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*Patients with Chronic Obstructive Pulmonary Disease Increase Their Strategies
for Coping with Dyspnea After a Treadmill Exercise Program*

by

Marianne Kwiatkowski

THESIS

Submitted in partial satisfaction of the requirements for the degree of



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Preface

I would like to acknowledge my committee member for their guidance and support, Virginia Carrieri-Kohlman, Susan Janson, and Jenny Gormely.

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Problem-Focused Coping Strategies for Preventing and Managing Dyspnea for Monitored and Coached Exercise Groups at Baseline (T1), after 12 sessions of exercise (T2), and after 8 weeks of home walking for Monitored Exercises (ME) and Coached Exercise (CE) groups. Problem-focused strategies out of a total of 17. A significant difference was found between T1 and T2 by post-hoc Scheffe $\emptyset p < 0.05$.

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Figure 4

Mixed Coping Strategies for Preventing and Managing Dyspnea for Monitored and Coached Exercise Groups at Baseline (T1), after 12 sessions of exercise (T2), and after 8 weeks of home walking for Monitored Exercises (ME) and Coached Exercise (CE) groups. Mixed strategies out of a total of 5. A significant difference was found between T1 and T2 for both groups and the CE group from T1 to T2 had a statistically significant increase as compared to the ME group by a post-hoc Scheffe $\emptyset p < 0.05$.

Dyspnea or shortness of breath, is a major problem for patients with pulmonary disease (Janson-Bjerklie, Carrieri & Hudes, 1986). Comroe (1966) defined dyspnea as difficult, labored, and uncomfortable breathing. The sensation is subjective and includes the patient's perception and reaction to the phenomenon (Carrieri, Janson-Bjerklie & Jacobs, 1984). Many variables influence the phenomenon of dyspnea, including: age, sex, illness severity, lung function, and social support (Carrieri, Janson-Bjerklie & Jacobs, 1984). Dyspnea is a cardinal manifestation of chronic obstructive pulmonary disease (COPD). In the 1980's COPD ranked as the fifth leading cause of death in the United States (Higgins, 1989). The true incidence of COPD is assumed to be much higher, due to multiple causes of deaths in patients with COPD, many who do not have COPD listed on their death certificates (Sherrill, Lebowitz & Burrows, 1990).

An individual with COPD faces life within the limitations of a chronic illness on a daily basis. In order to live a satisfying life, the dyspnea sufferer must develop and utilize coping strategies continuously to overcome the limitations imposed by the disease process. Benner and Wrubel (1988) describe symptom management for the person with chronic illness as the following "...through careful symptom management a chronically ill person can achieve an adaptation to his or her illness that in some ways resembles the smooth running bodily experience of the healthy person."(p.208). The nurse, functioning as a coach, can assist the COPD patient in developing new strategies that will enable him or her to cope within the confines of the dyspnea experience. When caring for a COPD patient, goals of therapy for the nurse coach should include promoting effective coping skills. Although, several factors affect the individual's perception of dyspnea, the nurse coach can minimize the psychophysiologic impact of the disease. Benner (1984) describes one function of the nurse coach as "making culturally avoided aspects of an illness approachable and understandable" (p.89). The nurse can encourage coping strategies in adapting to the situation and promoting a sense of hope (Shekleton, 1987).

Purpose

The primary purpose of this study was to describe the number and types of coping strategies used by a sample of individuals with COPD to prevent and/or manage dyspnea before and after a 12 session exercise program. The secondary purpose was to describe differences in coping strategies a group who received coached exercise (guided mastery) over a 12 session exercise program as compared to a group who were not coached but only monitored during exercise.

Review of the Literature

Definition of Coping and Appraisal:

Lazarus and Folkman (1984) define coping as cognitive and behavioral efforts used to manage the demands that exceed or stress the resources of an individual. Stress and coping are viewed by the individual through primary and secondary appraisal (Lazarus, 1991). Lazarus describes two types of appraisal that the individual goes through during a stressful situation. In the primary appraisal the situation is evaluated and the individual assigns meaning to the event. During the secondary appraisal coping strategies and resources for coping are considered. Through the use of coping strategies the individual can actually change or modify his or her response to the situation thus affecting the impact the event imposes on the individual. For example, if climbing stairs triggers dyspnea, then pursed lip breathing can be used to decrease dyspnea while climbing the stairs. With this type of problem-focused coping the relationship between the stressor, the situation causing the stress, and the individual is altered. If the relationship between the situation causing stress and the individual can not to be changed, the perception of the situation may be altered. Coping that reduces psychological tension, is called emotion-focused coping. If emotional stress caused by a family gathering leads to dyspnea and the situation can not be avoided, the individual may use coping strategies, such as prayer or detachment, to assist in reducing dyspnea.

We asked the question whether nurse coached exercise (guided mastery) would increase patients coping strategies more than monitored only exercise.

Desensitization and Guided Mastery (Coaching):

The goal of pulmonary rehabilitation is to assist the individual to achieve the highest level of functioning possible within the limitations of the disease by including exercise, emotional support, and education in the program (American Thoracic Society, 1981). In rehabilitation sessions coping strategies for dyspnea, such as pursed lip breathing, diaphragmatic breathing, and management of medications are taught to the participants. The skills demonstrated by the nurse-teacher are practiced and reviewed by each participant with the instructor. During nurse coached exercise the individual with COPD is exposed to new coping strategies. Desensitization to dyspnea is also included in the pulmonary rehabilitation experience. During desensitization or exposure to graduated levels of a stimulus, dyspnea, the individual is exposed to the feared stimulus or situation in a safe environment (Williams et al., 1985). As the participants increase the level of exercise they experience dyspnea greater than their usual levels. The critical factor in desensitization for phobias has been found to be the time of exposure as a determinant of fear extinction and thus development of a greater sense of ability to coping (Williams et al., 1985). The process of guided mastery can be compared with pulmonary rehabilitation (Carrieri-Kohlman, Douglas, Gormley & Stulbarg 1993). When using guided mastery, the coach or therapist has an active role in giving feedback and directing the activity, which is designed to encourage a sense of personal achievement in the participant (Williams, Turner & Peer 1985). The new coping skills are tested in a safe and trusting environment. During pulmonary rehabilitation the participant is encouraged by the nurse to set realistic exercise goals. As the goals are met the nurse assists the participant to revise his or her goals and to set new goals to progress to the next level of exercise. While exercising the nurse offers support and feedback on the use of coping strategies such as pursed lip breathing.

