

## APPENDIX I

### INSTITUTIONAL ETHICS COMMITTEE APPROVAL



## स्वामी विवेकानन्द योग अनुसंधान संस्थान Swami Vivekananda Yoga Anusandhāna Samsthāna

(Declared as Deemed-to-be University under Section 3 of the UGC Act, 1956)

Eknath Bhavan, # 19, Gavipuram Circle, Kempegowda Nagar, Bangalore - 560 019

Ph: 080 - 2661 2669, Telefax: 080 - 2660 8645

E-mail: svyasa@svyasa.org Website: www.svyasa.org

RES/IEC-SVYASA/28/2014

October 09, 2014

To,  
Prof. Alex Hankey  
Professor,  
Division of Yoga and Physical Sciences,  
S-VYASA University,  
Bangalore

Reference:

"Pulmonary Rehabilitation through Yoga in Coal miners with Chronic Obstructive Pulmonary Disease: A Randomized Control Study."- Committee Approval of the above mentioned study

Dear Dr. Alex Hankey,

We have received from you the following study related documents vide your letter dated June 17, 2014

1	Project Proposal
2	Informed consent form

Ethics committee meeting was held on July 20, 2014 at 10 am to 1:00 pm at Eknath Bhavan, Bangalore. Above documents were examined and discussed in the meeting. After due consideration, the committee has decided to approve conducting the aforementioned study.

**APPROVED**

*RS. Venkatesh*

**INSTITUTIONAL ETHICS COMMITTEE  
SVYASA, BANGALORE**



स्वामी विवेकानन्द योग अनुसंधान संस्थान  
**Swami Vivekananda Yoga Anusandhāna Samsthāna**  
(Declared as Deemed-to-be University under Section 3 of the UGC Act, 1956)

Eknath Bhavan, # 19, Gavipuram Circle, Kempegowda Nagar, Bangalore - 560 019

Ph: 080 - 2661 2669, Telefax: 080 - 2660 8645

E-mail: [svyasa@svyasa.org](mailto:svyasa@svyasa.org) Website: [www.svyasa.org](http://www.svyasa.org)

This is to confirm that neither Dr. Alex Hankey nor any study staff participating in this study were involved in the voting procedures and decision making.

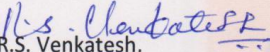
The institutional Review Board / Independent Ethics Committee (IEC) are expected to be informed about the progress of the study / any changes in the protocol and patient information / informed consent. The investigators are also expected to submit a copy of the final report to IEC for records.

This approval is valid up to the completion of the study at the site.

Please submit to the IEC, the status report of the study as per & SOPs.

The IEC is organized & operates according to the requirements of ICH – GCP, Indian Council of Medical Research guidelines & Schedule Y.

Best Wishes,

  
R.S. Venkatesh,  
Member Secretary,  
Institutional Ethics Committee,  
S-VYASA, Bangalore.

## APPENDIX II

### INFORMED CONSENT FORM

#### TO BE FILLED BY THE SUBJECTS PARTICIPATING IN THE STUDY

##### **Title of Research study:**

Yoga based Pulmonary Rehabilitation in the Management of Chronic Obstructive Pulmonary Disease in Coal Miners: A Randomized Controlled Trial.

##### **Information to the participants**

You are being invited to participate in a research study to determine the role of ‘Integrated Approach of Yoga Therapy’ on pulmonary, autonomic, psycho physiological function and quality of life in coal miners with COPD. This study is conducted as part of the PhD (Yoga) programme offered by Swami Vivekananda Yoga Anusandhana Samsthana (SVYASA). The investigator will explain the procedures in detail. You can clarify your doubts. The participation is voluntary. You may withdraw at any point of time. Please note that you have a right to refuse to give your consent, and this is not compulsory.

The study will be conducted by dividing the participants in two groups. The participants will be randomly allocated into one of the groups; Yoga or Wait-list Control group.

You may be randomly allotted to any one of the above two groups. Participants in yoga group will be provided IAYT intervention for 12 weeks duration; 90 minutes per day, 6 days a week and shall maintain a diary to make suitable notes and changes. Participants in Wait-list Control will be involved in routine day to day activities with conventional medical care during the study period and co-operate in providing pre and post data. They will be taught the same yoga protocol after 12 weeks.

The data to be collected from subjects will include:

- Pulmonary Function Test (PFT) by Spirometry
- Exercise tolerance by Six minute walk test (6MWT)
- Dyspnoea intensity by Modified Borg Scale (MBS)
- Perception of fatigue by Modified Borg Scale (MBS)
- Cutaneous Oxygen Saturation by Pulse oximetry
- Quality of life by COPD Assessment Test (CAT)
- Measurement of Pain by Numeric Rating Scale (NRS)
- General health measures: Quality of Sleep.
- Psychological measures: Anxiety, Depression
- Autonomic measures: Blood Pressure, Heart Rate, Respiration Rate,
- Anthropometric measures: Height, Weight, Body Mass Index (BMI).

