USE OF A RELAXATION TECHNIQUE IN THE
REHABILITATION OF PATIENTS
WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

by

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This study is dedicated

to

Rich, Kay, Dick, Bret and Rex

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CHAPTER I

INTRODUCTION

Chronic disease is a major and increasing health problem in the United States. Cures rarely occur so most patients with a chronic disease must learn to adapt and structure their lives so that they can live as normally as possible within the limitations of their condition. Strauss (1975) has described some of the numerous problems that patients with chronic disease and their families must face. He points out that although certain illnesses are well publicized, there is little public awareness of the magnitude of chronic illness problems.

Although many health workers are involved in helping patients with chronic illness during some phase of their disease, nurses certainly can and do play a key role. Nurses work with patients in a wide range of settings including inpatient units, outpatient clinics, rehabilitation centers, doctors' offices and patients' homes. The opportunities for care and teaching are many and as new models of nursing care delivery are developed these opportunities

will be better utilized. It is important, however, that
new nursing approaches be carefully evaluated for their efficacy
so that continual improvement will occur.

Chronic obstructive pulmonary disease (COPD) has received
much less attention from the health professions than might
be expected in view of its prevalence. Neff and Petty
(1971) speculate that perhaps physicians become "thera-
peutic nihilists" because they consider the clinical bene-
fits of the available treatments to be too meager to
justify the time and effort involved. The authors assert,
however, that much can be done to help these patients
and the plan of management should be largely outpatient
and home-based. In light of these considerations, this
study is designed to investigate the value of a newly
developed relaxation technique as a nursing intervention
in the rehabilitation of COPD patients.

Review of the Literature

Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD) is the term
used to refer to a group of disorders (primarily emphysema,
chronic bronchitis, and asthma) which cause progressive,
permanent lung damage. It is characterized by persistent
obstruction of bronchial air flow. There is increased

hindrance to expiratory air flow and usually, but not necessarily, increased resistance to inspiration. It is the most common chronic pulmonary condition in the U.S., and mortality and morbidity rates from COPD have increased dramatically in recent years. It is second only to arteriosclerotic heart disease as a cause of early disability awards for male workers. As the American Lung Association (1973) points out, "statistics tell only a part of the havoc wrought by COPD in human lives through invalidism, discouragement, and suffering; and in the national economy the repercussions of caring for its unfortunate victims are many" (p. 23).

According to Howell (1975), the typical COPD patient is a male cigarette smoker, between the ages of 50 and 60 years, who may or may not have had a long history of chronic bronchitis. His chief symptom is breathlessness on exertion, often with wheezing. It is worse in the morning, and is associated with a sensation of tightness until the patient has expectorated the night's accumulation of sputum. Involvement in emotional situations and sudden exposure to cold air or smoky atmospheres will produce symptoms of breathlessness, coughing and tightness when dyspnea is sufficiently severe to interfere with everyday activity. Although the basic cause of COPD is not

known, current treatment methods include: (1) removal of irritants and treatment of infections, (2) bronchodilatation, (3) bronchial toilet and mucolytics, (4) physical rehabilitation training, and (5) oxygen therapy.

An article by Nett and Petty (1970) describes the physical and emotional changes experienced by the typical emphysema patient. The early symptoms of chronic cough, expectoration, and progressive dyspnea on exertion are usually noted by the patient only after many years of smoking, exposure to air pollution, and recurrent chest infections. At this point, the patient commonly denies the significance of the symptoms. He tries to reassure himself that his problems are due to aging, or that he only has a "normal" cigarette cough.

Slowly the patient discovers he is unable to perform more and more activities of living. He stops participating in things to avoid the unpleasant feelings of dyspnea, cough, fatigue and anxiety. At this time, he is likely to start complaining to people around him, and to try home remedies or over-the-counter drugs. Nevertheless, he is still unlikely to go to a physician. "It probably results from a basic denial mechanism and the fear that a doctor will take away a primary pleasure, smoking, which at this time in life is far more important to the patient than relief

of his rather mild to moderate symptoms" (Nett & Petty, 1970, p. 1252).

As the years go on, continued smoking and chest infections cause further deterioration in the patient's condition. Often he develops a "cold" and suddenly finds himself panicked because he is seriously short of breath. Almost all of the time he has to work consciously to breathe. Hypoxemia and hypercapnia lead to other physiologic abnormalities and the patient is now greatly stressed. Usually when the patient's condition has worsened to this degree, he will seek competent medical help.

By the time a patient comes in contact with health professionals he usually has a fairly advanced disease, and is aware that he faces progressive disability. He feels threatened, frustrated and fatigued. Guilt and self-blame about cigarette smoking can also contribute to his unhappiness. "The emphysema patient reacts with anger, fear, demands and depression and often retaliates by insulting the medical personnel around him. He sometimes refuses all care as a final attempt at denial. It is incredible that he usually continues to smoke" (Nett & Petty, 1970, p. 1253).

The advanced disease process inevitably causes major changes in the patient's lifestyle and family relationships. The patient must often stop work during a period of his life which should be productive. As a result, financial

problems can occur. The wife may go to work while the husband stays home. This sort of role reversal may produce resentment on the part of the wife and lowered self-esteem on the part of the husband. In addition, impotence may occur which produces a further strain on the marriage.

Depression, anxiety and somatic complaints are the most commonly reported psychological components of the advanced COPD picture. The patient is caught in a vicious cycle; his breathing difficulties lead to anxiety and/or depression and these emotions cause increased dyspnea which leads to even greater anxiety. "With a severe degree of respiratory incapacitation, the patient can no longer afford to become angry, anxious, depressed, or even very happy since emotional changes of any kind lead to symptom production and often to physiologic decompensation. He protects himself from events that appear innocuous to those around him" (Dudley, Wermuth & Hague, 1973, p. 391). Such behavior easily leads to conflict and misunderstanding with people who are trying to help him.

Dudley, Martin, Verhey and Holmes (1969) observed that subjects with severe emphysema tended to react to a noxious stimulation (a tightened headband) with denial and re-pression. In contrast, healthy controls (young medical students) reacted to the same stimulation with anxiety,

anger, restlessness and irritability. In a further study, (Dudley & Pattison, 1969) it was found that patients with the least psychosocial assets and the most severe obstructive disease had the greatest need for the defenses of isolation, repression and denial in a psychotherapeutic group situation.

The results of a multidisciplinary inhospital COPD rehabilitation program were reported by Kimbel, Kaplan, Alkalay and Lester (1971). On admission, patients (n=251) were categorized according to an index of impairment based on symptoms, activity level and physical independence into five classes, with class 1 being the least and class 5 the most impaired. All subjects were administered the Minnesota Multiphasic Personality Inventory (MMPI). Analysis of the data revealed elevations in the "neurotic triad" namely, hypochondriasis, depression and hysteria. Only the scores for the class 1 group were within the normal range. The greater the impairment of the patient, the higher the scores on the neurotic triad tended to be. The authors state (p. 95), "these results suggest that progression of symptoms of obstructive pulmonary disease has a measurable effect on personality alterations."

Another multidisciplinary program was conducted by Agle, Baum, Chester and Wendt (1973) with 21 subjects. The MMPI was given at the beginning of the program, at the completion of training (one month), and again one year

later. The results showed that patients who responded well
to rehabilitation (as measured by increased physical activity)
tended to manifest less severe symptoms of depression,
anxiety and excessive bodily preoccupation initially, and
to show improvement in these categories at the end of the
year. Improvement, however, did not correlate positively
with physiological measures. The researchers concluded
that the improvement in psychological symptoms was due to
the total rehabilitation effort rather than any one element
of it. They also interpreted their results as suggesting
that the degree of psychological distress is not necessarily
related to the degree of physical impairment.

