1990

An educational video: controlling hypertension

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DOI: <https://doi.org/10.31979/etd.6wke-778g>
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An educational video: Controlling hypertension

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San Jose State University, 1990

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AN EDUCATIONAL VIDEO:
CONTROLLING HYPERTENSION

A Project Report
Presented to
The Faculty of the Human Performance Department
San Jose State University

In Partial Fulfillment
of the Requirements for the Degree
of Masters of Arts

By
Niel Bergquist
May, 1990

Approved by the Department of Human Performance

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ABSTRACT

AN EDUCATIONAL VIDEO: CONTROLLING HYPERTENSION

by Niel Bergquist

This project examines the issue of patient education with regards to the control of hypertension. It examines the factors inhibiting patient education within a cardiac rehabilitation setting; the central factors in the control of hypertension including nutritional and hygienic behavior changes and drug therapy; and the utility of the video medium in patient education. Because current research suggests that video can be an effective learning medium, an educational video was produced to encourage the control of hypertension. Weight control, sodium intake, alcohol consumption, exercise, stress management, and drug therapy are examined using narration, behavior modeling, and graphic presentation. To test the educational value of the video, subjects were given a knowledge test before and after viewing. In addition, a Likert evaluation test, measuring productive quality, was administered. The results indicate that "Controlling Hypertension" is an effective education tool and also proved to be of high productive quality.

ACKNOWLEDGMENTS

I would like to thank DeAnza College for making this project possible. Even though she laughed, I always felt her concern in my future -- Thanks Vivian! Also thanks to Greg for his patience and support.

Lastly, master's candidates often feel motivated to finish a piece of work for themselves or for an improved economic future. I completed this work for my wife, Kim, for if I did not have her to share this accomplishment, I'd be just another master's candidate.

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AN EDUCATIONAL VIDEO: CONTROLLING HYPERTENSION

CHAPTER I

INTRODUCTION

The development of this project is based on the author's two year working experience as an exercise instructor with the De Anza College Cardiac Rehabilitation Program. Within the program, patient understanding in the area of coronary heart disease was found to be very poor. Given the chance for effective rehabilitation, a patient must clearly understand the heart disease process (Richards, 1975). A patient must understand the physiological responses to an unhealthy lifestyle which will often result in a problem with heart disease. By acquiring the correct information to understand heart disease, each patient might incorporate the recommended lifestyle changes in an attempt to avoid any ongoing cardiovascular complications. In order to facilitate the implementation of this process, communication between the health care professional and patient must be effective. Effective communication combined with efficient learning of coronary care concepts will help a patient develop a healthier lifestyle through learning skills in stress reduction, exercise, nutritional guidance, and drug therapy. One of the best forms of educational communication

for developing skills to fight heart disease for the patients of De Anza's Cardiac Rehabilitation Program is videotape.

The Cardiac Rehabilitation Program

The Cardiac Rehabilitation Program at De Anza College, Cupertino, California, is considered a phase 4 program. Cardiac rehabilitation programs are divided into four phases with phase 1 beginning at the time of heart disease diagnosis or immediately after a heart attack. The purpose of a phase 1 program is to reduce the physical and psychological complications that frequently accompany a heart attack. Phase 2 programs continue the rehabilitation process. In phase 2 efforts to prevent deconditioning and provide psychological support are intensified through graduated activity progression and an organized educational program. Phase 3 of a cardiac rehabilitation program is prescribed once the patient is discharged from the hospital. Before being discharged, all of the patient's records and test results are evaluated to prescribe an outpatient exercise program. Once phase 3 begins, patients are closely checked as physical progress increases. As in phase 2, the objective of phase 3 is to continue preventive deconditioning and educational support for the outpatient. Upon completion of phase 3, cardiac patients should be able to perform their usual daily

activities. The patient may also have increasing self-confidence and demonstrate understanding of correct diet, exercise, drug therapy, and the overall process of heart disease. In phase 4 the main emphasis is exercise. Each patient usually has had a heart attack in the last year and is developing healthful habits in the hope that a recurrence will be prevented. Also a participant may have joined this phase for preventative reasons. Simply stated, phase 4 deals with cardiovascular conditioning. It emphasizes patient support and reassurance in an attempt to keep them involved in an exercise program (Comoss, Burke, & Swails, 1979).