Guided mastery like pulmonary rehabilitation enhances the participants ability to undertake new activities by focusing on performance success rather than the passage of time and exposure to the stimulus (Williams, Turner & Peer 1985). Both guided mastery and desensitization would be expected to increase the number of total coping strategies reported by the individual with COPD. While guided mastery increases coping strategies through modeling and desensitization promotes coping by exposure and fear extinction, both are currently present in pulmonary rehabilitation programs. Guided mastery should promote greater increase in coping strategies for the symptom of dyspnea as compared to the desensitization in a rehabilitation session because teaching and reinforcing coping strategies are a major component of guided mastery. Guided mastery use of modeling provides new ways of coping with dyspnea by providing instruction and continuous review. Modeling in pulmonary rehabilitation begins with demonstration by the nurse of pursed lip breathing and relaxation both at and during exercise The nurse and the patient review and practice these strategies (Carrieri-Kohlman, Douglas, Gormley & Stulbarg 1993). While desensitization relies on changes in coping due to increased exposure to dyspnea and a reduction in the fear dyspnea provokes.

Review of Literature on Coping in COPD:

In an early study on coping with severe emphysema, Fagerhaugh (1973) interviewed 22 patients with advanced emphysema. The subjects described strategies both problem and emotion focused they used to cope with the symptom of dyspnea. The author describes how patients estimate the oxygen requirements for various activities. If the activity requires more oxygen then expected the patient experiences a sense of panic. Thus a vicious cycle develops of dyspnea, anxiety and a further increase in dyspnea. As a defense mechanism the patients isolated themselves, and social situations that provoked dyspnea were avoided. The author identified money, time, energy, priority setting and mobility assistants as the fundamental aspects of determining the patient's ability to cope successfully with emphysema.

Barstow (1974) also interviewed patients with emphysema to identify their coping strategies. Although size of the sample is not stated, several important coping strategies were identified. The presence of a significant other in the home was the single most important variable in assisting coping with dyspnea, this is also similar to Fagerhaugh's findings. The author noted other important coping strategies for patients adjusting to the limitation of the disease process including simplification, pacing of activities, and withdrawal from others during periods of dyspnea. The author found the highest number of coping strategies used in the management of activities of daily living such as bathing, eating, dressing, sleeping and mobility. Although patients reported breathing strategies learned in pulmonary rehabilitation to be helpful, little change in their every day management of their illness was reported after attending rehabilitation classes.

In Chalmers' (1984) study 30 patients with mild, moderate, and severe COPD were interviewed to describe their coping strategies. The author does not include demographic information, therefore the findings are difficult to generalize. The subjects of this study used many strategies to assist them in day to day living. Three main categories of strategies were identified as cognitive, behavioral, and expressive strategies. Each category consisted of several components. Cognitive coping included normalization, pacing, planning ahead, problem solving, and emphasizing the positives. Behavioral strategies included medication management, health promoting activities, and alterations in the physical environment to reduce the triggers of dyspnea. In the expressive category the strategies used included emotions that assisted in coping with the disease and its symptoms.

Carrieri and Janson-Bjerklie (1986) interviewed 68 subjects with chronic pulmonary conditions and described the strategies for coping with dyspnea. Subjects had pulmonary disease classified as emphysema-bronchitis, asthma, restrictive lung disease, or pulmonary hypertension. A structured interview was used to identify the types of strategies used by patients with COPD to cope with their breathlessness. These reported

strategies were categorized into included both immediate coping strategies for an acute episode of dyspnea and long term adaptations for living with chronic symptoms. Problem-focused immediate strategies for an acute episode included changing position, breathing techniques, physical distancing from aggravating factors, medication adjustments, oxygen therapy, fresh air, and home remedies. Immediate emotion focused strategies included the use of self isolation, tension reduction activities such as, relaxation, prayer/meditation, and attempts to consciously relax. The subjects cited additional strategies, such as seeking social support, distraction, and diversion which were classified as mixed problem/emotion-focused coping. The long term problem-focused strategies employed by the sample included a planned change in their activities of daily living, planned activity modification, health directed behaviors, protective behaviors and self-selected treatments. The emotion-focused long term strategies included emphasizing the positive, emotional distancing by ignoring or not worrying about their breathlessness, and social self-isolation. Mixed problem and emotion focused coping for long term behaviors were similar to the immediate strategies, and in addition included formal participation in an organized support group such as the American Lung Association Better Breathers.

In the study by Carrieri and Janson-Bjerklie (1986) the sample's total number reported of strategies for dyspnea ranged from 0 to 23, with a mean of 13 per subject. The number and types of strategies used varied among the different disease groups. Patients with asthma, who were younger and maybe had greater and more frequent exposure to dyspnea, used the most strategies with avoidance of triggers being the most frequent one. For the emphysema and bronchitis subjects, the strategies described by the subjects were similar those published by Fagerhaugh (1973) and Barstow (1974). These included changes in activities of daily living and modification of activity. The subjects with emphysema and bronchitis who attended formal classes reported that, despite severe

dyspnea, they were able to employ a variety of learned strategies and actively participate in social activities and enjoy a more rewarding life.

In a study on the clinical markers of asthma severity, 95 subjects with asthma reported a number of coping strategies they used to abort an asthma episode (Janson-Bjerklie, Ferketich, Benner & Becker, 1992). The major categories included problem-focused, emotion-focused and mixed coping strategies. The coping strategies were categorized into breathing strategies, modifying activity, social support, adjusting medications and tension reduction activities. The subjects used these coping strategies in order to relieve their dyspnea and only sought treatment in an emergency room after the coping strategies failed to help reduce their dyspnea.