Krop, Block and Cohen (1973) studied the neuropsycho-
logical effects of a month of continuous oxygen therapy
on a group of 10 hypoxemic COPD patients. This group showed
significantly more improvement on eight of 10 neuropsycho-
logical tests than did a comparison group of 12 patients with
an equal degree of COPD but less hypoxemia. In addition,
the patients treated with oxygen demonstrated significant
decreases in scores on the depression, hypochondriasis,
hysteria and social introversion scales of the MMPI.

Meditation

Meditation "refers to a family of mental exercises
that generally involve calmly limiting thought and attention.

Such exercises vary widely and can involve sitting still and counting breaths, attending to a repeated thought, or focusing on virtually any simple internal or external stimulus" (Smith, 1975, p. 558). Meditation techniques have been used for centuries, primarily within a religious context. In recent years, however, the popularity of meditation has greatly increased in this country, and many claims have been made regarding its beneficial effects. Currently, therefore, meditation is the focus of much scientific research and debate.

Transcendental meditation (TM) was first introduced in the United States in 1959. Since then it is estimated that nearly half a million people have learned the technique. TM is taught, for a fee, by approved instructors in centers all over the country. The exercise itself is basically simple; it involves sitting quietly twice a day and passively attending to a special thought called a "mantra." Several books about TM have been recent bestsellers, including one by Bloomfield, Cain, Jaffe and Kory (1975) which describes in detail the history, uses and goals of the program.

In 1972 Wallace and Benson discovered that significant physiological changes occurred during the practice of meditation. Similar investigations followed and the results have been summarized by Goleman and Schwartz (1976). They state, "Major dependable autonomic trends include slowing of breath and heart rate, decrease in oxygen consumption,

lowering or stabilization of blood pressure, decrease in skin conductance, and fewer skin conductance responses--a pattern of responses syggesting generalized sympathetic inhibition" (p. 456). Other reported physiological changes during meditation include decreased blood lactate concentrations and an electroencephalogram pattern of intensification of slow alpha waves with occasional theta-wave activity (Wallace & Benson, 1972).

Further research (Beary & Benson, 1974; Walruth & Hamilton, 1975) has shown that other techniques besides TM can produce hypometabolic changes. Benson (1974) has postulated the existence of a "relaxation response" and has developed a simple, easily learned technique to elicit this response. The Benson technique has four essential components: (1) a mental device (2) a passive attitude (3) decreased muscle tonus and (4) a quiet environment. Benson believes that the regular use of such a technique can combat many of the ill effects of stress.

Stek and Bass (1973) found that level of interest in meditation was not related to either perceived locus of control or to personal adjustment. Using a cross-sectional design, Davidson and Schwartz (1976) showed meditation to be associated with decrements in trait anxiety and with increments in attentive ability. In another recent study (Davidson, Goleman & Schwartz, 1976) long-term meditators

were compared with non-meditators for the ability to reduce stress reactions in a laboratory threat situation. It was found that meditators habituated more quickly to the stressor and experienced less subjective anxiety. Finally, there is some evidence (Bloomfield et al., 1975) that meditation is associated with the reduced use of alcohol and cigarettes.

There are numerous reports in the literature on the psychological effects of meditation. Smith has reviewed the research on meditation as psychotherapy and concluded that "without exception the studies reviewed show the regular use of meditation to be associated with decrements in psychopathology, particularly anxiety, over a period of time usually ranging from 4 to 10 weeks. The effects of meditation persist when controls are included for initial group differences, passage of time, therapist support and reassurance, individual contact with therapist, and interpersonal contact with practicing peers" (p. 562). Smith cautions, however, that the critical variable could be the expectation of relief or the regular practice of sitting quietly rather than the meditation exercise itself.

Candelent and Candelent (1975) have taught TM to a wide variety of psychiatric patients for several years. The authors contend that no particular diagnostic group is more or less suited to practicing TM. The authors also report that the effects of meditation are gradual and are often not

noticeable to the patient until after a few weeks of practice. In contrast, Glueck and Stroebel (1975) state that psychiatric patients who exhibit considerable amounts of overt anxiety often show dramatic and immediate effects from TM. "These individuals often are relieved of anxiety symptoms after the first meditation" (p. 111).

Glueck and Stroebel also report that patients with serious depressive symptoms can learn the TM technique but have considerable difficulty in being able to meditate twice a day without a great deal of encouragement. Similarly, Carrington and Ephron (1975) state that patients with acute depressive reactions do not respond as well to meditation as those with subacute, neurotically determined depressions.

In summary it is apparent from a review of the literature that COPD is a major health problem with serious physiological, psychological and social effects on its victims. It is generally agreed that anxiety and depression are the most common psychological components of the advanced stage of the disease, but there is disagreement as to whether or not they correlate directly with the severity of the illness. Attempts to cope with anxiety have been shown to take the form of denial and repression in some patients.

Research shows that various relaxation methods can induce beneficial mental and physical changes in some subjects. For these reasons it has been suggested (Bither, 1973) that

relaxation training might have value as a nursing technique in the rehabilitation of COPD patients.

Purpose of the Study

The general purpose of the study was to determine whether a brief form of relaxation training could be taught to COPD patients, whether they would utilize it as directed, and whether or not it had beneficial effects.

In light of the needs and limitations of COPD patients it would seem that the ideal relaxation technique would have the following advantages: (1) proven effectiveness with at least some subjects, (2) suitable for home use (does not require elaborate or expensive equipment), (3) can be taught to patients in a reasonable short period of time, and (4) does not involve physical exertion. The Benson meditation technique appears to meet these criteria. Accordingly, it was hypothesized that patients who practiced the Benson meditation technique for one month would show significant decreases in anxiety and depression when compared to a group of patients who attempted to relax but were not taught a specific method.

Since smoking has serious consequences for COPD patients, the investigator also sought to discover the effect, if any, the practice of either type of relaxation would have on the smoking behavior of subjects. A further purpose of the study

was to compare the current sample to others in the literature
with regard to the extent of pretest anxiety and depression,
and to examine the interrelationships among these and the
variables of age, education, and perceived severity of
illness.

CHAPTER II

METHODOLOGY

Setting

Although all data were collected in the subjects'
homes, the sample was drawn from two repiratory outpatient
clinics. One clinic is located at a 527-bed Veterans
Administration hospital, and is held one afternoon a week
to provide follow-up care to former inpatients on the
respiratory unit. The patients are treated for a full
range of medical respiratory illnesses, including COPD.
An average of about 25 patients are seen in the clinic
each week. Care is provided by both staff and resident
physicians.

The other clinic utilized for the study is conducted
weekly at a large university hospital. This clinic
accepts patients of all ages and both sexes. They can
be self-referred or referred by community physicians.
Many come from other towns and some from out-of-state.
On the average, 8 to 10 patients are seen each week for
all types of chest diseases. They are assigned to either
a staff or resident physician and are charged on an

ability-to-pay basis.

Subjects

Initially it was planned to draw the entire sample from among the patients being treated for COPD at the Veterans outpatient clinic. The typical subject in that population is male, a World War II veteran, aged 50 or over, a cigarette smoker, with moderate to very severe respiratory impairment. After the study was begun it was learned that many of these patients could not be included because they either suffered from some other major medical or psychiatric problem or they resided out of town. To obtain an adequate sample, therefore, it was decided to select additional subjects from the smaller but similar clinic at the university hospital. The COPD patient population at this clinic is comparable to that of the Veterans except that it has a higher percentage of female patients and is not limited to veterans.