Introduction of the Problem

The De Anza College Cardiac Rehabilitation Program is a phase 4 program. Through patient interviews, the author concluded that effective learning regarding the prevention of heart disease may not have taken place. The lack of knowledge within the majority of the patients may be attributed to many factors but, a major problem involved in the education of the patients is the transfer of information between the health care professional and the patient. Specifically, doctors and nurses often fail to communicate at a patient's level of understanding of cardiac concepts (Francis, Korsh, & Morris, 1969). Also, the actual time

spent discussing the individual's heart problem and how it can be controlled may also be limited (V.M. Low, Personal Communication, Oct. 28, 1983). Time allowed for education in the De Anza Cardiac Rehabilitation Program is often inadequate since classes meet from 6:30 to 7:30 a.m. and 7:30 to 8:30 a.m. There is little time for any structured introduction into the program or ongoing learning sessions since most patients leave for work right after cool down. The problem of lack of knowledge or misunderstanding may also be attributed to the individual patient within De Anza's Cardiac Rehabilitation Program (V.M. Low, Personal Communication, Oct. 28, 1983). If attempts are made to understand what is personally happening to the patients after a heart attack, health care professionals will frequently find distraught, fearful individuals (Froelicher, 1973). Patients may focus their concerns on other personal issues like "What will happen to my family if I die?" "How am I going to go back to work?" And, "Will I be able to act normal again?"

After having a heart attack, patients normally have one or two reactions. First, they may admit that they have a heart problem and begin to do something about it. Second, they may revert back to their old habits, allowing their heart disease to worsen. Most post cardiac patients find it easier to deny or forget about a problem than try to learn

how to treat and control it (Martin & Dubbert, 1984). If communication is effective, a greater chance of success will be yielded due to an enhanced understanding of an effective treatment for the heart problem involved. By understanding, people are more apt to help their heart problem and develop a plan for a healthier lifestyle (Maccoby & Farquhar, 1975). Another problem in communication may be the patient's inability to understand physiological ideas and apply them to their own situation. In a study examining inadequate doctor-patient communication Southard, Shankar, and Apostolides (1980), found that discontinued high blood pressure therapy was significantly related to patients thinking they no longer needed treatment. The patient's inability to concentrate during the initial learning period after a heart attack or heart problem may hinder the thought process. That, coupled with an inadequate knowledge of heart disease, may strongly impair the patient's overall understanding of their disease. Wherever fault may lie, either due to the patient or health care professional, educational communication between these groups must be improved for adequate treatment of heart disease.

Health care professionals must become aware of the problem of non-adherence in hypertension therapy. A national survey of physicians, conducted in 1977, found that the most frequent reason given for failing to achieve ade-

quate blood pressure control in hypertension was inadequate adherence. In addition, according to the Federal Drug Administration (1978), the most frequent reason for non-adherence was the difficulty patients had in altering their lifestyle behavior. Change in lifestyle behavior may be facilitated by adequate knowledge and information given by the health care professional. Initiation and maintenance of behavioral change (e.g., diet, exercise) concerning hypertension are likely to be major components in the successful management and control of hypertension.

In summary, the problems presently existing in patient education at the De Anza College Cardiac Rehabilitation Program may be in the transfer of information between the health care professional and the patient. Is this information too much knowledge or too little? Is the information clear and understandable for each individual patient? Is the time, location and sequence of information given correct for patient learning? Do the patients themselves have the ability and willingness to attempt to understand cardiovascular concepts?

Statement of the Problem

To help improve educational communication between health care professionals and the patients of the De Anza College Cardiac Rehabilitation Program a videotape in hyper-

tension was completed. Hypertension was chosen to be the subject of the video since it affects 75% of the patients within the Program. In addition, through patient interviews, hypertension was found to be the most misunderstood topic concerning heart disease (V.M. Low, Personal Communication, Oct. 18, 1983).

Statement of Purpose

The purpose of this project is to improve patient education in the area of hypertension. Communication of preventative measures concerning hypertension between health care professional and cardiac rehabilitation patients may be enhanced by presenting to the patient a video titled, "Controlling Hypertension."

Significance of the Project

Video is a consistent form of communication which is easily accessible for uninterrupted patient viewing. When dealing in a classroom setting or any face to face communication, the chance of human factors interfering in the learning process increases (Schramm, 1971). Videotaped instruction serves to standardize the learning process and allows reviewing and revision as necessary. If learning problems are found to occur, the video can be modified for a more effective learning medium. To avoid the technical

problems involved in reproducing and refilming certain sequences, a meeting may be scheduled between teacher and the patient to clear up any misunderstandings the video may have presented.