**Risks:** The instruments are non-invasive and there is no known health risks involved.

**Benefits:** This research may be beneficial in establishing Yoga as an effective tool for PR.

**Confidentiality:** The information collected will be kept with utmost confidentiality by the yoga research foundation.

**Undertaking by the Principal Investigator:**

Your consent in the above study is sought. You have a right to refuse consent without giving any reason. Without any prejudice, I undertake to maintain complete confidentiality regarding the information obtained from your ward during the course of the study. If you have any doubts about the study, please feel free to clarify the same. Even during the study you are free to contact the investigator for clarifications if you so desire. The phone number of the investigator is given below:

<b>Investigator Name</b>	<b>Phone Number</b>
Dr. Rajashree Ranjita	9342195264

**Signature of the Investigator**

Dr. Rajashree Ranjita

PhD Research Scholar, SVYASA.

**CONSENT**

I have been informed about the procedures of the study titled “Yoga based Pulmonary Rehabilitation in the Management of Chronic Obstructive Pulmonary Disease in Coal Miners: A Randomized Controlled Trial” .The possible risks too have been explained to me as stated in the information. I have understood that I have the right to refuse my consent or withdraw it any time during the study without adversely affecting my health. I am aware that by subjecting to this investigation, I will have to give time to assessments by the investigating team and that these assessments do not interfere with the benefits.

I, \_\_\_\_\_, the undersigned, give my consent to participate in this investigation/research program.

**Signature of the Witness**

**Signature of the Participant**

Date

**APPENDIX III**  
**SOCIO DEMOGRAPHIC DATA SHEET**

Participant No.							
Name of the Participant							
Date of Birth							
Gender							
Educational status							
Socio economic status							
Languages known							
Duration since diagnosis of disease	< 5 yrs	5 – 10 yrs	>10 yrs				
Duration of working in coal mines	< 5 yrs	5 – 10 yrs	>10 yrs				
Smoking Status	Active Smoker	Ex- smoker		Non smoker			
Severity of COPD	Mild	Moderate		Severe		Very severe	
Postal address:							
Phone no:	Landline:				Mobile:		
Are you practicing yoga?	Yes/ No? _____ If Yes, specify since how long?						
I am able to carry on normal activity myself. No special care is needed	Yes/ No? _____						

**APPENDIX IV**  
**SIX MINUTE WALK TEST**

The following elements should be present on the 6MWT worksheet and report: Lap counter:

-----

Patient name: \_\_\_\_\_ Patient ID# \_\_\_\_\_

Walk # \_\_\_\_\_ Tech ID: \_\_\_\_\_ Date: \_\_\_\_\_

Gender: M F Age: \_\_\_\_ Race: \_\_\_\_ Height: \_\_\_\_ ft \_\_\_\_ in, \_\_\_\_ meters

Weight: \_\_\_\_ lbs, \_\_\_\_ kg Blood pressure: \_\_\_\_ / \_\_\_\_

Medications taken before the test (dose and time): \_\_\_\_\_

Supplemental oxygen during the test: No Yes, flow \_\_\_\_ L/min, type \_\_\_\_ Baseline End  
of Test

Time \_\_\_\_:\_\_\_\_ \_\_\_\_:\_\_\_\_ Heart Rate \_\_\_\_ \_\_\_\_ Dyspnea \_\_\_\_ \_\_\_\_ (Borg scale) Fatigue  
\_\_\_\_ \_\_\_\_ (Borg scale) SpO2 \_\_\_\_ % \_\_\_\_% Stopped or paused before 6 minutes? No Yes,  
reason: \_\_\_\_\_

Other symptoms at end of exercise: angina dizziness hip, leg, or calf pain Number of laps:  
\_\_\_\_ (\_\_\_\_\_60 meters)

final partial lap: \_\_\_\_ meters

Total distance walked in 6 minutes: \_\_\_\_ meters

Predicted distance: \_\_\_\_ meters Percent predicted: \_\_\_\_%

Tech comments:

Interpretation (including comparison with a pre intervention 6MWD):

**APPENDIX V**  
**MODIFIED BORG SCALE**

<b>SCALE</b>	<b>SEVERITY</b>
0	No Breathlessness* At All
0.5	Very Very Slight (Just Noticeable)
1	Very Slight
2	Slight Breathlessness
3	Moderate
4	Some What Severe
5	Severe Breathlessness
6	
7	Very                      Severe Breathlessness
8	
9	Very    Very    Severe    (Almost Maximum)
10	Maximum

(Note: The word "breathlessness" was added in our version of the scale for clarification.)