The final sample, then, consisted of 22 volunteers who were being treated for COPD at one of the two clinics described above. In addition, they were free from any other major health problems at the time of the first interview and resided within the greater metropolitan area in which the study was conducted. Subjects from both clinics were assigned alternately to the "meditation" and "control" groups in order to minimize the influence

on the study of any differences that might exist between the two populations. Subjects in the final sample ranged in age from 39 to 81 years, with a mean of 60.4 years. The subjects had completed an average of 10.1 years of school, with a range of 4 to 16 years. Fifteen of the subjects were married at the time of the study. Only one of the subjects was female and only two subjects were employed, both part-time.

Data-Gathering Instruments

The following data-collecting instruments were used in this study: (1) the Spielberger State-Trait Anxiety Inventory (STAI), (2) the Zung Self-Rating Depression Scale (SDS), (3) a Patient Data Sheet (forms A and B), and (4) a diary.

The A-State scale of the STAI is designed to measure an individual's anxiety level at a given time. The essential qualities evaluated by the scale consist of feelings of tension, nervousness, worry and apprehension. The measure contains 20 statements of mood. The respondent is asked how descriptive each statement is of his feelings at that particular moment in time, along a four-point scale ranging from (1) "not at all" to (4) "very much so." Low scores thus indicate states of calmness, intermediate scores reflect moderate levels of tension and apprehensiveness, and high scores indicate states of intense apprehensiveness

that approach panic.

The A-State scale has been shown to possess both concurrent and construct validity (Spielberger, Gorsuch & Lushene, 1970). Scores on the scale have been reported to increase in response to various kinds of stress (Spielberger, Wadsworth & Dunn, 1973), and to decrease as a result of relaxation training (Spielberger et al., 1970). The scale has a high degree of internal consistency as shown by high item remainder correlation coefficients and alpha reliability coefficients. (See Appendix A for a copy of the A-State.)

The A-Trait scale of the STAI is similar in construction to the A-State. It, too, consists of 20 statements with reference to which the subject is asked to rate himself on a four-point scale ranging from (1) "almost never" to (4) "almost always." The instructions, however, direct the respondent to answer in terms of how he generally feels. Spielberger et al. (1970) report the scale has good concurrent and construct validity as well as test-retest reliability with correlations ranging from .73 to .86. (See Appendix B for a copy of the A-Trait scale.)

The Self-Rating Depression Scale (SDS) developed by Zung (1965) is one of the most frequently used depression measures. It consists of 20 items rationally derived from the clinical diagnostic criteria most commonly used

to characterize depressive disorders. These items are expressed in "verbatim patient language." They are scored on a four-point scale. On the symptom-positive items, "most of the time" equals 4, and "a little of the time" equals 1. The ten symptom-negative items are scored inversely. Raw scores have a possible range from 20 to 80 and can be "normalized" using the "SDS Index" constructed by Zung (1974). He states that an index score of 65 may be interpreted to mean that the patient has 65% of the depression measurable by the scale. (See Appendix C for a copy of the SDS.)

Evidence of the criterion validity of the SDS has been reported by Zung (1965). He found that scores on the scale were significantly higher for patients diagnosed as depressive than for patients having other diagnoses or a normal control group, both in this country and cross-culturally. Some, but not all, investigators have found the scale to be responsive to antidepressant drug treatment in hospitalized patients. The SDS also possesses concurrent validity in that it correlates with the Depression scale of the MMPI (r=.76), the Hamilton Depression Scale (r=.56), the Beck Scale (r=.76), and the Lubin Scale (r=.29). (For further validity data see Blumenthal, 1975.)

Additional data were collected by means of a Patient

Data Sheet and a diary. The Patient Data Sheet was constructed by the experimenter to obtain data about the subject's socio-economic status, his smoking behavior and his perception of the severity of his illness. Form A, completed at pretest, contains questions regarding age and smoking habits. In addition, the subject's occupation and educational background were recorded on this sheet by the experimenter. The final item on this form concerns perceived severity of illness. A horizontal line 100 units long (each unit being 1/30th of an inch), is labeled from 0 ("normal") at one end to 100 ("very severe") at the other. The subject was instructed to place a mark at the point on the line which he thought best described the current stage of his illness. The item was scored by measuring the distance from the zero point to the subject's mark with a scale of one inch=30. (See Appendix D for a copy of Form A.)

Form B of the Patient Data Sheet was filled out by the subject at the second home visit. It contains questions regarding smoking habits and the item regarding perceived severity of illness. (See Appendix E for a copy of Form B.)

All subjects were given a diary (see Appendix F), to complete during the experimental period. The diary contained 30 identical pages, one page for each day. Each page was divided into two sections. The top half of

the page was used to record the morning session, and the
bottom half was used for the afternoon or evening session.
At each session the subject entered the time he began
and the time he finished his relaxation attempt. When
he completed the session, he rated the amount of tenseness
or relaxation he was feeling by placing a mark on a line
provided. This line is 100 units long, each unit being 1/20th
of an inch. The line is labeled, however, from 0
("extremely tense or upset") to 10 ("asleep"). It
was scored by measuring the horizontal distance from the
zero point to the subject's mark with a scale of one
inch=20. This produced a possible range of scores of
0 to 100 which could be treated as interval data. Following
the "relaxation line," space was provided in the diary
for the subject to record comments or describe any unsual
events which had occurred since the previous session.

Design and Procedure

This study utilized a true experimental design of
the pretest-posttest control group type. Such a design
controls adequately for internal validity, but must be
considered questionable with regard to generalizability,
or external validity (see Campbell & Stanley, 1963).

The procedure employed was the same at both clinics.
On the day the clinic was held, the experimenter reviewed

the charts of all patients scheduled to be seen that day.
Only those patients with charts having a diagnosis of COPD,
emphysema or chronic bronchitis were considered further.
This group of charts was then screened to determine if the
patient met the other criteria for subjects (see Appen-
dix G). All patients who according to their charts met
the above requirements were then considered potential
subjects.

The next step in the procedure on the clinic days
was to explain the study individually to all eligible
patients, and ask if they would volunteer. Five patients
declined for reasons ranging from "not interested" to
"too sick." The patients who did volunteer were first
asked to read and sign a consent form (see Appendix H).
After answering any questions, the investigator made an
appointment with each patient for a home visit.

Subjects in both groups were pretested at the beginning
of the home visit. Ideally, the data collecting instruments
used in this study should have been given to subjects in
random order. It was reasoned, however, that the anxiety
measures, particularly the A-State, would be sensitive to
the effects of any prior testing. For this reason, and
in accordance with instructions in the STAI test manual
(Spielberger et al., 1970), all subjects were given the
A-State first, followed by the A-Trait. Although the SDS

may also be affected by situational factors, there was no such caution in the literature (Blumenthal, 1975; Zung, 1974). The SDS and Patient Data Sheet were therefore administered in random order, following the administration of the STAI.

After the pretesting was completed, subjects in the experimental condition were taught the Benson meditation technique as described in The Relaxation Response by Benson (1975). Each subject was also given a diary, shown how to complete it, and advised that the investigator would contact him by phone in the middle of the month to answer questions and discuss progress. Written instructions for both the diary and the technique were left with the subject at the end of the home visit. (See Appendices I and J.)

At the end of a month another home visit was made by the experimenter. At this time the diary was collected and the subject was posttested in the same manner as during the pretest period. Patient Data Sheet Form B was given in place of Form A, however. When the questionnaires were completed the investigator conducted a short, informal interview to allow the subject to express his views on any aspect of the study.

The identical procedure was followed with subjects in the control condition except that no method of relaxation

was taught or suggested. The experimenter explained to these subjects that relaxation was thought to be important for COPD patients, and the study required only that they attempt to relax twice a day for 10 to 20 minutes. The choice of method was left entirely up to the subjects. They received the same written instructions for completing the diary as subjects in the meditation group.