By having an orientation video and a series of learning videos available to patients, efficiency can be maximized. A video could either be sent to the patients or made available at a college library for viewing at home or in the library's Audio-Visual Center. By viewing the video in the privacy of one's own home, the patient might relax and better absorb the content of the tape. Developing a series of videos discussing such topics as cholesterol, stress, and salt consumption would enable an ongoing learning experience which could assist the patient in a lifestyle change. In addition, time would be saved in the initial consultation of each new patient since the video would introduce the patient to the program. If video can be used in conjunction with discussion periods involving the patient and the cardiac rehabilitation staff, the new patient will realize and understand the effectiveness of a rehabilitation program, and, more importantly, how it can help them.

DEFINITIONS

In order to have a clear understanding of the material presented in this study, the following terms must be defined:

1. Aerobic Exercise--An exercise of mild to moderate intensity that requires a steady supply of oxygen by the body in order to provide continuous energy for rhythmic skeletal muscle contraction and relaxation. This type of exercise appears to have the greatest effect on physical fitness and health (Froelicher, 1973).
2. Atherosclerosis--A disease that is characterized by the deposition of fat and cholesterol within the inner wall of an artery (American Heart Association Heartbook, 1980).
3. Beta Blockers--Drugs inhibiting stimulating impulses to the heart and generally resulting in a decrease in heart rate, heart force of contraction and constriction of blood vessels (AHAH, 1980).
4. Cardiac--Of, or pertaining to, the heart; sometimes refers to a person who has heart disease (AHAH, 1980).
5. Cardiovascular--Of, or pertaining to, the heart and blood vessels (AHAH, 1980).
6. Cholesterol--A fatty material found only in animal tissue along with being manufactured by the human body (AHAH, 1980).

7. Diastolic--The phase of the heart's cycle that occurs during the relaxation of the heart (AHAH, 1980).

8. Diuretic--A medicine which promotes the excretion of urine to remove excess body fluid (AHAH, 1980).

9. Group--Any set of items or groups of people under study. An experimental group is studied to determine the effect of an event, a substance, or a technique. A control group serves as a standard or reference for comparison with an experimental group (Urdang & Swallow, 1983).

10. Hypertension--A chronic elevation of the blood pressure within the arteries (AHAH, 1980).

11. Mean Arterial Pressure (MAP)--The arithmetic mean of the blood pressure in the arterial portion of the circulation (Urdang & Swallow, 1983).

12. Obesity--An abnormal increase in the proportion of fat cells in the subcutaneous tissues of the body. Obesity may be exogenous or endogenous (Urdang & Swallow, 1983).

13. Placebo--An inactive substance, as saline, distilled water, or sugar, or a less effective dose of a harmless substance as a water-soluble vitamin prescribed as if it were an effective dose of a needed medication. Placebos are used in experimental drug studies to compare the effects of the placebo with those of the experimental drug (Urdang & Swallow, 1983).

14. Type A Behavior--A human behavioral type in which activity is characterized by some or all of the following: competitiveness, intense striving for achievement, easily provoked hostility, a sense of urgency about doing things quickly, being punctual, impatience, abrupt and rapid speech and gestures, and concentration upon self-selected goals to the point of not perceiving and attending to some other aspects of the environment, including communications from others (Friedman, 1969).

15. Type B Behavior--A human behavior type which is characterized by characteristics opposite to Type A. Common Type B behaviors are unhurried, less easily provoked, and smooth modulated speech and gesture patterns (Friedman, 1969).

16. Vasodilator Agents--Chemical compounds that cause a relaxation of the muscles of the arterioles, thus reducing resistance to the flow of blood and lowering blood pressure (AHAH, 1980).

Delimitations

The audience evaluating the video, "Controlling Hypertension," was composed of non-hypertensive volunteers recruited from the Gym West fitness center. Participant ages ranged from 18 to 70 years old and included both males and

females. The video was made available for viewing at home or in the college library.

The video is limited to topics concerning the physiology, symptoms, prevention, and treatment of hypertension.

Limitations

The video, "Controlling Hypertension," was evaluated by a non-hypertensive population. An evaluation by subjects with hypertension may result in increased test scores due to the group association and familiarity with hypertension.