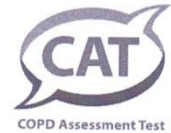
From Burdon JGW, Juniper EF, Killian KJ, Hargrave FE, Campbell EJM. The perception of breathlessness in asthma. Am Rev Respir Dis 1982;126:825-8. Official Journal of the American Thoracic Society. © by the American Lung Association.

## APPENDIX VI

### COPD ASSESSMENT TEST

Your name:

Today's date:



### How is your COPD? Take the COPD Assessment Test™ (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment.

For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.

**Example:** I am very happy  0  1  2  3  4  5 I am very sad

		SCORE
I never cough	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	I cough all the time
I have no phlegm (mucus) in my chest at all	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	My chest is completely full of phlegm (mucus)
My chest does not feel tight at all	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	My chest feels very tight
When I walk up a hill or one flight of stairs I am not breathless	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	When I walk up a hill or one flight of stairs I am very breathless
I am not limited doing any activities at home	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	I am very limited doing activities at home
I am confident leaving my home despite my lung condition	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	I am not at all confident leaving my home because of my lung condition
I sleep soundly	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	I don't sleep soundly because of my lung condition
I have lots of energy	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	I have no energy at all
		<b>TOTAL SCORE</b>

COPD Assessment Test and the CAT logo is a trade mark of the GlaxoSmithKline group of companies.  
 © 2009 GlaxoSmithKline group of companies. All rights reserved.  
 Last Updated: February 24, 2012



## APPENDIX VII

### BECK DEPRESSION INVENTORY



**Beck Depression Inventory**

**Baseline**

V 0477

CRTN: \_\_\_\_\_ CRF number: \_\_\_\_\_

Page 14

patient initials: \_\_\_\_\_



Date: \_\_\_\_\_

Name: \_\_\_\_\_ Marital Status: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Occupation: \_\_\_\_\_ Education: \_\_\_\_\_

**Instructions:** This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today**. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

<p><b>1. Sadness</b></p> <p>0 I do not feel sad.</p> <p>1 I feel sad much of the time.</p> <p>2 I am sad all the time.</p> <p>3 I am so sad or unhappy that I can't stand it.</p> <p><b>2. Pessimism</b></p> <p>0 I am not discouraged about my future.</p> <p>1 I feel more discouraged about my future than I used to be.</p> <p>2 I do not expect things to work out for me.</p> <p>3 I feel my future is hopeless and will only get worse.</p> <p><b>3. Past Failure</b></p> <p>0 I do not feel like a failure.</p> <p>1 I have failed more than I should have.</p> <p>2 As I look back, I see a lot of failures.</p> <p>3 I feel I am a total failure as a person.</p> <p><b>4. Loss of Pleasure</b></p> <p>0 I get as much pleasure as I ever did from the things I enjoy.</p> <p>1 I don't enjoy things as much as I used to.</p> <p>2 I get very little pleasure from the things I used to enjoy.</p> <p>3 I can't get any pleasure from the things I used to enjoy.</p> <p><b>5. Guilty Feelings</b></p> <p>0 I don't feel particularly guilty.</p> <p>1 I feel guilty over many things I have done or should have done.</p> <p>2 I feel quite guilty most of the time.</p> <p>3 I feel guilty all of the time.</p>	<p><b>6. Punishment Feelings</b></p> <p>0 I don't feel I am being punished.</p> <p>1 I feel I may be punished.</p> <p>2 I expect to be punished.</p> <p>3 I feel I am being punished.</p> <p><b>7. Self-Dislike</b></p> <p>0 I feel the same about myself as ever.</p> <p>1 I have lost confidence in myself.</p> <p>2 I am disappointed in myself.</p> <p>3 I dislike myself.</p> <p><b>8. Self-Criticalness</b></p> <p>0 I don't criticize or blame myself more than usual.</p> <p>1 I am more critical of myself than I used to be.</p> <p>2 I criticize myself for all of my faults.</p> <p>3 I blame myself for everything bad that happens.</p> <p><b>9. Suicidal Thoughts or Wishes</b></p> <p>0 I don't have any thoughts of killing myself.</p> <p>1 I have thoughts of killing myself, but I would not carry them out.</p> <p>2 I would like to kill myself.</p> <p>3 I would kill myself if I had the chance.</p> <p><b>10. Crying</b></p> <p>0 I don't cry anymore than I used to.</p> <p>1 I cry more than I used to.</p> <p>2 I cry over every little thing.</p> <p>3 I feel like crying, but I can't.</p>
--	--

THE PSYCHOLOGICAL CORPORATION\*  
Harcourt Brace & Company  
SAN ANTONIO  
Orlando • Boston • New York • Chicago • San Francisco • Atlanta • Dallas  
San Diego • Philadelphia • Austin • Fort Worth • Toronto • London • Sydney

Subtotal Page 1  
Copyright © 1996 by Aaron T. Beck  
All rights reserved. Printed in the United States of America.