CHAPTER III

RESULTS

For the sake of clarity, the findings will be presented
in the following order: First, there will be a description
of the attrition of the sample, and then the results regarding
the frequency, duration and ratings of the relaxation sessions
will be presented. Next, the smoking behavior findings will be
reported, and then the effects of relaxation training on
anxiety and depression will follow. Finally, the intercor-
relations among the dependent variables, age, education,
and perceived severity of illness, will be presented.

Attrition of the Sample

During a five-month period, a total of 28 patients,
15 in the Benson condition and 13 in the control condition,
volunteered for the study. Four subjects in the Benson
group and two in the control group did not complete the
study for various reasons. Among the subjects in the
Benson group who dropped out, two stated they were "too
sick" to continue, one subject said the technique made him

"more tense instead of relaxed," and one subject finished
the diary but died unexpectedly before he was retested.
Two subjects in the control condition quit. One said she
was too sick to participate further, and the other was
an elderly man who was transferred to an out-of-town
nursing home. Two female subjects were among the non-
completers, one in each condition. As a result, only
one female subject was included in the final sample, and
she was in the control condition.

As Table 1 reveals, the mean age for the non-completers
was 70.3 years which was higher than the mean age of 60.4
years for the final sample. The non-completers were also
found to have a slightly lower socio-economic status
as well as higher mean pretest scores on anxiety, depression,
and perceived severity of illness. Although some of these
differences appear significant, the small size of the
non-completer group (n=6) must be recognized.

The final sample consisted of 22 subjects, 11 in each
condition. Seven subjects were drawn from the university
clinic and 15 from the Veterans. Four of the university
subjects were in the meditation condition, and the other
three were in the control group. The Veterans clinic
subjects were likewise almost equally divided with seven
in the meditation and eight in the control condition.
Analysis indicated (see Table 2) that the subjects from

Table 1

A Comparison Between the Non-completers and the Subjects in
the Final Sample With Regard to Selected Characteristics

Characteristic	Non-completers (N=6)	Final Sample (N=22)	Difference
Age (Years)			
Mean	70.3	60.4	9.9
Standard Deviation	6.3	9.7	
Range	62-80	39-81	
A-State			
Mean	53.3	51.4	1.9
Standard Deviation	6.4	10.6	
Range	53-60	34-72	
A-Trait			
Mean	57.0	50.6	6.4
Standard Deviation	7.1	9.5	
Range	45-66	35-66	
SDS			
Mean	63.1	54.9	8.2
Standard Deviation	6.5	8.2	
Range	54-70	41-69	
Socio-Economic Status[a]			
Mean	61.1	56.3	4.8
Standard Deviation	9.2	16.8	
Range	51-77	15-77	
Preceived Severity of Illness			
Mean	72.5	65.6	6.9
Standard Deviation	15.9	18.9	
Range	50-92	26-94	

[a]Hollingshead Two-Factor Index of Social Position (lower
scores are assigned to higher positions).

Table 2

A Comparison Between the Subjects Drawn From Each
Institution With Respect to Selected Characteristics

Characteristic	Veterans Clinic (N=15)	University Clinic (N=7)
Age (Years)		
Mean	60.0	61.3
A-State		
Mean	49.8	54.8
A-Trait		
Mean	49.6	52.5
SDS		
Mean	53.1	58.5
Socio-Economic Status[a]		
Mean	54.7	59.8
Perceived Severity of Illness		
Mean	65.1	66.9

[a]Hollingshead Two-Factor Index of Social Position
(lower scores are assigned to higher positions).

the two institutions were nearly identical with regard
to age, pretest anxiety and perceived severity of illness.
The university subjects showed a somewhat higher mean
pretest depression score and somewhat lower socio-economic
status. On inspection, neither difference appears signi-
ficant. We conclude, therefore, that combining the samples
from the two institutions was justified.

Frequency of Relaxation Practice

Data from the subjects' diaries were examined to deter-
mine how well subjects in both conditions complied with
the instructions to practice relaxation twice a day. Only
21 diaries were available, however, since the spouse of
a subject in the control condition inadvertently lost the
subject's diary just before it was completed.

A maximum number of 56 sessions could be recorded in
the diary in the 28 day period. When the number of sessions
missed by subjects were computed, natural cutting points
in the distribution emerged. The results are presented
in Table 3. Six subjects in the meditation condition
and eight in the control group (14 total) missed three
or less sessions. Two subjects in the meditation and none
in the control missed a slightly larger number of sessions
(six and seven). Only one person in each group missed
12 to 15 sessions. Finally, two people in the meditation

Table 3
A Comparison of Subjects With Respect to
the Number of Relaxation Sessions Missed

| Number of Sessions Missed Out of 56 | Number of Subjects | | Total |
	Meditation Group (N=11)	Control Group (N=10)[a]	
0-3	6	8	14
6-7	2	0	2
12-15	1	1	2
32-39	2	1	3

[a]N of 10 because of missing data from one subject.

and one in the control reported missing over half of the assigned sessions (32 to 39).

The two subjects in the meditation group who missed the most sessions stated the technique was not helpful. The subject in the control condition who frequently missed sessions experienced family problems during the month and felt she was "too busy" to relax. Inspection of the data failed to reveal any major differences between the five subjects who missed 12 or more sessions and the rest of the sample with respect to demographic variables, length of sessions, relaxation ratings, or scores on depression, anxiety and perceived severity of illness.

Duration and Ratings of Relaxation Sessions

One objective of the investigation was to determine the average length of time subjects spent in each session, and the degree of relaxation they perceived after the session. Reasoning that the sessions at the beginning of the month would be the least productive and the most variable in length, it was arbitrarily decided to analyze the data from the last eight sessions. In order to do this it was necessary to eliminate data from subjects who stopped practicing relaxation prematurely or who frequently missed sessions throughout the study period. As mentioned previously, five people missed 12 or more sessions. When data from these subjects were excluded, 16 diaries, eight from

subjects in each condition, were available. The following
results, therefore, were based on this smaller sample
consisting of the subjects who complied most fully with
the instructions.

Turning first to the length of the relaxation sessions,
it should be noted that the results showed little variability
in the range of times each individual spent although there
were large differences between subjects. For example, one
subject would tend to record all of his sessions as lasting
10 to 15 minutes. Another typical subject would record
all his sessions in the 35 to 40 minute range. Table 4
presents the mean times recorded in the last eight sessions
by subjects in the two groups. The findings show that
subjects in the meditation condition reported sessions
with a mean duration of 18.2 minutes. The subjects in the
control group spent an average of 23.6 minutes in each
session.

Relaxation ratings were scored on a scale from 0 to
100, with the higher scores indicating greater levels of
relaxation. Table 5 shows the range and mean scores for
subjects in the two conditions. Considerable variability
in the range of scores was noted on this measure, both for
individuals and between subjects. A range of 15.0 to 77.3
and a mean of 50.0 was found for subjects in the meditation
group. A slightly smaller range (30.6 to 88.3), but a

Table 4

Recorded Duration of Last Eight Relaxation Sessions

| | Time Per Session in Minutes | | |
Condition	Mean	Standard Deviation	Range
Meditation (N=8)	18.2	7.7	10.0-32.5
Control (N=8)	23.6	10.6	13.1-39.4

Table 5

Subject's Relaxation Ratings of Last Eight Sessions

| | Relaxation Ratings on 100-Point Scale | | |
Condition	Mean	Standard Deviation	Range
Meditation (N=8)	50.0	20.8	15.0-77.3
Control (N=8)	62.5	18.8	30.6-88.3

higher mean (62.5) was found for the control subjects.

Six subjects in the control and four in the meditation group wrote frequent remarks in the "comments" section of the diary. Most comments were brief and were intended to explain why a session was missed or why it was rated in a particular way. In the former category, typical comments included, "company came," "went to town," and "forgot." Other remarks described physical symptoms such as "can't breathe good" and "tired tonight." The final question on the diary regarding important physical and emotional changes was only answered affirmatively a few times by several subjects. The type of occurrences noted in this section seemed to be little different than those recorded in the "comments" section by other subjects (e.g. "stomach ache").