The information presented on how to control hypertension is limited since the material presented was based on an audience for a phase four cardiac rehabilitation program. The hypertension information may not apply to beginning phases within a cardiac rehabilitation program due to differences in patient preventative learning techniques after diagnosis of coronary heart problems. Since a program instructor is not available during viewing, questions concerning the video's content may not be readily answered. This could contribute to reduced understanding. Also, due to the cardiac rehabilitation class' limited access to an after-class meeting room, group participation while viewing the video seems to be an unlikely scenario.

The information about hypertension was gathered for a large participation group within a community college cardiac

rehabilitation setting. Cardiac rehabilitation programs may differ within hospital and nonprofit organizations on education structure and implementation. The information in this video may not apply in such a setting.

Another limitation of this project may be the video itself: a video cassette player is needed to view the material. As stated, De Anza's Cardiac Rehabilitation Program has access to video players, but other cardiac rehabilitation programs which wish to view the video may not.

Another limitation may be the viewing audience. Participants in the Cardiac Rehabilitation Program viewing the video may differ in educational background, knowledge, and understanding. Comprehension levels between participants within a cardiac rehabilitation program may show a decrease or increase in patient understanding after video viewing.

One last limitation may be the relationship between the author and the Gym West fitness volunteers. Upon evaluation of the video, a "halo effect" may occur due to the subjects' favorable attitude toward the author.

Chapter II

REVIEW OF THE LITERATURE

The following review of literature is organized into two main sections. The first section will deal exclusively with studies showing the positive benefits of television and/or video as an educational medium.

The second section will focus on treatments to control hypertension. This section will be divided into seven subsections: (a) introduction, (b) diet and hypertension, (c) obesity and hypertension, (d) alcohol and hypertension, (e) stress and hypertension, (f) exercise and hypertension, and (g) drug therapy and hypertension. These six areas are traditionally considered to be the most effective ways to control hypertension (Kaplan, 1983).

Television Instruction

The main area of concern in this project is video communication. Since video communication is a relatively new concept, the bulk of research concerning its effectiveness in education is in the area of television. There is no doubt that children and adults learn from instructional television. The effectiveness of television has now been demonstrated in well over one hundred experiments in several hundred separate comparisons (Wilkinson, 1980).

Initial experiments were conducted in an effort to compare the benefits of television instruction to no instruction. Sykes (1964), compared fifty-eight education majors who had been randomly assigned to a television or a control group. The television group watched six 45-minute art lessons over a six week period, while the control group had no instruction. Upon posttest, a significant difference was observed between groups. The treatment group performed significantly better than the control group on an examination covering the material of six art lessons presented by television.

One of the most important experiments conducted concerning the effectiveness of television instruction is the research completed by Wade (1967). After television had been installed into the Washington County School system in Hagerstown, Maryland, the performance of the students was measured on the Iowa Test of Achievement. When the television group was compared with the conventional learners, the television-taught children in grade five gained 1.9 years in knowledge of arithmetic concepts in just one school year. During a full year of television instruction, the average level of Hagerstown Junior High mathematics students rose from the 31st to the 84th percentile on national norms. In a summary of the Hagerstown research, Wade (1967), examined the norms of the Hagerstown children in 1958, before

television was first introduced in 1959. The children were junior high students who were taking United States history. The Hagerstown pre-television test score percentile on national norms was 28. During the first year of United States history taught by television, the percentile rose to 45, 46 in 1960, and 50 in 1961. Schramm (1962), summarized 393 experimental comparisons on the effects of television teaching versus classroom teaching. He reported that 255 of these comparisons showed no significant differences. Eighty three studies determined that television teaching was significantly superior as a learning vehicle and 55 studies determined that conventional teaching was the superior education tool.

When compared with conventional teaching methods such as problem solving, question/response and discussion, television alone also contributed to learning. For example, Reid (1960), Clevenger and Cobin (1959), and Lesser and Schueler (1986), each found that the performance of students taught predominantly by television was significantly better than that of the students taught conventionally.

Other examples of students learning more effectively from television are studies of typewriting skills by Pasewark (1957), and communication skills concerning discussion by Becker, Dunlap and Gruber (1957). Examining anatomy laboratory skills, Diamond (1962) found that tele-

vision improved learning and saved time by permitting an entire class to clearly see a demonstration simultaneously. Television has also been found to be very effective with computer assisted instruction (Hawkins, 1984).

In a broader overview of this issue, Moldstad (1974), reviewed a number of studies and concluded that instructional technology when carefully used:

1. yields significantly greater learning.
2. can accomplish equal amounts of learning in significantly less time.
3. is usually preferred by students when compared to traditional instruction.