Continued on Back

0154018392  
NR15645



# Beck Depression Inventory

Baseline

V 0477

CRTN: \_\_\_\_\_ CRF number: \_\_\_\_\_

Page 15 patient initials: \_\_\_\_\_

<p><b>11. Agitation</b></p> <p>0 I am no more restless or wound up than usual.</p> <p>1 I feel more restless or wound up than usual.</p> <p>2 I am so restless or agitated that it's hard to stay still.</p> <p>3 I am so restless or agitated that I have to keep moving or doing something.</p> <p><b>12. Loss of Interest</b></p> <p>0 I have not lost interest in other people or activities.</p> <p>1 I am less interested in other people or things than before.</p> <p>2 I have lost most of my interest in other people or things.</p> <p>3 It's hard to get interested in anything.</p> <p><b>13. Indecisiveness</b></p> <p>0 I make decisions about as well as ever.</p> <p>1 I find it more difficult to make decisions than usual.</p> <p>2 I have much greater difficulty in making decisions than I used to.</p> <p>3 I have trouble making any decisions.</p> <p><b>14. Worthlessness</b></p> <p>0 I do not feel I am worthless.</p> <p>1 I don't consider myself as worthwhile and useful as I used to.</p> <p>2 I feel more worthless as compared to other people.</p> <p>3 I feel utterly worthless.</p> <p><b>15. Loss of Energy</b></p> <p>0 I have as much energy as ever.</p> <p>1 I have less energy than I used to have.</p> <p>2 I don't have enough energy to do very much.</p> <p>3 I don't have enough energy to do anything.</p> <p><b>16. Changes in Sleeping Pattern</b></p> <p>0 I have not experienced any change in my sleeping pattern.</p> <hr/> <p>1a I sleep somewhat more than usual.</p> <hr/> <p>1b I sleep somewhat less than usual.</p> <hr/> <p>2a I sleep a lot more than usual.</p> <hr/> <p>2b I sleep a lot less than usual.</p> <hr/> <p>3a I sleep most of the day.</p> <hr/> <p>3b I wake up 1-2 hours early and can't get back to sleep.</p>	<p><b>17. Irritability</b></p> <p>0 I am no more irritable than usual.</p> <p>1 I am more irritable than usual.</p> <p>2 I am much more irritable than usual.</p> <p>3 I am irritable all the time.</p> <p><b>18. Changes in Appetite</b></p> <p>0 I have not experienced any change in my appetite.</p> <hr/> <p>1a My appetite is somewhat less than usual.</p> <hr/> <p>1b My appetite is somewhat greater than usual.</p> <hr/> <p>2a My appetite is much less than before.</p> <hr/> <p>2b My appetite is much greater than usual.</p> <hr/> <p>3a I have no appetite at all.</p> <hr/> <p>3b I crave food all the time.</p> <p><b>19. Concentration Difficulty</b></p> <p>0 I can concentrate as well as ever.</p> <p>1 I can't concentrate as well as usual.</p> <p>2 It's hard to keep my mind on anything for very long.</p> <p>3 I find I can't concentrate on anything.</p> <p><b>20. Tiredness or Fatigue</b></p> <p>0 I am no more tired or fatigued than usual.</p> <p>1 I get more tired or fatigued more easily than usual.</p> <p>2 I am too tired or fatigued to do a lot of the things I used to do.</p> <p>3 I am too tired or fatigued to do most of the things I used to do.</p> <p><b>21. Loss of Interest in Sex</b></p> <p>0 I have not noticed any recent change in my interest in sex.</p> <p>1 I am less interested in sex than I used to be.</p> <p>2 I am much less interested in sex now.</p> <p>3 I have lost interest in sex completely.</p>
--	---