Smoking Behavior

Every subject in the original sample of 28 had a history of cigarette smoking. Most had smoked from one to three packs a day. The number of years a subject had smoked varied with age, and ranged from 12 to 60 years. At the time each subject was pretested, however, only 8 of the 28, or 23 per cent, were still smoking. Again, the interval of time since each subject had quit smoking varied a great deal. It ranged from two months for several subjects

up to 20 years for one. Most subjects had quit within the preceding five years.

Turning to the final sample, Table 6 shows the reported changes in subject's smoking habits. Five people in the meditation condition were smokers when the study began. Three of these smoked about one pack a day, one of them smoked less than five cigarettes a day, and the other only smoked about five cigarettes a week. After practicing the meditation technique for one month, two subjects reported no change in their habits. Three smokers in the meditation group stated they smoked fewer cigarettes at the end of the month. One subject who had quit smoking eight months prior to the study reported he began again during the study period.

Subjects in the control condition had similar changes in their smoking behavior. Two people began the study as smokers and one of them quit during the month. Two non-smoking control subjects began smoking during the month. However, they had only abstained for less than a year at the time they were pretested.

Anxiety and Relaxation

Raw scores on the STAI have a possible range from 20 to a maximum of 80. The pretest range for the original sample was 23 to 75 for the A-State and 24 to 67 for the A-Trait. The overall raw mean was 45.0 for A-State and

Table 6

Reported Smoking Behavior of Subjects
Before and After the Experimental Period

Condition	Pretest		Posttest	
	Smokers	Non-smokers	Smokers	Non-smokers
Meditation (N=11)	5	6	6	5
Control (N=11)	2	9	4	7

43.8 for A-Trait. These scores are only slightly higher than those reported for the sample on which normative data were based by Spielberger et al., (1970). His sample of 100 general medical and surgical patients without psychiatric complications showed A-State and A-Trait mean scores of 42.68 and 41.33, respectively. For this study, therefore, the raw scores for both parts of the STAI were converted to standard T-scores normalized for general medical and surgical patients.

Table 7 shows the A-State scores for subjects in the two conditions immediately prior to the start of their relaxation regimens and again one month later. Subjects in the meditation group had a mean pretest A-State score of 48.7, while the control condition mean was slightly higher at 54.1. After a month, the mean posttest score for the meditators rose by 1.6 to 50.3. The posttest mean for the control group decreased by 3.3 to 50.8.

The results show that trait anxiety remained stable. Table 8 reveals that the mean pretest A-Trait scores were 51.4 for the meditation group and 49.8 for the control subjects. At the end of the experimental period both groups had slightly, but not significantly, lower posttest scores. The meditation condition subjects had a mean posttest score of 49.5 for a difference of -1.9, and the control group score declined to 48.4 for a difference of -1.4.

Table 7

Pretest and Posttest Scores of Subjects
in the Two Conditions on the A-State Scale

Condition	Pretest (N=11)	Posttest (N=11)	Difference Between Pretest and Posttest Scores
Meditation			
Mean	48.7	50.3	+1.6
Standard Deviation	10.8	6.8	
Range	36-68	36-70	
Control			
Mean	54.1	50.8	-3.3
Standard Deviation	10.2	13.6	
Range	34-72	25-72	

Table 8

Pretest and Posttest Scores of Subjects
in the Two Conditions on the A-Trait Scale

Condition	Pretest (N=11)	Posttest (N=11)	Difference Between Pretest and Posttest Scores
Meditation			
Mean	51.4	49.5	-1.9
Standard Deviation	8.4	8.2	
Range	40-66	36-62	
Control			
Mean	49.8	48.4	-1.4
Standard Deviation	10.8	8.3	
Range	35-66	36-62	

Since the differences between pretest and posttest mean anxiety scores were not significant, we must reject the hypothesis that the meditation group would show a significant decrease in anxiety after one month.

Depression and Relaxation

Raw scores on the depression measure were converted to "SDS index" scores as devised by Zung (1974). The results before and after the experimental period are reported in Table 9. Inspection of the table shows that the subjects in both groups had similar mean scores on the pretest (control 55.8, meditation 54.1). On the posttest, subjects in the meditation condition showed a mean of 53.1 for a slight difference of -1.0. The control subjects also had a lower mean posttest score (53.8) for a difference of -2.0. Although the mean scores changed in the expected direction, the change was not significant for either group. We must conclude, therefore, that the prediction that the mean depression score of the experimental group would decrease significantly was not confirmed.

Table 10 shows the distribution of depression scores of the original sample according to Zung's clinical classification (1974). Only six subjects had scores "within normal range." Eleven subjects had scores in the "presence of minimal to mild depression" category, and 10

Table 9

Pretest and Posttest Scores of Subjects in the Two
Conditions on the Self-Rating Depression Scale (SDS)

Condition	Pretest (N=11)	Posttest (N=11)	Difference Between Pretest and Posttest Scores
Meditation			
Mean	54.1	53.1	-1.0
Standard Deviation	7.9	7.8	
Range	41-68	36-64	
Control			
Mean	55.8	53.8	-2.0
Standard Deviation	8.9	10.8	
Range	44-69	31-68	

Table 10

Distribution of SDS Scores of the Original Sample
According to Zung's Clinical Classification

SDS Index Score	Equivalent Clinical Global Impression	Number of Subjects
Below 50	Within normal range	6
50-59	Presence of minimal to mild depression	11
60-69	Presence of moderate to marked depression	10
70 and over	Presence of severe to most extremely depressed	1

scores were in the range labeled "presence of moderate to marked depression." One subject who did not complete the study had a pretest depression score in the highest category, "presence of severe to most extremely depressed."

Interrelationships Among the Major Variables

A final purpose of the study was to examine the interrelationships among anxiety, depression, perceived severity of illness, age and educational level. Accordingly, Pearsonian correlations were calculated using the pretest scores and demographic data from the original sample of 28 subjects. The results are presented in Table 11. A significant correlation was found between state and trait anxiety ($r=.753$, two-tailed test, $p<.01$). Depression was found to correlate significantly with both state anxiety ($r=.519$, two-tailed test, $p<.01$) and trait anxiety ($r=.522$, two-tailed test, $p<.05$). No significant relationships were found between depression or anxiety and the variables of age or education.

Scores on the perceived severity of illness measure had a possible range of from 0 to 100. The mean score of the original sample on this measure was 67.1. As shown in Table 11, perceived severity of illness was not significantly related to anxiety, depression, age or educational level.

Table 11

Pretest Intercorrelations Among the Major Variables (N=28)

	A-Trait	SDS	Perceived Severity of Illness	Age	Education
A-State	.753**	.519**	.080	-.120	-.229
A-Trait		.522*	.214	-.079	.009
SDS			.303	.156	-.365
Perceived Severity of Illness				.185	-.088

*p<.05.

**p<.01.

        Table 12 shows the findings on the perceived severity

of illness measure before and after the experimental period.

Subjects in the meditation group had a pretest mean of 67.5

which decreased to 58.8 on the posttest for a difference

of -8.7. The control subjects had an even larger decrease,

(63.8 to 54.5), for a difference of -9.3. Some of this

difference in the control group scores, however, appears to

be due to the very low (5) posttest score of one subject.

When that score is excluded, the mean becomes 57.4 and the

difference -6.4.