In related research Schramm (1971), concluded that motivated students learn from any medium if it is competently used and adapted to the needs of the student to complete an educational task. Whether a student learns more from one medium or another is likely to depend on how and what medium is used.

Video Instruction

Since completion of the above cited research, many technological advancements in video have greatly expanded the ability to move information around the world, and to process and store it with inexpensive, reliable microprocessors. Most of video technology has been used with actual

recording and playback in a teaching and learning environment (Ornstein, 1982). In fact, many universities are compensating their instructors for preparing and presenting videotape courses that go along with the teaching regimen (Zuber-Skerritt, 1984).

Videotape has also been found to be extremely convenient (Zuber-Skerritt, 1984). Students are able to view a lecture at any time of the day or night. The tape can be stopped, started, and repeated as many times as required. In addition, it may pose a lesser threat to the students than a live lesson or lecture (Dubin, Hedly, Schmidbauer, Goldman, & Traveggia, 1969). The distance over which an educational institution can communicate is virtually limitless since tapes can be easily sent worldwide. Also, due to the capacities of the video recorder, teachers are no longer forced to adjust the sequence of lessons to the dates and hours determined by the television broadcaster. As more educational tapes are made available, educators will have more opportunity to select single video programs to suit their own educational aims.

Comparing television and video as an education tool, television may be too complex, expensive, and time consuming in production. Video is much cheaper and can be viewed while recording is in progress as well as immediately after it has been completed. Other advantages that video has for

better viewing is skip over, speed up, slow down, freeze frame, and review.

Studies have shown that video is most effective when being used in small groups, typically three to ten students (Kelley, 1964). Video can be supplemented by paraprofessional tutors as students watch the tape. Learning is improved since the students are free to interrupt at any place in the video where they need more discussion or explanation of the points or concepts being examined (Hartley, 1968). Experience has shown that students learn best when the video can be stopped frequently, every five to ten minutes for periods of three to five minutes (Gordon & Falk, 1972).

Video also works most effectively when it is made an integral part of interaction and woven into the classroom context of learning activities. This effectiveness is brought about when video is planned, introduced, and incorporated carefully as a part of a teaching-learning system (Dranov, 1980).

Research also suggests that the effectiveness of video grows out of attention to the basic requirements of good teaching rather than any special effects that might be particular to television or video (Chu & Schramm, 1967). Others have presented evidence suggesting that color may not contribute to learning with television (Rosenstein & Kanner,

1960). Also dramatic production, such as a dynamic speaker, has not been shown to be any more effective than lectures and discussions (Kazem, 1961). Animation has been found to contribute to learning by gaining the viewer's attention. The research suggests that this is only true in situations where a need for attention and recall is clearly evident (Oshins, 1981).

In addition, video holds the viewer's attention more effectively than do print materials coupled with lectures or demonstrations (Smith, 1968a, 1968b). Most research suggests that one can learn just as much viewing a videotape in the convenience of the home as by attending a live lecture. For example, a study at New York University indicated that 30 minutes of TV instruction amount to the equivalent of 50 minutes in class, mainly because home TV students can focus on the subject matter more intensely in a distraction-free environment (Wollman, 1981).

Summary: Television and Video Instruction

Introducing television or video into an educational system appears to be beneficial. If used correctly as a tool to aid education, video or television can be used with considerable confidence in the learning environment. A key factor to note when discussing learning from television or video is that most experiments have shown that television

instruction has brought about more learning than the existing classroom teaching (Campeau, 1974; Ely, 1987). This evidence now comes from many countries, from students of all age levels from preschool to adults, and from a great variety of subject matter and learning objectives.

Review of the Literature Related to Hypertension

Introduction

Hypertension is clearly a serious public health problem in the United States today (Kaplan, 1983). About 25 million Americans are estimated to have the disease. Due to increased public awareness and improved treatment, hypertension is becoming a controllable risk factor in the battle against heart disease. Public awareness may be defined as improved educational media to the community (Oshins, 1981). The video in this project "Controlling Hypertension" was made to further this educational improvement.

There is considerable evidence showing hypertension as being a major risk factor in the development of heart disease (American Heart Association Heartbook, 1980; Friedman, 1969; Hegeland, 1980). The risk of premature heart disease and death rises sharply with increased systolic or diastolic blood pressure (Goodfriend, 1983). Having hypertension has also been associated with a higher frequency of heart attacks and strokes (Kaplan, 1983). Incidences of heart

problems and stroke have been reduced when treated with an anti-hypertensive drug regimen (American Heart Association Heartbook, 1980).