3 4 5 6 7 8 9 10 11 12 A B C D E

Subtotal Page 2

---

Subtotal Page 1

---

Total Score

NR15645

## APPENDIX VIII

### STATE TRAIT ANXIETY INVENTORY

#### SELF-EVALUATION QUESTIONNAIRE STAI Form Y-1

**Please provide the following information:**

Name \_\_\_\_\_ Date \_\_\_\_\_ S \_\_\_\_\_

Age \_\_\_\_\_ Gender (Circle) M F T \_\_\_\_\_

**DIRECTIONS:**

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

NOT AT ALL  
 SOMEWHAT  
 MODERATELY SO  
 VERY MUCH SO

- |  |         |
|--|---------|
| 1. I feel calm.....  | 1 2 3 4 |
| 2. I feel secure .....                                     | 1 2 3 4 |
| 3. I am tense .....  | 1 2 3 4 |
| 4. I feel strained .....                                   | 1 2 3 4 |
| 5. I feel at ease .....                                    | 1 2 3 4 |
| 6. I feel upset .....                                      | 1 2 3 4 |
| 7. I am presently worrying over possible misfortunes ..... | 1 2 3 4 |
| 8. I feel satisfied .....                                  | 1 2 3 4 |
| 9. I feel frightened .....                                 | 1 2 3 4 |
| 10. I feel comfortable .....                               | 1 2 3 4 |
| 11. I feel self-confident.....                             | 1 2 3 4 |
| 12. I feel nervous .....                                   | 1 2 3 4 |
| 13. I am jittery .....                                     | 1 2 3 4 |
| 14. I feel indecisive.....                                 | 1 2 3 4 |
| 15. I am relaxed .....                                     | 1 2 3 4 |
| 16. I feel content .....                                   | 1 2 3 4 |
| 17. I am worried .....                                     | 1 2 3 4 |
| 18. I feel confused.....                                   | 1 2 3 4 |
| 19. I feel steady.....                                     | 1 2 3 4 |
| 20. I feel pleasant.....                                   | 1 2 3 4 |

Copyright 1968, 1977 by Charles D. Spielberger. All rights reserved.

© Copyright 1968, 1977 by Charles D. Spielberger. All rights reserved.  
 Published by Mind Garden, Inc., 1690 Woodside Rd, Suite 202, Redwood City, CA 94061

STAI-AD Test Form Y  
[www.mindgarden.com](http://www.mindgarden.com)

## SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name \_\_\_\_\_ Date \_\_\_\_\_

### DIRECTIONS

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

ALMOST NEVER  
SOMETIMES  
OFTEN  
ALMOST ALWAYS

- |  |   |   |   |   |
|--|---|---|---|---|
| 21. I feel pleasant.....   | 1 | 2 | 3 | 4 |
| 22. I feel nervous and restless .....  | 1 | 2 | 3 | 4 |
| 23. I feel satisfied with myself.....  | 1 | 2 | 3 | 4 |
| 24. I wish I could be as happy as others seem to be .....  | 1 | 2 | 3 | 4 |
| 25. I feel like a failure .....  | 1 | 2 | 3 | 4 |
| 26. I feel rested .....  | 1 | 2 | 3 | 4 |
| 27. I am "calm, cool, and collected".....  | 1 | 2 | 3 | 4 |
| 28. I feel that difficulties are piling up so that I cannot overcome them.....                       | 1 | 2 | 3 | 4 |
| 29. I worry too much over something that really doesn't matter.....                                  | 1 | 2 | 3 | 4 |
| 30. I am happy .....   | 1 | 2 | 3 | 4 |
| 31. I have disturbing thoughts .....   | 1 | 2 | 3 | 4 |
| 32. I lack self-confidence.....  | 1 | 2 | 3 | 4 |
| 33. I feel secure .....  | 1 | 2 | 3 | 4 |
| 34. I make decisions easily .....  | 1 | 2 | 3 | 4 |
| 35. I feel inadequate.....   | 1 | 2 | 3 | 4 |
| 36. I am content .....   | 1 | 2 | 3 | 4 |
| 37. Some unimportant thought runs through my mind and bothers me .....                               | 1 | 2 | 3 | 4 |
| 38. I take disappointments so keenly that I can't put them out of my mind .....                      | 1 | 2 | 3 | 4 |
| 39. I am a steady person.....  | 1 | 2 | 3 | 4 |
| 40. I get in a state of tension or turmoil as I think over my recent concerns<br>and interests ..... | 1 | 2 | 3 | 4 |

Copyright 1968, 1977 by Charles D. Spielberger. All rights reserved.