Table 12

Subjects Perceived Severity of Illness
Before and After the Experimental Period

Condition	Pretest (N=11)	Posttest (N=11)	Difference Between Pretest and Post-test Scores
Meditation			
Mean	67.5	58.8	-8.7
Standard Deviation	21.8	19.7	
Range	26-93	26-86	
Control			
Mean	63.8	54.5	-9.3
Standard Deviation	16.4	19.1	
Range	26-80	5-73	

CHAPTER IV

DISCUSSION

Attrition of the Sample

The size of the sample was dictated, in part, by
the time limitations of the investigator, and the difficulty
in obtaining subjects who met all the criteria. Five
months were needed to secure 28 volunteers. The require-
ments for inclusion in the study were rather narrow, and
the medical criteria proved particularly hard to meet.
Other studies (Agle et al., 1973; Kimbel et al., 1971)
have encountered similar selection problems. In the present
investigation, a no-treatment control group would have been
included had sufficient subjects been available.

Several points should be noted in regard to the
representativeness of the final sample. First, subjects
used in this study may have been less anxious and depressed
than COPD patients who suffer from other major medical
conditions or who are experiencing acute complications.
Secondly, we have no information regarding the psychological
characteristics of the five patients who declined to volunteer.
Finally, those subjects who failed to complete the study

did appear to be generally older and have a lower socio-
economic status. In addition, the non-completers showed
higher mean scores on anxiety, depression and perceived
severity of illness.

Demographic variables and perceived severity of
illness did not prove to be related to anxiety or depression
in the present study. Although slightly higher, the anxiety
and depression scores of the noncompleters were not signi-
ficantly different than those of the final sample. There
is no reason to conclude, therefore, that the sample attri-
tion caused spurious results. We may assume that the sample
is representative of the defined population, COPD patients
with no major medical or psychiatric conditions.

Relaxation Achievement

After practicing regularly for a month, neither group
of subjects reported attaining a high level of relaxation.
The mean relaxation rating of the meditation group (50.0) falls
between "slightly tense" and "slightly relaxed" on the line
provided. The mean score for the control subjects was
somewhat higher (62.5) than the score for the experimental
group, but this was still not even in the "moderately
relaxed" portion of the line.

The finding of greater reported relaxation levels among
subjects in the control condition could be due to several

factors besides the differential effectiveness of the two methods. First, on the average, control group subjects spent more time in each session. The greater time spent could be explained by the fact that some of the methods chosen by the control subjects have inherent time periods, TV programs, for example. It is also likely that some control subjects may have continued some relaxation activities, such as reading, until they felt relaxed.

Within each group, meditation and control, each individual tended to spend a consistent length of time in each session. The level of relaxation reported by each individual at each session, however, varied considerably. In short, achievement of relaxation was not found to be related to the length of time spent.

A second possible explanation for the higher reported relaxation level among control subjects is that they might have differed initially from the subjects in the meditation condition. Inspection of the findings reveals the control subjects did have a higher mean pretest A-State score and a lower mean pretest perceived severity of illness score than the experimental subjects. Neither difference was significant, however, and the two groups were similar with respect to the other variables measured such as A-Trait.

One limitation of the present study was the failure to obtain relaxation ratings from subjects immediately prior to the start of each session. In the absence of such ratings

it is impossible to determine the degree of change in relaxation level subjects experienced during each session. The rather low average post session relaxation rating of the sample could represent an increase, decrease or no change from the non-reported average level of relaxation the subjects felt at the beginning of the sessions.

Anxiety and Depression

The prediction that subjects who practiced the Benson meditation technique would have significantly lower anxiety and depression scores at the end of a month was not borne out. The following post hoc explanations are offered for these findings.

First, the experimental period may have been too short. There are different opinions in the literature on this point, but the most significant changes have been reported after subjects have been meditating for longer periods of time--from six weeks up to several years in some studies (Bloomfield et al., 1975; Smith, 1976). The results for the meditation group in the present study might have been different if the experimental period had been longer. It is less likely, however, that a longer period would have produced different results for the control subjects since they had used similar methods, though perhaps with less frequency, before the study began.

It is also possible that personality variables affected the outcome of the study. To our knowledge no systematic studies have been done to determine what personality variables are correlated with the successful use of the Benson technique. Nevertheless, there is evidence that personality traits do have importance with some other relaxation techniques (Stoudenmire, 1972; Wood, 1975). It is also important to note that most studies with meditation have been carried out with college student samples. Subjects in this study obviously differ from a college population with regard to age, sex, socio-economic status, education and health.

The results of the present study are in accord with those of an investigation reported after the present one was begun. In a carefully controlled study, Smith (1976) found that "TM is no more effective in reducing trait anxiety than a parallel control treatment consisting of sitting without meditation. A treatment using a TM-like exercise is no more effective than a parallel control treatment using an exercise designed to be the near antithesis of meditation" (p. 635). Smith speculates that expectation of relief contributed to the effectiveness of all his treatment groups.

Recent work by Davidson and Schwartz (1976) provides another perspective for interpreting the results of the

present study. These authors theorize that there are two general types of anxiety, cognitive and somatic. They cite considerable evidence to show that relaxation methods which affect primarily somatic processes will be most effective in the reduction of somatic anxiety, and the same is true with regard to cognitive methods and cognitive anxiety. In addition, they hypothesize that if a mode specific technique is employed and is effective in that mode, it will also influence other modes, but to a lesser degree.

Davidson and Schwartz conclude that meditation is most useful for subjects experiencing both low cognitive and low somatic anxiety. They state, "due to the relative passivity of most meditation procedures, distracting cognitive and somatic anxiety must first be reduced through the utilization of more active mode specific techniques" (p. 203). If this assertion is true, then the failure to obtain significant results in the present study might have been due to a high level of somatic anxiety among the subjects.

Another limitation of the study was the lack of an objective measure of the severity of illness. It is known, for example, that hypoxemia can produce psychological symptoms, including anxiety and depression (Krop et al., 1973). Meditation may not affect hypoxemia and therefore could not be expected to decrease anxiety and depression

levels in subjects with this type of impairment.

Intercorrelations Among the Major Variables

Three significant relationships were found when the intercorrelations among the major variables in the original sample were examined. State and trait anxiety were shown to be directly related on both the pretest and posttest. Spielberger et al. (1970) report that correlations between the two scales tend to be higher when they are given under conditions which pose some threat to self-esteem, when the subjects are males, and when the scales are given, one immediately after the other, in the same testing session. While subjects' perceptions of the threat to self-esteem posed by testing conditions were not measured in the present study, the other two situations did occur which may explain the finding.

Both state and trait anxiety were found to correlate significantly with depression. Although depression and anxiety are frequently mentioned in the literature as common psychological reactions of COPD patients, no studies in which correlations were made could be found.

Spielberger et al. (1970) reported a significant negative correlation between trait anxiety and educational level in a large sample (N=161) of general medical and surgical patients. Although the mean educational level

of the present sample was nearly identical, no such rela-
tionship was found. Failure to find such a relationship
in this study may reflect differences in the two sample
sizes or the fact that all subjects in the present sample
suffered from a chronic, rather than acute, condition.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chronic obstructive pulmonary disease (COPD) refers to
a group of diseases that causes progressive, permanent impair-
ment of lung function. Included in this category are
patients with emphysema, chronic bronchitis and asthmatic
bronchitis who have chronic airway obstruction. COPD is a
major public health problem in the United States. It is the
second leading cause of permanent and total disability among
males and mortality rates from COPD have increased dramatically
in recent years.

Breathlessness on exertion, chronic cough and progressive
disability are the common clinical characteristics of COPD.
As the disease progresses, cardiopulmonary abnormalities
develop. Treatment is mainly palliative. Psychologically,
COPD patients often show denial in the form of rationalization
of symptoms and continued smoking. In the later stages of
the disease process abnormal levels of anxiety, depression
and hypochondriasis are frequently noted.

Meditation as a form of relaxation has been shown to
produce significant hypometabolic changes in some subjects.