The cause of hypertension is unknown in over 90% of all cases. An available cure has yet to be found. Even though there is no cure for hypertension, hypertensives may help control it by practicing correct eating habits, weight control, alcohol abstinence, stress management, exercise, and drug therapy.

A study examining the effect of a multifactor intervention program on mortality from coronary heart disease (CHD) found the combination of medication, weight control, diet, and exercise, yielded significant results in controlling hypertension, a risk factor in CHD (Multiple Risk Factor Intervention Trial [MRFIT], 1982). In this study a total of 12,866 men, aged 35 to 57 and with an inclination towards heart disease, were randomly assigned to two groups. The first group was called a special intervention program. This consisted of the administration of dietary advice to lower cholesterol, reduce or stop smoking, and a stepped-care drug regimen treatment of hypertension. (Step care is a progressive, step by step logical antihypertensive drug treatment procedure in treating and controlling hypertension.) The second group used the usual sources of health care, which included an annual visit to their personal physician or com-

munity medical facility. Of all of the participants, 8,011 were considered to be hypertensive. At the end of of this 7 year study, the hypertensive participants in the special intervention group had a 23.76 percent reduction in coronary heart disease caused mortality rates than the usual care group. The outcome of this study provides strong evidence for better overall treatment of hypertension compared to the usual care community program.

Diet and Hypertension

Diet can influence blood pressure in a negative way by causing your pressure to rise. There is evidence that too much salt in your diet can increase your chances for developing high blood pressure (Dahl, 1958). Conversely, by reducing sodium consumption, blood pressure can be reduced (Haddy, 1980).

In one study showing the effects on reducing blood pressure in hypertensives by dietary sodium restriction, Beard, Cooke, Gray, and Barge (1982), studied a group of 90 patients on medication for mild hypertension. Two groups were randomly assigned, one being a diet treatment group, the other the control group. The diet group was given a list of markets and restaurants where they could obtain unsalted foods. The control group was urged to maintain their usual salt consumption. After 12 weeks, results showed both groups yielding a reduction in systolic and

diastolic pressure, but the diet group was able to reduce the amount of anti-hypertensive medication taken by one-half with some patients going completely off medication. The control group remained on almost full medication, with 2 patients out of 3 having made no reduction.

A double blind study performed by MacGregor, Markandu, and Best (1982) examined 19 patients with mild to moderate hypertension. After two weeks of sodium restriction each patient was assigned to either a salt group or a salt placebo group. At the end of an eight week period, results showed a 6.1% fall in mean arterial pressure in the salt placebo group versus the salt group.

Recent literature suggests that salt may negatively contribute to hypertension in some people more than others. These "salt sensitive" people seem to be more susceptible to high blood pressure when sodium intake is high. As with prior research, a solution that may solve this rise in blood pressure in salt sensitive people would be to reduce sodium intake (Myers, 1987).

Obesity and Hypertension

Another factor which affects blood pressure is obesity. Hypertension is twice as common in overweight persons as it is in those with normal weight based on age and height. The increased incidence of hypertension in the obese may be due to their higher salt consumption (Pickering, 1972). In a

ten year study by Stamler, Farinaro, and Mojonnier (1980) 115 men with definite mild hypertension and 101 men with high to normal diastolic blood pressure were treated by trying to lower blood pressure by nutritional hygienic means without anti-hypertensive drugs. Long term results showed a moderate weight loss, slowing of pulse rate, and reduction of serum cholesterol levels. Sustained falls in blood pressure were significant for both groups. Changes in weight and changes of blood pressure were significantly correlated. This study suggests that weight loss can lower blood pressure due to actual weight loss or a decrease in sodium intake. The issue of whether salt contributes to high blood pressure is still controversial. A study by Tuck, Sowers, and Dornfield (1981) observed 25 obese patients placed on a 12 week reducing diet. Sodium intake was either medium or low. Mean arterial pressure fell significantly and equally in both groups. These conclusions demonstrate a reduction in blood pressure regardless of sodium intake.