© Copyright 1968, 1977 by Charles D. Spielberger. All rights reserved.  
Published by Mind Garden, Inc., 1690 Woodside Rd, Suite 202, Redwood City, CA 94061

STAI-P-AD Test Form Y  
www.mindgarden.com

**APPENDIX IX**  
**DETAILS OF IAYT PRACTICES FOR COPD**

Sl. No.	NAME OF THE PRACTICES	DURATION
<b>1.</b>	<b>LECTURES ON THEORY</b>	<b>10 Min.</b>
	COPD causes, symptoms, complications and lifestyle factors, prevention and management, Stress reaction and its management, Yoga philosophy and health, <i>Panchakosa Viveka</i> (Five layers of existence), Lifestyle Modification, Emotion and coping, Diet and exercise.	
<b>2.</b>	<b>BREATHING PRACTICES</b>	<b>10 Min.</b>
	Standing- Breathing Practices  Hands in and out breathing  Hands stretch breathing x 3directions  Ankle stretch breathing  Sitting – Breathing Practices  Dog breathing  Rabbit breathing  <i>Sasankasana</i> breathing (moon pose)  Tiger breathing  Prone - <i>Makarasana</i>  <i>Bhujangasana</i> breathing  <i>Salabasana</i> breathing  Supine – <i>Savasana</i>  Alternate straight leg raising	  30 Sec.  1 Min.  30 Sec.   1 Min.  1 Min.  1 Min.  1 Min.  1 Min.  1 Min.

	Both leg raising	1 Min.
<b>3.</b>	<b>LOOSENING PRACTICES</b>	<b>10 Min.</b>
	Side bending	1 Min.
	Twisting	1 Min.
	Back stretch	1 Min.
	<i>Pawanmuktasana kriya</i> (Alt.leg)	1 Min. x 2
	Forward backward rocking	1 Min.
	Side rolling	1 Min.
	<i>Surya Namaskara</i> (10 count) x 3 rounds	1 Min. x 3
<b>4.</b>	<b>YOGASANAS (PHYSICAL POSTURES)</b>	<b>20 Min.</b>
	Standing Asana	
	<i>Ardhakati chakrasana</i> (Lateral arc pose)	2 Min.
	<i>Ardha chakrasana</i> (Half wheel pose)	2 Min.
	<i>Padahasthasana</i> (Forward bend pose)	2 Min.
	Sitting Asana	
	<i>Vakrasana</i> (Twisting posture)	2 Min.
	<i>Ardhamatsyendrasana</i> (Half spinal twist posture)	2 Min.
	<i>Supta vajrasana</i> (Sleeping thunderbolt posture)	2 Min.
	Prone Asana	
	<i>Bhujangasana</i> (Serpent pose)	2 Min.
	<i>Salabhasana</i> (Locust pose)	2 Min.
	Supine Savasana	
	<i>Sarvangasana</i> (Shoulder stand pose)	2 Min.
	<i>Matsyasana</i> (Fish Pose)	2 Min.

5.	CHAIR BREATHING	10 Min.
	Instant Relaxation Technique	1 Min.
	Neck movement with chair support	
	With normal breathing	20 Sec.
	With breathing	20 Sec.
	<i>A Kara</i> chanting	20 Sec.
	Neck movement in <i>vajrasana</i>	
	With normal breathing	20 Sec.
	With breathing	20 Sec.
	<i>U Kara</i> chanting	20 Sec.
	<i>Sasankasana</i> movement	
	With normal breathing	20 Sec.
	With breathing	20 Sec.
	<i>M Kara</i> chanting	20 Sec.
	Relaxation in <i>Tadasana</i>	
	Neck movement in <i>Tadasana</i>	
	With normal breathing	20 Sec.
	With breathing	20 Sec.
	<i>M Kara</i> chanting	20 Sec.
	<i>Ardha chakrasana &amp; Padahastasana</i>	
	With normal breathing	20 Sec.
	With breathing	20 Sec.
	<i>M Kara</i> chanting	20 Sec.
	Quick Relaxation Technique ( <i>A Kara</i> chanting)	4 Min.

<b>6.</b>	<b>PRANAYAMA</b>	<b>10 Min.</b>
	<i>Kapalabhati</i>	2 Min.
	<i>Vibhagiya pranayama</i> (Sectional breathing)	2 Min.
	<i>Ujjayi pranayama</i> (Diaphragmatic breathing)	2 Min.
	<i>Nadisuddhi pranayama</i> (Alternate nostril breathing)	2 Min.
	<i>Bhramari pranayama</i> (Bee breathing)	2 Min.
<b>7.</b>	<b>MEDITATION</b>	<b>10 Min.</b>
	<i>Nadaanusandhana</i> (Alternate day)	10 Min.
	Om Mediatation (Alternate day)	10 Min.
<b>8.</b>	<b>DEEP RELAXATION TECHNIQUE (DRT) in corpse pose</b>	<b>10 Min.</b>
<b>9.</b>	<b>KRIYA (once a week)</b>	<b>90 Min.</b>
	Theory on <i>Kriya</i>	10 Min.
	<i>Jalaneti</i>	20 Min.
	<i>Sutraneti</i>	20 Min.
	<i>Vamana Dhouti</i>	25 Min.
	DRT (Deep Relaxation Technique)	15 Min.