The strategies used by individuals with COPD to manage dyspnea are well documented in the literature. However, the effects of exercise in the presence of a nurse coach on the COPD patient's ability to cope with dyspnea are unknown. During a supervised exercise program the participant experiences dyspnea in a safe environment. Practicing with a fear producing sensation under supervision is believed to will increase the individual's perception of control of the sensation. The individual learns what strategies help them achieve success in dealing with the symptom of dyspnea. If the strategies used to manage dyspnea are combined with other newer strategies, or therapeutic modalities, a larger repertoire of strategies are available to modulate the experience with dyspnea (Carrieri & Janson-Bjerklie, 1990). If patients with COPD are given the appropriate coping strategies and incentives, they judge themselves capable of handling the situation that otherwise might be intimidating (Bandura, 1977). The nurse can open the door to the possibility of managing the disease process and can assist in finding new ways of coping (Benner, 1985). Nurses can promote and encourage the use of coping strategies to assist patients in managing the symptoms of COPD and thereby enhance their quality of life.

Design

This study is part of a secondary repeated measure randomized analysis of data obtained in a randomized clinical trial investigating the impact of nurse coached exercise on the symptom of dyspnea. The purpose of this secondary analysis was to describe the number and the types of coping strategies used by individuals with COPD to manage dyspnea before and after a 12 session exercise program. Subjects were randomized in the original study to a monitored exercise group (ME) and a coached exercise group (CE). All subjects were asked to identify the types of strategies used for preventing dyspnea as well as those used during dyspnea at three times, before (T1) and after a 4 week supervised exercise treatment program (T2) and after 2 months of home walking with weekly phone contact by a nurse (T3). The treatment variable for this analysis consisted of 12 session treadmill exercise program and the dependent variable was the number and type of coping strategies the subjects used to manage their dyspnea.

Setting

The study was performed in a large urban university medical center. The study protocol was approved by the institutional Committee on Human Research and informed consent was obtained from all participants prior to induction into the study.

Sample

Subjects with moderate to severe COPD were recruited from physicians' offices, outpatient clinics, and the American Lung Association Better Breathers Clubs. A convenience sample of 57 were enrolled in the study, seven dropped out and were lost to follow up. The final sample included of 50 subjects who were randomized to treatment groups. The sample included 23 males and 27 females with a mean age of 67 ± 8 years. The mean FEV1 for the ME group was 0.91 ± 0.24 and the CE group was 0.92 ± 0.25 . The sample reported experience dyspnea for 11.4 ± 13.8 years. Of this sample 75% attended college or graduate school.

Inclusion criteria included: history of daily activities limited by dyspnea, diagnosis of COPD, airflow limitation with FEV1 < 60% predicted and/or FEV1/FVC <50%, < 20% reversibility with inhaled bronchodilator, ability to read and speak English, and ability to provide dyspnea measurements while walking on a treadmill for at least 3 minutes. Exclusion criteria included active cardiac disease or those requiring continuous oxygen. All subjects were screened with cardiopulmonary stress testing to determine eligibility and provide baseline data. The subject completed at least 3 minutes of warm up at one mile per hour and one additional 90 second period of exercise during the initial screening. If during the stress test the subjects experienced cardiac arrhythmias or desaturation of hemoglobin below 80% for more than one minute they were excluded from participating in the study.

Instrument

The coping questionnaire developed for this study included a list of 29 coping strategies for managing dyspnea. The subjects checked boxes corresponding to strategies they used to prevent their dyspnea or decrease their dyspnea during the time of the episode. The questionnaire used in this study was derived from a descriptive study conducted by Carrieri and Janson-Bjerklie (1986) in which pulmonary patients were asked to identify strategies they use to manage their dyspnea. (Appendix)

Study Procedure

At baseline before the first exercise session, the coping questionnaire was administered (T1), after 12 exercise sessions (T2), and after eight weeks of home exercise (T3).

After completion of the questionnaire, the subjects then received individual supervised treadmill training 2-3 times per week for a total of 12 sessions. Prior to the treadmill exercise sessions subjects in the CE group viewed a videotape on relaxation and breathing strategies. The videotape demonstrated pursed-lip breathing and abdominal/diaphragmatic breathing. During the exercise session the CE group received

reinforcement by the nurse coach on breathing and relaxation strategies. The nurse provided feedback to the subjects regarding performance of the breathing strategies and the effects on heart rate and oxygen saturation.

The ME group received no instruction on strategies to cope with their dyspnea. The subjects were told that they could walk as long as they wanted up to a maximum of 30 minutes including warm-up and cool-down. If the subjects asked about improving their performance, the nurse referred them to the recommendations by the American Heart Association that exercise should be maintained for 20 minutes at 70-85% of the maximum predicted heart rate.

After the completion of the total 12 sessions of exercise (T2), the subjects entered the second phase of the exercise program, which consisted of 8 weeks of an unsupervised home walking program. All subjects were given an exercise prescription to walk at least 4 times per week for at least 20 minutes. All subjects also received weekly phone calls from the nurse to assess health status and compliance with the home walking prescription. In addition only the CE group received reinforcement on the use of breathing and relaxation strategies.

Data Analysis

Baseline demographics and pulmonary function for both groups were compared using a t-test. In order to determine the effect of the intervention of exercise over time on the reported number of coping strategies, and the effect of nurse coaching a two way analysis of variance (ANOVA) was performed with of one between subjects factors (treatment group) and one within subjects factor (time). The types of coping strategies used by gender was also analyzed using an ANOVA. A post hoc scheffe and t-test were applied to the p values. A p value of 0.05 was the accepted level of significance.

Results

A sample of 57 were enrolled in the study, six dropped or were lost to follow up and one died at home during the home walking phase. The final sample of 50 subjects included 23 males and 27 females. The ME and CE group did not differ significantly in baseline demographics, FEV1, or disease severity. No significant difference was noted in the number of subjects with prior Pulmonary Rehabilitation education or exercise experience. The mean age was 67 ± 8 years. Also the number and types of coping strategies reported by the ME group and the CE group were not significantly different at baseline.

Number of Coping Strategies for Dyspnea:

All subjects in the total sample reported an increase in the number of coping strategies used to prevent and manage their dyspnea from T1(baseline) to T2 (after 12 sessions of exercise). Out of a possible number of 58 the mean number of coping strategies were 17.0 ± 7.5 at T1 and 24.0 ± 8.3 at T2 for the total sample. The mean number of coping strategies also increased from 24.0 ± 9.2 at T2 to 26.0 ± 9.2 at T3 (during the 8 weeks of home walking), although the change from T2 to T3 was not statistically significant. The mean (\pm standard deviation) coping strategies for the total sample are shown in Table 1 and Figure 1.