A study done by Reisin et al. (1978) looked at effective weight loss without salt restriction on the reduction of blood pressure in overweight hypertensive patients. The study dealt with 121 patients that were divided into three groups. Group 1 consisted of patients on a weight reduction program but did not receive anti-hypertensive drug therapy. Group 2A patients were on a weight reduction program and

received regular anti-hypertensive drug therapy. Group 2B patients were not on the weight reduction program but received anti-hypertensive drug therapy. This group served as a control to group 2A. All patients of group 1 and 2A on the weight reduction program lost at least 6 pounds of body weight. The weight and blood pressure reductions were highly significant and were present in both sexes and all ages in these groups. The non-weight reduction group 2B showed no significant change in blood pressure or weight loss. From past research, including their own, Reisin and colleagues note that weight loss in the obese almost always results in a reduction in blood pressure, even when no restriction is placed on salt intake. One explanation offered for this effect is that since total food consumption decreases, so too does the intake of the salt found in these foods.

Alcohol and Hypertension

Alcohol consumption may also raise blood pressure. Alcohol consumption, described as consuming two or more ounces of alcohol a day, has been associated with a higher prevalence of hypertension (Kaplan, 1983).

In a study by Arkwright, Beilin, and Rouse (1981), 491 male government employees, ages between 20 and 45, were asked to complete an 18 page questionnaire concerning demographic, socio-economic, dietary, and personality factors,

and to complete a 24 hour diet record. Alcohol consumption was assessed in two ways: (1) subjects were asked to write down the type and the amount of alcohol they drank each day of the previous week; and 2) if the alcohol consumption differed from their usual consumption they were also asked to estimate what they would usually drink in an average week. Experimental groups were broken down into non-drinkers, men drinking one or two drinks per day, and men drinking more than that amount. The researchers determined that systolic pressure increased progressively with increasing alcohol consumption but there was no increase in diastolic pressure. This increase in systolic pressure was seen independent of age, obesity, or cigarette smoking. Results of this study indicate that alcohol intake may rank close to obesity as a preventable cause of hypertension in the community.

Another study by Saunders, Beevers, and Patton (1981) was completed over a two year period. One hundred thirty two patients were studied in three different classifications, while drinking, during detoxification from alcohol, and in a period after abstinence. Patients who drank more than 80 grams of alcohol daily were admitted to a hospital hypertensive research unit. Patients were questioned on alcohol intake during dependency, and anti-hypertensive medication was discontinued. Blood pressure was taken the day of admission and at least twice daily thereafter. In

most patients blood pressure returned to normal after detoxification and remained so for at least one year in those who continued to abstain. However, blood pressure rose in those who started drinking again.

Stress and Hypertension

The evidence for psychological stress as a primary cause of hypertension is inconclusive, but some evidence exists which links psychological stress to hypertension (Shapiro, 1977). Individuals who are extremely competitive, achievement oriented, aggressive, impatient and tense exhibit a set of behaviors that is called Type A behavior pattern. Persons that are more relaxed, unhurried and easy going reflect the alternative Type B behavior pattern (Friedman, 1969). Many of the traits associated with a Type A behavior pattern produce a stress reaction that may increase blood pressure (Heine & Weiss, 1987).

To help combat stress, relaxation methods such as yoga, transcendental meditation, and biofeedback have been used in the treatment of hypertension. With these methods many different, easy to learn, techniques of relaxation can be used. In an experiment showing the effects of yogic relaxation and biofeedback in the treatment of 20 patients with hypertension, Patel (1973) found significant lowering of blood pressure. Eleven women and nine men on anti-hypertensive medication attended sessions for three months, participating

three times per week, half an hour each session. During each session patients were asked to lie on an examination couch and be connected to a relaxometer. This machine measures the activity of the central nervous system indirectly by the changes in the skin's electrical resistance. The relaxometer was also combined with an audio signal that the patient tried to reduce or stop by decreasing sympathetic activity. By using yogic relaxation techniques combined with biofeedback, the mean (average of systolic and diastolic readings) blood pressure reading of the patients dropped from 121 mm Hg to 101 mm Hg. Five patients were able to stop anti-hypertensive medication, while seven others reduced their medication by 33% to 60%.