## APPENDIX X PLATES

**Plate 1: Doctors measuring pulmonary function of participants.**



**Plate 2: Participants during measurement of PEFr.**

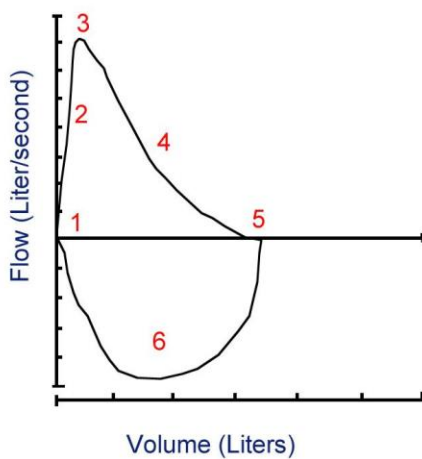


**Plate 3: Measurement of peripheral capillary oxygen saturation (SpO<sub>2</sub>%), and pulse rate using pulse oximeter.**

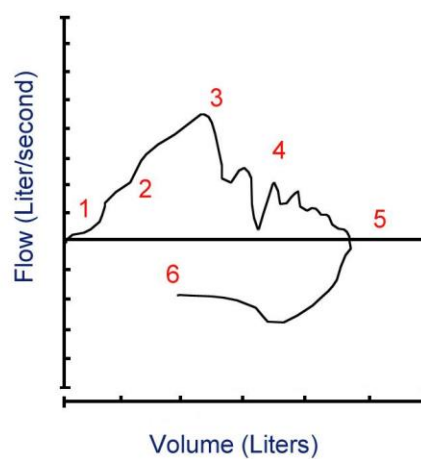


**Plate 4: Flow volume Characteristics of Spirometry**

Flow-volume Characteristics of Acceptable and Unacceptable Spirometry



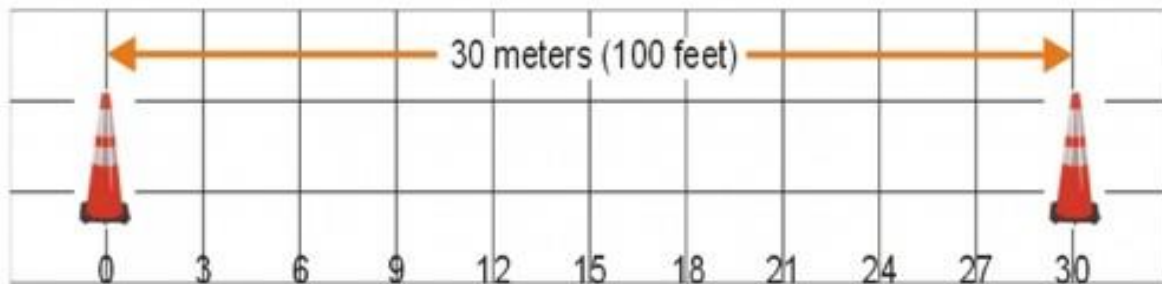
1. Instantaneous start of exhalation
2. Rapid rise in flow to peak flow
3. Sharp peak occurring early in exhalation
4. Smooth continuous fall in flow without interruptions
5. Gradual fall in low flow to IV
6. Smooth continuous inhalation to TLC
7. Reproducible shape