Comparison of the two treatment groups revealed no statistically significant difference in coping strategies. Although not statistically significant, the CE group increased the total number of prevention and management of dyspnea coping strategies reported more than the ME group at T2. Out of a total of 58 possible strategies, the ME group reported a mean of 21.0 ± 7.0 strategies reported versus the CE group's mean of 26.6 ± 8.7 . Again at T3, both the ME and CE groups reported a slight increase in coping strategies, ME's mean 24.1 ± 9.5 and CE's mean of 27.4 ± 8.8 . However, there was no difference was noted between treatment groups for T2 and T3 in the strategies used as prevention and management of dyspnea.

Types of Coping Strategies for Dyspnea:

Problem-focused, emotion-focused, and mixed coping strategies increased in both groups from T1 to T2, and the increase in T2 was maintained at T3. The ME and CE group did not differ in the types of strategies used at T2.. The problem-focused strategies that had the greatest increase in frequency reported at T2: included pursed-lip breathing (PLB), at T1 15 subjects reported using PLB to prevent dyspnea and at T2 the number of subjects increased to 26, at T1 10 subjects reported using abdominal/diaphragmatic breathing to prevent dyspnea at T2 the number increased to 26, and at T1 28 subjects reported they avoid irritants to prevent dyspnea and by T2 42 reported they avoided irritants to prevent dyspnea. At T1 13 used fresh air to prevent dyspnea and at T2 29 reported using fresh air to prevent and at T1 16 subjects used fresh air manage dyspnea. Exercise used as a prevention strategy for dyspnea by 16 at T1 and at T2 the number increased to 26. The emotion-focused strategies used during dyspnea increased more for the CE group from T1 to T2. This trend did not reach statistical significance. The emotion-focused strategy of relaxation increased in frequency more than any other emotion-focused strategy in both the ME and CE groups. At T1 9 subjects reported the use of relaxation to prevent and manage dyspnea and at T2 23 subjects used relaxation to prevent and manage dyspnea.

In the mixed coping strategy category, the CE group had a statistically significant increase from T1 to T2 as compared to the ME group, ($p < 0.05$) for the strategies reported to prevent and manage dyspnea. Distraction and socialization had the greatest increase of all mixed coping strategies. The mean (\pm standard deviation) of the types of coping strategies for the total sample are shown in Table 2 and Figure 2.

Gender did not affect the number and type of coping strategies reported at T1, T2, and T3. The only difference noted was males increased their mixed strategies to prevent dyspnea more than females from T1 to T2.

Discussion

The most important finding of this study was that subjects who completed a 12 session exercise program with only monitoring by a nurse increased their coping strategies for both preventing and managing dyspnea. As expected those who were taught coping strategies and were coached by a nurse also increased the number of strategies reported. This increase in coping strategies was maintained during two months of home walking. The nurse coached group did have a slightly greater increase in the total coping strategies reported than the monitored exercise group. These subjects exercised with a nurse present in a safe environment for 12 treadmill sessions. In addition the coached group received teaching and reinforcement of coping skills.

Subjects exercised and experienced dyspnea under constant supervision from the nurse and desensitization to dyspnea may have occurred. Exercise desensitization is defined as the use of exercise to expose a person to gradual levels of dyspnea over time in a safe environment (Carrieri-Kohlman, et al., 1993). Conversations with the nurse and observations of others patients using the physical therapy department provided for both groups a distraction while they exercised. In self directed mastery the individual is exposed to a stressful situation and an opportunity is presented to test out coping strategies (Bandura, 1977). The experience may have provided an opportunity to work with new coping strategies and the success in coping with their dyspnea during exercise reinforced their expectations of increased control over their dyspnea. Self directed mastery also may explain why the coping strategies learned during exercise were retained during the home walking phase. The subjects may have believed they had the ability to cope with their dyspnea while exercising and the continued success of the coping strategies reinforced their expectations of their ability to exercise.

The subjects were able to use the coping strategies they reported at baseline during the exercise session and may have tried new coping strategies in this safe environment. The success they achieved may have increased their mastery expectations (Bandura, 1977).

Mastery expectation is the belief in one self to accomplish an activity assessed within the capacity of the individual's coping strategies. Patients with COPD, who also experience dyspnea may have avoided exercise in the past because they viewed themselves as incapable of exercising and also may have believed they did not possess coping strategies necessary to handle this stress provoking situation. Exercising with a nurse present may have increase their belief that they were capable of achieving their goals, their coping strategies at baseline were reinforced, and they felt safe to try new ones. As reported elsewhere, their self-efficacy or confidence for walking on the treadmill did increase (Gormely, Carrieri-Kohlman, Douglas, & Stulbarg, 1993).

The nurse coached group's increase in additional coping strategies may have been due to the teaching and modeling that occurred during guided mastery. Modeling of coping strategies for dyspnea occurred with the use of the videotapes and also through reinforcement from the nurse. The nurse also provided distraction with use of visual imagery. Using guided mastery techniques the nurse coach took an active role in giving the patient direct assistance and behavioral guidance while they walked on the treadmill (Williams et al., 1985). Through the reinforcement and encouragement from the nurse, the subjects may have increased their confidence in their ability to cope successfully with what had overwhelmed them in the past (Bandura, 1977). The nurse coached group increased their mixed coping strategies more than the monitored exercise group. Their increased use of visual imagery may account for their report of increased use of distraction as a coping strategy.

The questionnaire developed for this study is specific for the COPD population. The Ways of Coping Checklist by Folkman and Lazarus (1980) is an effective tool for measuring coping strategies used in stressful situation, however, this tool does not uncover the specific strategies employed by a patient with COPD to cope with the symptom dyspnea. For this reason the authors chose not to use the Ways of Coping

Checklist and use the more specific tool for the COPD population, Strategies for Prevention and Management of Dyspnea Questionnaire.

