true
3= some time true
4= usually true
5= always true
Items 1, 5, 6, 9, 10, 11 are reverse scored. Give “Never true” 5 points, “Seldom true” 4 points, “Sometimes true” 3 points, and “Usually true” 2 points, “Always true” 1 point. The high number of score denotes the high school performance
- Norms** : 1-15 = very poor school performance
16- 30= poor school performance
31- 45= borderline school performance
46 – 75= high school performance

3.14.2.3 LIFE EVENTS

- Purpose** : The purpose of this test is to measure the life events of the subjects.
- Equipment** : Children life events questionnaire designed by Himalini Varma (1995)
- Procedure** : The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 21 statements, each statement describe some experience

about childhood level life event. Each statement was evaluated on given three options. The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate option

- Scoring** : A Little good = 1
 Quiet good = 2
 Really good = 3
- Norms** : 1-21= very poor Life event
 22- 42= poor Life event
 43 – 63= Life event

3.14.3 DOMESTIC SKILLS

3.14.3.1 HYGIENE

- Purpose** : The purpose of this test is to measure the hygiene of the subjects.
- Equipment** : Children hygiene questionnaire designed by Malabirhan Asssef (2014)
- Procedure** : The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 8 statements, each statement describe some experience about childhood level of hygiene. Each statement was evaluated on given two options. The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate options
- Scoring** : Yes = 2
 No = 1
- Norms** : 1 – 8 = poor hygiene
 8-16= good hygiene

3.14.3.2 HEALTH

- Purpose** : The purpose of this test is to measure the health of the subjects.
- Equipment** : Children health questionnaire designed by Abhaya V.Kalkarni (1999)
- Procedure** : The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 12 statements, each statement describe some experience about childhood level of health. Each statement was evaluated on given three options. The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate option
- Scoring** :
 Never true = 1
 Sometimes true = 2
 Always true = 3
 The high number of score denotes the good health condition
- Norms** :
 1-12 = very poor health condition
 13- 24= borderline health condition
 25- 36= good health condition

3.14.3.3 DRESSING MANNERISM

- Purpose** : The purpose of this test is to measure the dressing mannerism of the subjects.
- Equipment** : Children dressing mannerism questionnaire designed by Himali Varma (1995)
- Procedure** : The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire. The following instructions were given to the subjects. Questionnaire has 6 statements, each statement describe some experience about childhood level dressing mannerism. Each statement was evaluated on given two options. The researcher requested them to read each statement carefully and decide to what extent each

statement was true asked them to put tick mark at the appropriate options

- Scoring** : Yes = 2
No = 1
- Norms** : 1 – 6 = poor dressing mannerism
7-12= good dressing mannerism

3.15 COLLECTION OF DATA

The data was collected from 60 asperger syndrome children. They were divided into four groups consisting of 15subjects at random. Experimental group and control group. Group I –15 Subjects were trained on suryanamaskar, Group II –15 Subjects were trained on pranayama, Group III –15 Subjects were trained on suryanamaskar with pranayama, Group IV – 15 subjects treated as the Control group respectively for twelve weeks (5 days a week). After the practice period all subjects were tested on selected criterion variables at different levels as pre and post practice.

3.16 STATISTICAL TECHNIQUE

The data obtained were analyzed by Analysis of Covariance (ANCOVA) to assess the significant difference among the groups between the pre-test and post-test on socio psychological variables, learning developmental factors and domestic skills to find out the combined effect of suryanamaskar with pranayama practices on selected socio psychological variables, learning developmental factors and domestic skill among asperger syndrome children. The adjusted post-test mean difference among the experimental groups were tested and if the adjusted post test result was significant the Scheffe's Post hoc test was used to determine the significance of the paired means difference.

The investigator has analyzed scientific results obtained by application of various methodologies discussed above and the results are analyzed and presented in from of detailed discussion graphs and various tables in the Chapter IV