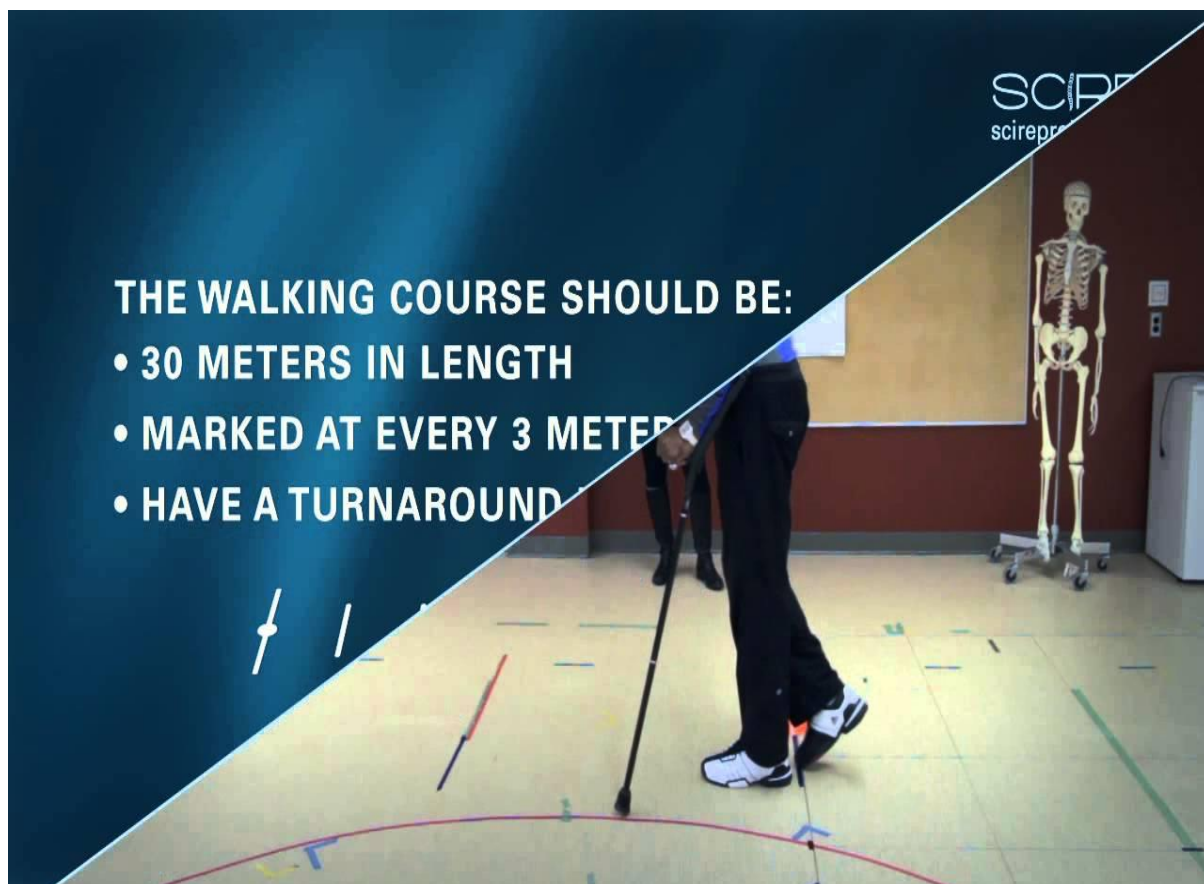
1. Slow start
2. Slow rise in flow
3. Broad late peak
4. Erratic flow (cough or vocal cord) dysfunction
5. Abrupt return to zero flow
6. Incomplete inhalation
7. Non-reproducible



**Plate 5: Graphical representation of Six Minute Walk Test**



**Plate 6: Points to be noted during Six Minute Walk Test.**



**Plate 7: Yoga practice by a participant.**



**Plate 8: Office of the Mahanadi Coalfield Limited**



**APPENDIX XI**  
**PUBLICATIONS FROM THIS THESIS**

1. Ranjita, R., Hankey A., Nagendra, H. R., & Mohanty S. (2016). Yoga based Pulmonary Rehabilitation for the Management of Dyspnoea in Coal miners with Chronic Obstructive Pulmonary Disease: a Randomized Controlled Trial. *Journal of Ayurveda and Integrative Medicine*. <http://dx.doi.org/10.1016/j.jaim.2015.12.001>
2. Ranjita, R., Badhai S., Hankey A., & Nagendra, H. R. (2016). A randomized controlled study on assessment of health status, depression and anxiety in coal miners with chronic obstructive pulmonary disease following yoga training. *International Journal of Yoga*, 9(2):137-44. doi: 10.4103/0973-6131.183714.
3. Ranjita, R., Hankey A., & Nagendra, H. R. (2015). Measuring the effect of integrated yoga on quality of sleep and chronic pain in coal miners with chronic obstructive pulmonary disease: a randomized controlled trial. *International Scientific Yoga Journal SENSE*, 5(5).
4. Ranjita, R., Mohanty S., Hankey A., & Nagendra, H. R. (2016). Evidence based critical review on Ayurvedic management of Kaphaja Kasa (Chronic Bronchitis). *Indian Journal of Health and Well Being*, 7(1):73-78.
5. Ranjita, R., Nagarathna R., Hankey A., & Nagendra, H. R. (In review) A comprehensive yoga program improves pulmonary and autonomic functions of coalminers with chronic obstructive pulmonary disease: a randomized controlled study. *Complimentary Therapies in Medicine*.
6. Ranjita, R., Hankey A., & Nagendra, H. R. (In review) Mindfulness based stress reduction in coalminers with COPD: RCT on effect of 12 weeks of Yoga training on health related quality of life. *European Journal of Integrative Medicine*.
7. Ranjita, R., Hankey A., & Nagendra, H. R. (In review). Evaluation of the positive and negative emotion in coalminers with COPD following 12 weeks of Yoga training: a randomized controlled study. *Industrial Psychiatry Journal*.