The questionnaire used has the limitation of forced choice answers for the subjects. The questions allowed only a yes or no response. It is unknown if the reported increases in coping strategies are a result of taking the test three times or in fact due to practicing with the symptom of dyspnea during exercise. Through the repetitive testing the subjects may have been introduced to new strategies within the context of the questionnaire and teaching strategies through suggestion. At the end of the questionnaire a space was provided for subjects to add other strategies they used that were not included in the forced-choice list. Several subjects wrote reading and having others help with chores as strategies reported to prevent or to manage dyspnea. These need to be included in an expanded instrument.

The overall coping strategies for prevention and management of dyspnea reported by the sample increased after an 12 session exercise program. The patients in this study did experience an improvement in dyspnea with exercise and activities of daily living (Stulbarg, Carrieri-Kohlman & Gormley, 1993). Exercise programs that focus on guided mastery or desensitization do increase the overall coping strategies reported by the participants. Individuals have more coping strategies to use for managing shortness of breath or to use when presented with a dyspnea provoking situation.

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Appendix

Problem-focused Coping Strategies:

Decrease activity
Change position
Stop doing whatever I am doing
Keep still
Move slowly
Pursed lip breathing
Abdominal/diaphragmatic breathing
Avoid irritants/things that increase my shortness of breath, such as smoke
Fresh air (without pollution)
Use fans
Use oxygen
Take medication: bronchodilators
Take medication: prednisone
Exercise, such as walking
Avoid exercise
Use transportation rather than walking
Use home remedies

Emotion-Focused Coping Strategies

Forget it, I try not to think about it
Use relaxation techniques
Prayer
Leisure activities by myself
Be alone, by myself
Be quiet
Try to avoid getting upset or angry

Mixed Coping Strategies

Plan activities in advance
Distraction, such as watching TV/movies
Socialize & participate in leisure activities with others
Reassurance/support from others
Rely on others to help me with routine activities of the day, such as dressing

Strategies for Prevention and Management of Dyspnea Questionnaire:

What kinds of things do you do to decrease or relieve your "shortness of breath"? (Circle ALL that apply; then check (/ the column that best describes WHEN you do them.)

	I do this to <u>PREVENT</u> shortness of breath	I do this <u>WHEN I AM</u> short of breath	<u>BOTH</u>
1	Change position		
2	Stop doing whatever I am doing		
3	Keep still		
4	Move slowly		
5	Decrease activity		
6	Pursed lip breathing		
7	Abdominal/diaphragmatic breathing		
8	Avoid irritants/things that increase my shortness of breath, such as smoke		
9	Forget it, I try not to think about it		
10	Fresh air (without pollution)		
11	Use fans		
12	Use oxygen		
13	Take medication: bronchodilators		
14	Take medication: Prednisone		
15	Exercise, such as walking		
16	Avoid exercise		
17	Use transportation rather than walking		
18	Plan activities in advance		
19	Use home remedies such as:		
20	Use relaxation techniques		
21	Distraction, such as watching TV/movies		

Strategies for Prevention and Management of Dyspnea Questionnaire:

	I do this to <u>PREVENT</u> shortness of breath	I do this <u>WHEN I AM</u> short of breath	BOTH
22	Prayer		
23	Socialize & participate in leisure activities with others		
24	Leisure activities by myself		
25	Reassurance/support from others		
26	Be alone, by myself		
27	Be quiet		
28	Try to avoid getting upset or angry		
29	Rely on others to help me with the routine activities of the day, such as dressing		
30	Other, please name:		
31	Other, please name:		
32	Other, please name:		

What kinds of things do you do to relax, such as relaxation techniques or hobbies? (In the first column, list the kinds of activities you do to relax; then write how often you do them in the second column.)

<u>Type of Activity</u>	<u>Frequency (times/wk.)</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Table 1

Change in Dyspnea Coping Strategies - Mean Values

Dyspnea Coping Strategies	Monitored Exercise (ME)			Coached Exercise (CE)			ME vs. CE P	
	T1	T2	T3	T1	T2	T3		P
Preventative*	6.6±4.8	9.8±4.9	10.8±5.9	7.6±5.1	13.2±5.1	12.5±5.9	<0.05‡	NS
Management*	9.4±4.0	12.0±4.9	13.3±4.3	10.9±4.5	14.4±4.9	14.8±5.0	<0.05‡	NS
Combined Prevention and Management†	15.8±7.0	21.0±7.0	24.1±9.5	18.2±8.0	26.6±8.7	27.4±8.8	<0.05‡	NS

Note: All values are means ± standard deviation. *are out of a total of 29. † are out of a total of 58.

‡ significant difference was found between T1 and T2 by post-hoc Scheffe for both groups. p < 0.05.

Table 2

Types of Coping Strategies - Mean Values

Dyspnea Coping Strategies	Monitored Exercise (ME)			Coached Exercise (CE)			P	ME vs . CE P
	T1	T2	T3	T1	T2	T3		
Problem-Focused: *								
Preventative	4.5±3.2	7.3±4.1	7.7±3.7	5.1±3.3	8.4±3.6	9.3±3.8	< 0.05¶	NS
Management	6.7±2.1	9.0±2.6	9.7±2.0	7.1±2.4	9.4±2.9	10.0±2.5	< 0.05¶	NS
Emotion-Focused: †								
Preventative	1.3±1.4	1.8±1.3	2.5±1.9	1.5±1.6	2.8±1.5	2.5±1.7	< 0.05¶	NS
Management	1.6±1.6	1.7±1.6	2.2±1.6	1.9±1.5	2.9±1.6	2.7±1.8	< 0.05¶	NS
Mixed: ‡								
Preventative	0.7±1.0	0.9±1.3	1.5±1.4	0.9±0.9	2.7±1.3	2.0±1.2	< 0.05¶	< 0.05
Management	0.5±0.8	0.8±1.2	0.9±1.0	1.0±0.9	1.7±1.2	1.5±1.2	< 0.05¶	< 0.05

Note: All values are means ± standard deviation. *are out of a total of 17. † are out of a total of 7. ‡ are out of a total of 4.
¶ significant difference was found between T1 and T2 by post-hoc Scheffe for both groups. p < 0.05.