Studies have also found long-term meditation associated with reduced trait anxiety, increased attentive ability, reduced cigarette and alcohol use, and increased ability to habituate to a laboratory stressor. Meditation has been taught to psychiatric patients with a wide variety of diagnoses, and its use has reportedly resulted in decrements of psycho-pathology, particularly anxiety and depression.

The Benson meditation technique has four essential components, namely, a mental device, a passive attitude, decreased muscle tonus, and a quiet environment. The Benson technique was chosen for this study because it appeared to have the following advantages: (1) it has proven effective-ness with some subjects, (2) it is suitable for home use, (3) it can be taught in a reasonably short period of time, and (4) it does not require physical exertion.

The hypothesis tested in this investigation was that COPD patients who practiced the Benson meditation technique for one month would show significant decreases in anxiety and depression when compared to a group of patients who attempted to relax but were not taught a specific technique.

The design of the study was experimental, with a pretest, posttest, and control group. Subjects were volunteers from two respiratory outpatient clinics, and were assigned alternately to either the meditation or control group. All data gathering was done by the experimenter during two home

visits. Anxiety was measured with the Spielberger (1970)

State-Trait Anxiety Inventory, and depression with the Zung

(1965) Self-Rating Depression Scale. Demographic data,

information on smoking habits, and perceived severity of illness

ratings were obtained by means of a Patient Data Sheet

constructed by the experimenter.

On the first home visit, after being pretested, subjects

in the experimental group were taught the Benson technique,

and subjects in the control group were simply instructed to

relax any way they wished twice a day. All subjects were

given a diary to record and rate each relaxation session.

On the second home visit, one month later, all subjects were

posttested and their diaries were collected.

The results showed that subjects in both groups had

small mean decreases in depression and trait anxiety at the

end of the experimental period. The mean state anxiety scores

were slightly higher for the meditation group and slightly

lower for the control subjects. None of the differences

for either group was significant, so the prediction that use

of the Benson technique would significantly decrease anxiety

and depression with a sample of COPD patients was not confirmed.

Several findings of a descriptive nature emerged from

this study. First, subjects in the meditation group apparently

learned the method easily, but those subjects who did use the

technique regularly did not report experiencing high levels

of relaxation. Second, it was impossible to determine the value of the technique with regard to smoking behavior since, unexpectedly, very few of the subjects were smokers at the time the study commenced. Third, about three-fourths of the total original sample showed depression levels above normal. Fourth, significant positive correlations were found between depression and anxiety, and between state and trait anxiety. Finally, perceived severity of illness was not related to anxiety, depression or relaxation achievement.

The results of this study are not conclusive. They suggest, however, that the Benson meditation technique is no more effective than self-chosen relaxation methods for decreasing anxiety and depression, or for producing a subjective feeling of relaxation among COPD patients. Any or all of the following might have yielded more con- clusive results: a larger sample, a longer experimental period, a no-treatment control group, pre-session relaxation rating, and an objective measure of severity of illness.

In conclusion, the following recommendations for future research are suggested. First, more information regarding the psychological aspects of COPD is needed. Another study might explore the determinants of anxiety and depression since there is evidence to suggest that they may not be related to severity of illness, age, educational level or marital status. More knowledge is

also needed as to the types (e.g. somatic and cognitive) of anxiety experienced by COPD patients.

Future nursing research with COPD patients might use different relaxation methods and/or different settings. For example, different results might occur if relaxation is taught to patients while they are hospitalized. A hospital setting would also permit a study of the physiological effects of relaxation on COPD patients.

Benson (1975, p. 115) states, "regardless of the subjective feelings described by our subjects, we have found that the physiologic changes such as decreased oxygen consumption are taking place." A study to determine whether or not this finding holds true for COPD patients would be valuable. If meditation proves useful from a physiological standpoint, it might well become a nursing intervention in the rehabilitation of COPD patients.

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APPENDICES

APPENDIX A

Self-Evaluation Questionnaire
(A-State Scale)

SELF-EVALUATION QUESTIONNAIRE

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME .... DATE ....

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle 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 am regretful	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 rested	①	②	③	④
9. I feel anxious	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 "high strung"	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 over-excited and "rattled"	①	②	③	④
19. I feel joyful	①	②	③	④
20. I feel pleasant	①	②	③	④

APPENDIX B

Self-Evaluation Questionnaire
(A-Trait Scale)

SELF-EVALUATION QUESTIONNAIRE
STAI FORM X-2

NAME _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle 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 tire quickly	①	②	③	④
23. I feel like crying	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I am losing out on things because I can't make up my mind soon enough	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 am inclined to take things hard	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I try to avoid facing a crisis or difficulty	①	②	③	④
35. I feel blue	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 and interests	①	②	③	④

APPENDIX C

Self-Rating Depression Scale

Name _____

Age _____ Sex _____ Date _____

	None or a Little of the Time	Some of the Time	Good Part of the Time	Most or all of the Time
1. I feel down-hearted, blue and sad				
2. Morning is when I feel the best				
3. I have crying spells or feel like it				
4. I have trouble sleeping through the night				
5. I eat as much as I used to				
6. I enjoy looking at, talking to and being with attractive women/men				
7. I notice that I am losing weight				
8. I have trouble with constipation				
9. My heart beats faster than usual				
10. I get tired for no reason				
11. My mind is as clear as it used to be				
12. I find it easy to do the things I used to				
13. I am restless and can't keep still				
14. I feel hopeful about the future				
15. I am more irritable than usual				
16. I find it easy to make decisions				
17. I feel that I am useful and needed				
18. My life is pretty full				
19. I feel that others would be better off if I were dead				
20. I still enjoy the things I used to do				

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APPENDIX D

Patient Data Sheet

Form A

\# _____

Patient Data Sheet
Form A

AGE _____

DO YOU PRESENTLY SMOKE CIGARETTES?   ( ) YES   ( ) NO
IF NO, HAVE YOU EVER SMOKED CIGARETTES IN THE PAST?   ( ) YES   ( ) NO

IF YOU SMOKE NOW, ABOUT HOW MANY CIGARETTES DO YOU SMOKE
A DAY? _____

PLEASE PLACE AN "X" AT THE POINT ON THE LINE BELOW WHICH YOU
THINK BEST DESCRIBES THE STAGE OF YOUR ILLNESS NOW.

0	25	50	75	100
Normal	Mild	Moderate	Severe	Very Severe

APPENDIX E

Patient Data Sheet

Form B

\# _____

Patient Data Sheet
Form B

IF YOU SMOKE CIGARETTES, ABOUT HOW MANY DO YOU SMOKE A DAY? _____

HAVE YOU NOTICED ANY CHANGE IN YOUR SMOKING HABITS DURING THE PAST MONTH? ( ) YES ( ) NO

IF YES, PLEASE DESCRIBE: _____

_____

PLEASE PLACE AN "X" AT THE POINT ON THE LINE BELOW WHICH YOU THINK BEST DESCRIBES THE STAGE OF YOUR ILLNESS NOW.