Dyspnea Coping Strategies for Prevention and Management of Dyspnea for Total Sample

Figure 1

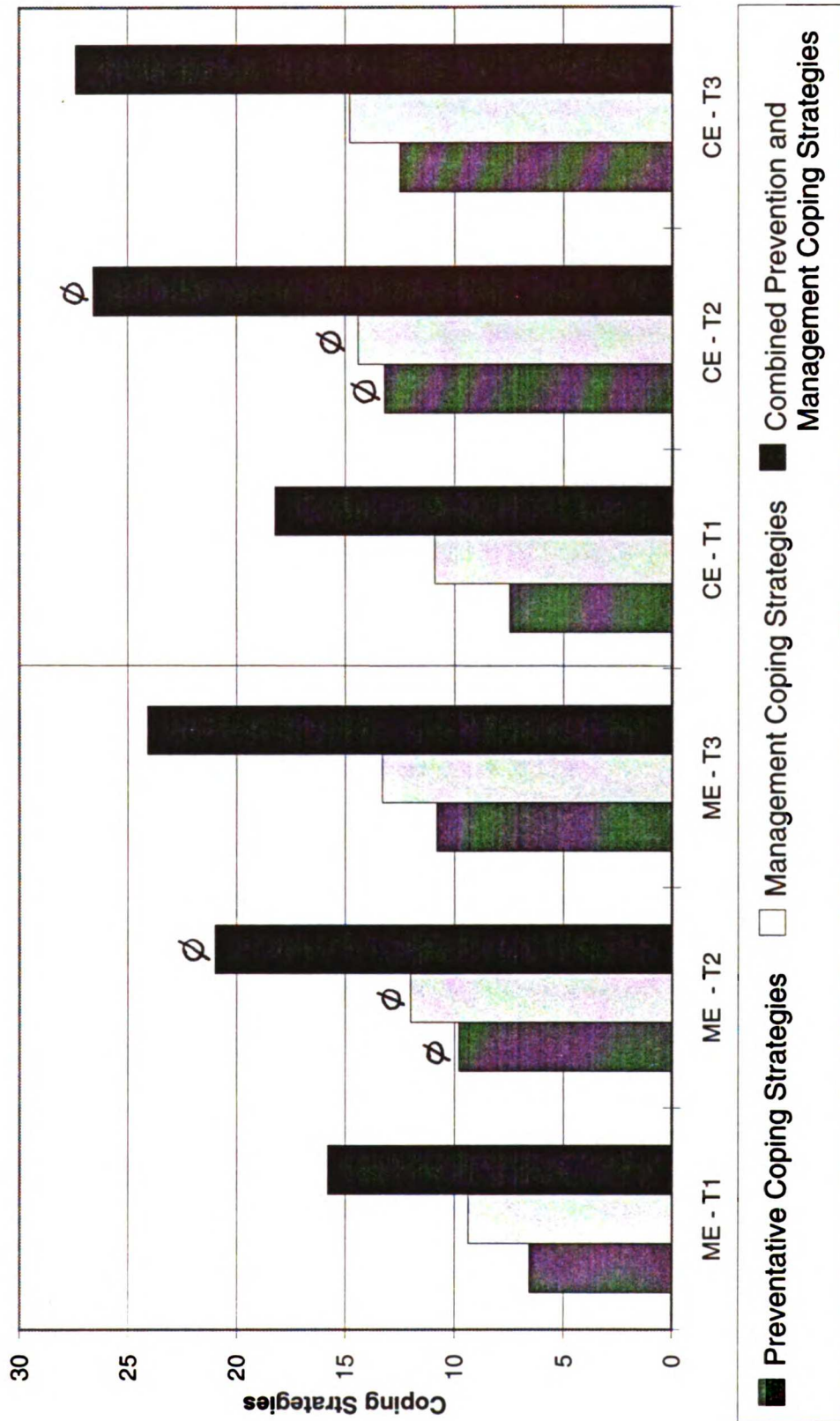
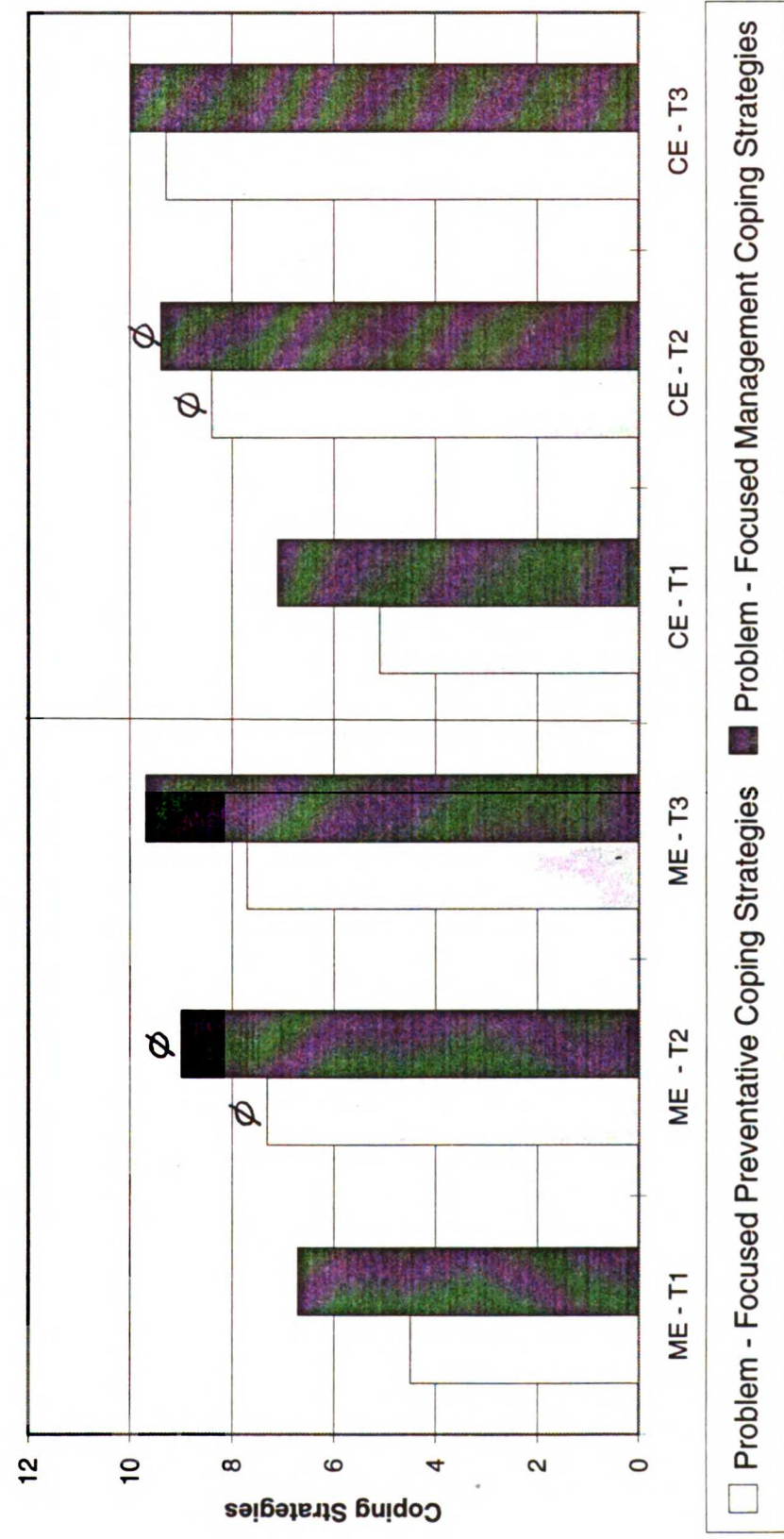


Figure 2

Problem-Focused Coping Strategies for Preventing and Managing Dyspnea for Monitored and Coached Exercise Groups



□ Problem - Focused Preventative Coping Strategies ■ Problem - Focused Management Coping Strategies

Figure 3

Emotion-Focused Coping Strategies for Preventing and Managing Dyspnea for Monitored and Coached Exercise Groups

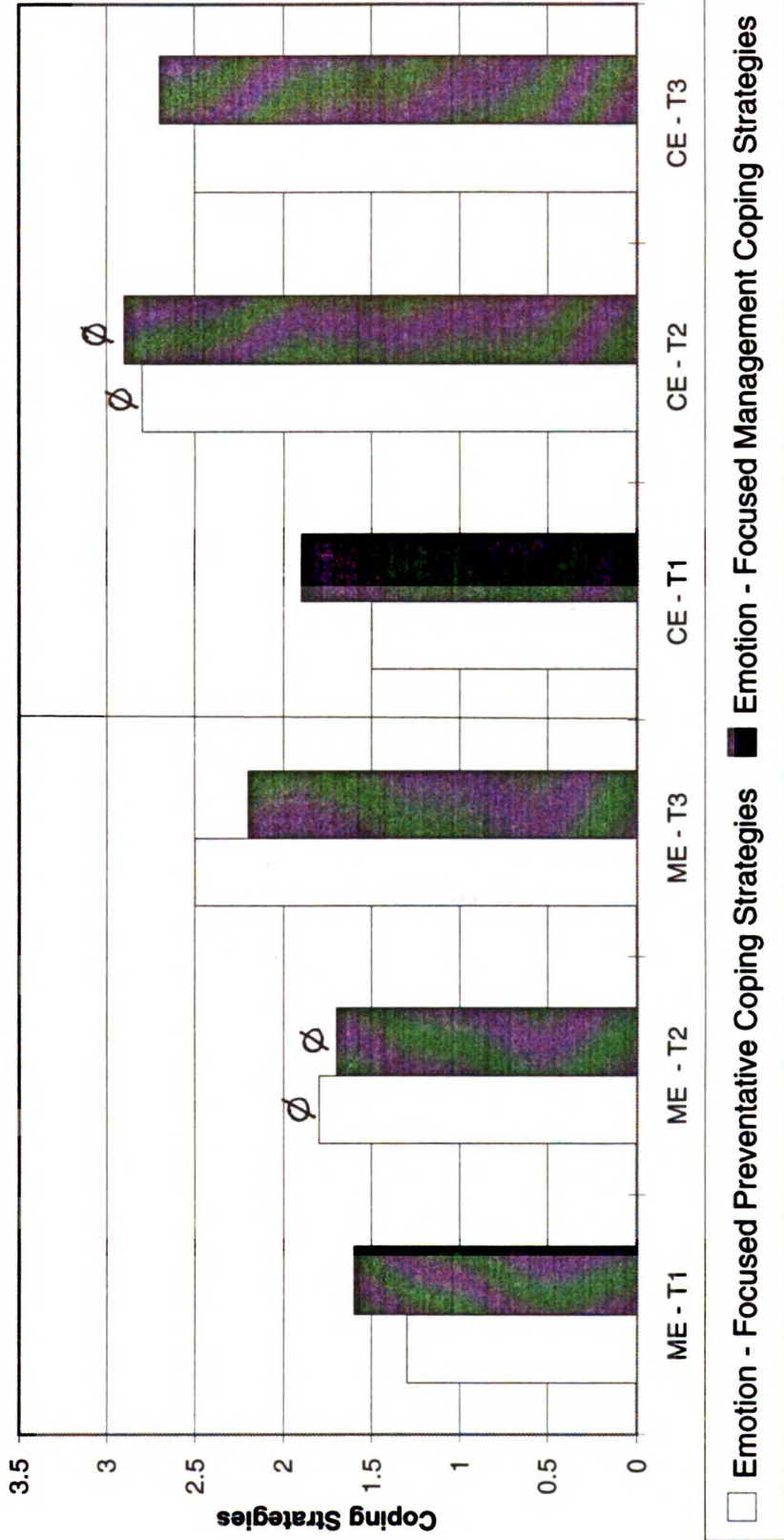
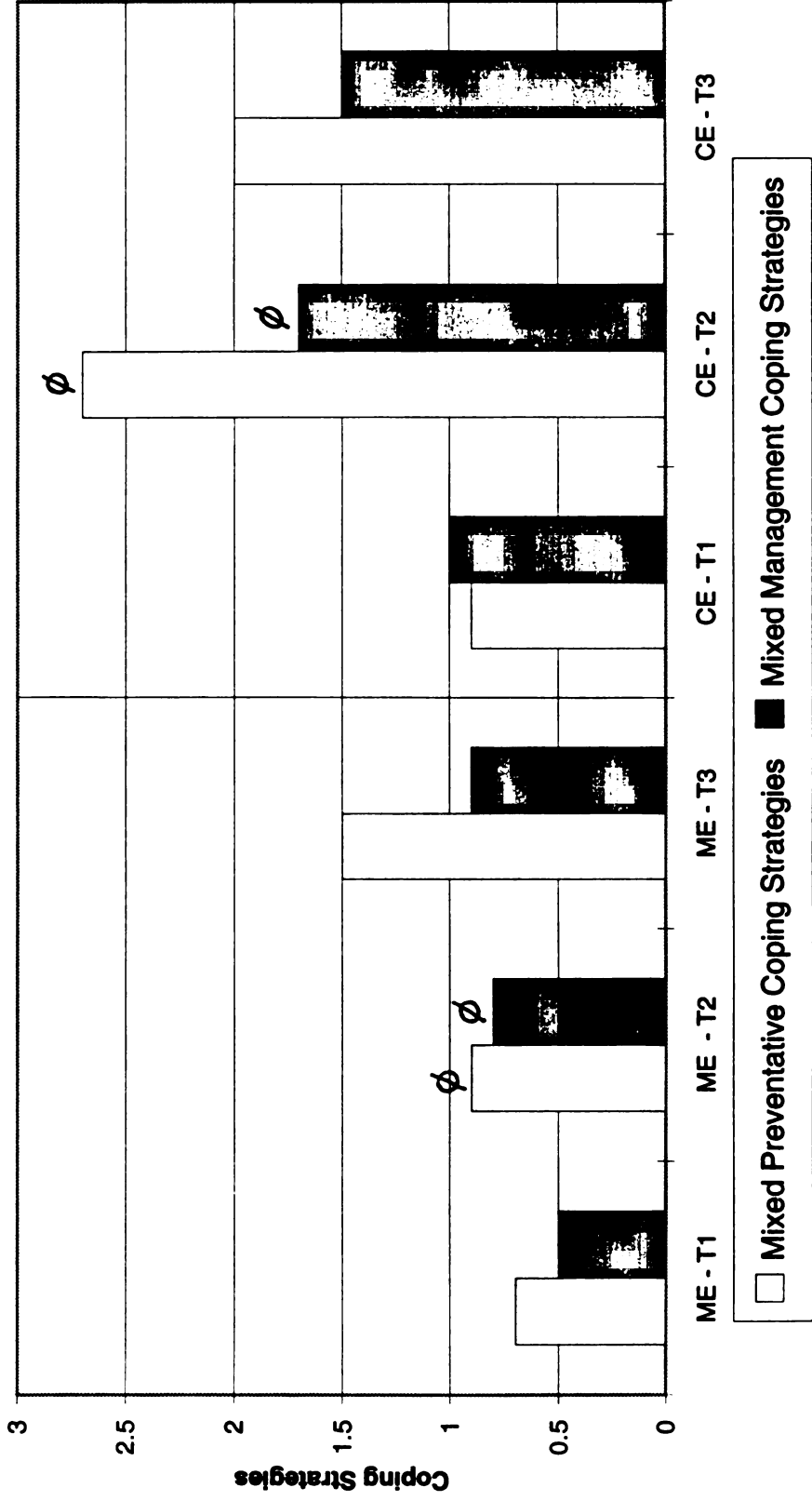