0	25	50	75	100
Normal	Mild	Moderate	Severe	Very Severe

APPENDIX F

Diary Page

DIARY

DAY : DATE:_____

_____

AM: BEGIN:_____   STOP:_____

EXTREMELY   MODERATELY   SLIGHTLY   SLIGHTLY   MODERATELY   ASLEEP
TENSE OR   TENSE   TENSE   RELAXED   RELAXED
UPSET

_____
 0   5   10

COMMENTS:_____

_____

HAVE YOU HAD ANY IMPORTANT PHYSICAL OR EMOTIONAL CHANGES (EITHER
GOOD OR BAD) SINCE THE LAST RELAXATION SESSION?   YES___ NO___
IF YES, BRIEFLY DESCRIBE:

_____

PM: BEGIN:_____   STOP:_____

EXTREMELY   MODERATELY   SLIGHTLY   SLIGHTLY   MODERATELY   ASLEEP
TENSE OR   TENSE   TENSE   RELAXED   RELAXED
UPSET

_____
 0   10

COMMENTS:_____

_____

HAVE YOU HAD ANY IMPORTANT PHYSICAL OR EMOTIONAL CHANGES (EITHER
GOOD OR BAD) SINCE THE LAST RELAXATION SESSION?   YES_____ NO_____
IF YES, BRIEFLY DESCRIBE:

_____

APPENDIX G

Criteria for Subjects

Criteria for Subjects

All patients having a clinical diagnosis of COPD, emphysema,
chronic bronchitis or asthmatic bronchitis who are currently
outpatients and who have had no prior relaxation training
will be considered eligible except for the following:

(1)   patients who have any other significant medical
      or psychiatric disorder

(2)   patients in an acute or clinically unstable phase
      of illness

(3)   patients who reside outside of the greater metro-
      politan area in which the clinics are located

APPENDIX H

Consent for Human Research Project

CONSENT FOR HUMAN RESEARCH PROJECT

I _____

   (First name)   (Middle initial)   (Last name)

herewith agree to serve as a subject in the investigation

named Use of Relaxation Technique in The Rehabilitation of

Patients With Chronic Obstructive Pulmonary Disease, con-

ducted by Ann Hadley under the supervision of Julia Brown,

PhD. The research aims to determine the usefulness of a

relaxation technique for patients with chronic bronchitis,

asthmatic bronchitis and emphysema.

    I understand that my participation will involve:

1.   Accepting a home visit from Ann Hadley to receive
    relaxation and record keeping instructions,
    and to answer some paper and pencil test questions
    which relate to feelings and mood. This visit
    will take about one hour.

2.   Practicing relaxation for 10 to 20 minutes
    twice a day for one month and keeping a
    record of each session.

3.   Receiving a second home visit to be retested
    with the paper and pencil tests. This will
    take about 15 minutes.

    All information that I give will be handled confi-

dentially. My anonymity will be maintained on all documents,

which will be identified by means of code numbers.

    My participation does not involve any known risks.

I may not receive any direct benefit from participating

in this project, but understand my contribution will help

expand the degree of knowledge in regard to the rehabilitation

of persons who have chronic obstructive pulmonary disease.

I understand I am free to refuse to participate or to withdraw from participation in this study at any time and it will in no way affect my relationship with, or treatment at the Veterans Administration Hospital, Portland/University of Oregon Health Sciences Center.

Ann Hadley has offered to answer any questions I might have about the tasks required of me in this study.

I have read the preceding explanation and agree to participate as a patient in the study described.

Signature _____

Witness _____

Date _____

Time _____

APPENDIX I

Diary Instructions

DIARY INSTRUCTIONS

A. IT IS VERY IMPORTANT THAT YOU TRY TO RELAX TWO TIMES
    A DAY EVERYDAY FOR 4 WEEKS.

B. ANN HADLEY WILL TELEPHONE YOU EACH WEEK TO DISCUSS HOW
    YOU ARE GETTING ALONG AND TO ANSWER ANY QUESTIONS.

C. IT IS ALSO IMPORTANT TO KEEP ACCURATE RECORDS IN THE
    DIARY. EACH TIME YOU ARE READY TO BEGIN A RELAXATION
    SESSION PLEASE FOLLOW THESE STEPS:

    1. LOCATE THE CORRECT DATE AND TIME OF DAY (AM OR PM).

    2. WRITE DOWN THE TIME NEXT TO "BEGIN."

    3. RELAX FOR 10 TO 20 MINUTES.

    4. WRITE DOWN THE TIME NEXT TO "STOP."

    5. REFLECT FOR A MOMENT AS TO HOW MUCH RELAXATION
        YOU ACHIEVED DURING THE SESSION, AND THEN PUT AN
        "X" AT THE POINT ON THE "RELAXATION LINE" WHICH
        COMES CLOSEST TO DESCRIBING YOUR FEELING.

    6. IN THE "COMMENTS" SECTION BRIEFLY GIVE YOUR REASON
        FOR RATING THE SESSION AS YOU DID. IF FOR SOME
        REASON YOU HAVE TO MISS A SESSION, USE THIS SPACE
        TO WRITE "NO SESSION" AND A BRIEF EXPLANATION.

    7. LASTLY, ANSWER THE QUESTION REGARDING PHYSICAL AND
        EMOTIONAL CHANGES. SUCH THINGS AS PHYSICAL IMPROVE-
        MENT OR ILLNESS, UNEXPECTED FINANCIAL GAINS OR
        LOSSES, CHANGES IN FAMILY RELATIONSHIPS, IMPORTANT
        OCCASIONS SUCH AS ANNIVERSARIES ETC. SHOULD BE
        MENTIONED HERE.

APPENDIX J

The Benson Relaxation Technique

THE BENSON RELAXATION TECHNIQUE
(from Benson, 1975, p. 114)

(1) Sit quietly in a comfortable position.

(2) Close your eyes.

(3) Deeply relax all your muscles, beginning at your feet
and progressing up to your face. Keep them relaxed.

(4) Breathe through your nose. Become aware of your
breathing. As you breathe out, say the word, "ONE,"
silently to yourself. For example, breathe IN... OUT,
"ONE"; IN...OUT, "ONE"; etc. Breathe easily and
naturally.

(5) Continue for 10 to 20 minutes. You may open your
eyes to check the time, but do not use an alarm.
When you finish, sit quietly for several minutes,
at first with your eyes closed and later with your
eyes opened. Do not stand up for a few minutes.

(6) Do not worry about whether you are successful in
achieving a deep level of relaxation. Maintain a
passive attitude and permit relaxation to occur at
its own pace. When distracting thoughts occur, try
to ignore them by not dwelling upon them and return
to repeating "ONE." With practice, the response
should come with little effort. Practice the tech-
nique once or twice daily, but not within two hours
after any meal, since the digestive processes seem
to interfere with the elicitation of the Relaxation
Response.

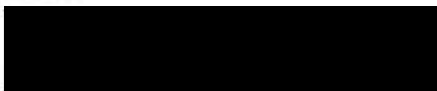AN ABSTRACT OF THE CLINICAL INVESTIGATION OF

ANN C. HADLEY

For the: MASTER OF NURSING

Date of receiving this degree: June 11, 1977

Title: USE OF A RELAXATION TECHNIQUE IN THE REHABILITATION
OF PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY
DISEASE

Approved: ████████████████████████ _____
                                        Adviser

The purpose of this experimental study was to determine
if the use of a simple meditation technique was more effective
than self-chosen relaxation methods in reducing anxiety
and depression with chronic obstructive disease patients.
Determination of the effect of relaxation on smoking behavior
was a further purpose.

Twenty-two COPD outpatients from two institutions
were assigned alternately to either the meditation or the
control group. All data were gathered by the investigator
in subjects' homes at the beginning of the experimental
period and again one month later. Subjects in the meditation
group were taught the Benson meditation technique (1975).
Subjects in the control group were asked to relax for the
same length of time as subjects in the other group. However,
they could use whatever methods they wished.

Anxiety was measured by Spielberger's State-Trait

Anxiety Inventory (1971), and depression by Zung's
Self-Rating Depression Scale (1965). A Patient Data
Sheet was constructed to obtain demographic data, information
on smoking habits, and the subject's perceived severity
of illness. In addition, all subjects rated the level of
relaxation achieved in each session they attempted.

The hypothesis that the use of the Benson meditation
technique for one month would significantly decrease anxiety
and depression with COPD patients was not confirmed. No
conclusions regarding the effects of relaxation on smoking
habits could be reached due to the small number of smokers
in the sample.