Figure 4

Mixed Coping Strategies for Preventing and Managing Dyspnea for Monitored and Coached Exercise Groups



□ Mixed Preventative Coping Strategies ■ Mixed Management Coping Strategies

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The text notes that without reliable records, it would be difficult to track the flow of funds and identify any irregularities.

2. The second part of the document outlines the various methods used to collect and analyze data. It describes the use of statistical techniques to identify trends and patterns in the data. The text also discusses the importance of using multiple sources of information to cross-verify the data and ensure its accuracy. This approach helps to minimize the risk of errors and provides a more comprehensive view of the data.

3. The third part of the document focuses on the role of technology in data collection and analysis. It highlights the benefits of using automated systems to collect and process data, which can significantly reduce the time and effort required for manual data entry. The text also discusses the importance of ensuring that the data is stored securely and that access is restricted to authorized personnel only.

4. The fourth part of the document discusses the challenges of data collection and analysis. It notes that data can be incomplete, inconsistent, or difficult to interpret. The text suggests that these challenges can be overcome by using a variety of data collection methods and by carefully reviewing and validating the data. It also emphasizes the importance of having a clear understanding of the data and the context in which it was collected.

5. The fifth part of the document discusses the importance of data security. It notes that data is a valuable asset and that it must be protected from unauthorized access and theft. The text suggests that this can be done by using strong passwords, encrypting data, and implementing other security measures. It also emphasizes the importance of having a backup plan in case of a data loss event.

6. The sixth part of the document discusses the importance of data privacy. It notes that data often contains sensitive information and that it must be handled in a way that respects the privacy of the individuals involved. The text suggests that this can be done by using data anonymization techniques and by implementing other privacy measures. It also emphasizes the importance of having a clear policy on data privacy and of communicating this policy to all personnel who handle the data.

7. The seventh part of the document discusses the importance of data quality. It notes that data that is inaccurate or incomplete can lead to incorrect conclusions and decisions. The text suggests that this can be avoided by using high-quality data sources and by carefully reviewing and validating the data. It also emphasizes the importance of having a clear understanding of the data and the context in which it was collected.

8. The eighth part of the document discusses the importance of data sharing. It notes that data can be a valuable resource and that it should be shared with other departments and organizations. The text suggests that this can be done by using data sharing platforms and by implementing other data sharing measures. It also emphasizes the importance of having a clear policy on data sharing and of communicating this policy to all personnel who handle the data.

9. The ninth part of the document discusses the importance of data governance. It notes that data governance is the process of managing the availability, usability, integrity, and security of the data. The text suggests that this can be done by implementing data governance frameworks and by using other data governance measures. It also emphasizes the importance of having a clear understanding of the data and the context in which it was collected.

10. The tenth part of the document discusses the importance of data ethics. It notes that data ethics is the study of the moral principles that govern the use of data. The text suggests that this can be done by using data ethics frameworks and by implementing other data ethics measures. It also emphasizes the importance of having a clear understanding of the data and the context in which it was collected.

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