In another study examining biofeedback, Shapiro, Tursky, Gershon, and Stern (1969) noted that high blood pressure may be modified by the autonomic nervous system, by conditioning it instrumentally with such behavior as response reinforcement. In his study, 20 normal male subjects were given feedback on their own systolic pressure. Half of the subjects were reinforced for decreasing their blood pressure while the other half were reinforced to increase it. Methods used were based on the sounds of the heartbeat when a blood pressure device is used to measure blood pressure. The sounds produced during a blood pressure measurement are called Korotkoff sounds. During each trial,

success was defined by the presence of a systolic Korotkoff sound for the subjects trying to raise their blood pressure and the absence of this sound for subjects trying to lower their blood pressure after each heart beat. This information was fed back to the subject by a flashing red light and simultaneous tone. With these conditioning responses involved, significant differences in pressure were obtained in a single session. Results showed that the subjects trying to lower their pressure were more successful than those attempting to raise their pressure. Throughout the experimental trials, subjects attempting to reduce their systolic pressure continued to do so, showing a decrease of 4.0 mm. In comparison, the subjects attempting to raise their pressure showed an increase of only 0.6 mm. This study indicates that systolic blood pressure can be modified by the use of external feedback and operant reinforcement.

Transcendental meditation has been shown to produce both physiological and psychological changes, such as lowering blood pressure and relaxation in hypertensives (Goodfriend, 1983). In a study by Blackwell, (1976) examining the effectiveness of transcendental meditation in controlling hypertension, seven selected hypertensive patients were stabilized on drugs. Subjects learned transcendental meditation (TM) while under doctor supervision. Subjects measured their own blood pressure several times daily. This

study lasted ten weeks. Follow-up appointments were scheduled twelve weeks and six months after the initial ten weeks. Transcendental meditation was taught with two introductory lectures followed by a private interview. At the time of the experiment a four day course of instruction in the practice of TM was given. Each day instruction lasted about two hours. After this period subjects met with their instructor once a week for two months and then twice a week for the third month to insure proper and regular practice of the technique. During the actual experiment, subjects continued to practice TM twice a day for twenty minutes, usually in the early morning and evening. After twelve weeks, home blood pressure recording showed a significant reduction in systolic pressure ranging from 4 to 15 mm Hg. These results indicate the positive physiological benefits plus the reported psychological benefits of reduced anxiety, better coping with stress, and feeling relaxed.

Exercise and Hypertension

Often, regular exercise will result in a reduction in both systolic and diastolic pressure. Exercise may also lower blood pressure by slowing your heart rate. In addition, exercise assists in controlling body weight and developing a more positive self image (Froelicher, Battler, & McKirnan, 1980).

The effects of physical training on lowering blood pressure were examined by Bonanno and Lies (1974). Forty untreated male volunteers with multiple coronary risk factors, including hypertension, were blocked into two groups. One group was deemed an exercise group and the other was a control. The exercise group participated in a supervised physical training program. No other efforts to reduce risk factors were made during the course of the study. The control group was asked to refrain from increased physical activity. The training program for the exercise group consisted of three exercise sessions a week for twelve consecutive weeks. Each training session began with a five to ten minute warm-up followed by thirty to thirty-five minutes individualized time for walk/jog sequences where a heart rate was maintained at a training level 70-85% of the maximum heart rate. Systolic pressure was significantly reduced only in the hypertensive subjects who exercised. The mean reduction was from 148 to 135 mm Hg. The hypertensive control groups mean systolic blood pressure reduction was only 150 to 147 mm Hg.

In a study by Roman, Camuzzi, and Villalon (1981), exercise was also found to lower blood pressure in hypertensives. Thirty hypertensive female patients were studied through four phases: (1) 3 months training at 70% of maximum heart rate; (2) 3 months without training; (3) 1 year

training at the same level as in phase one; and (4) 12 or more months with increasing intensity training over 70% of the maximal heart rate. An exercise bout consisted of a warm-up, 20 minutes aerobic exercise period and cool down, three times per week. After the first three months of training blood pressure fell from an average 192/114 mm Hg to 161/97 mm Hg but increased again when training stopped for a three month period. When training began again in phase three, blood pressure decreased once more. In phase four when maximum heart rate was increased over 70%, blood pressure continued to drop. All blood pressure readings were lower at exercise and resting levels.

Drug Therapy and Hypertension

The most common way to fight hypertension has been with drug therapy. One study completed on the effectiveness of drug therapy on hypertension was in the 1960's by the Veteran's Administration, (1967). In this randomized controlled trial study, 523 middle aged white and black men with an average diastolic blood pressure of 90 mm Hg to 129 mm Hg were divided into a drug group and a placebo group. Drug treatment was a combination of hydrochlorothiazide, reserpine, and hydralazine. Hydrochlorothiazide (trade name Esidrix) is a commonly administered diuretic, reserpine acts to lessen sympathetic discharge, and hydralazine is a vasodilator. The drug treatment group showed a consistent blood

pressure reduction. The placebo group's blood pressure remained elevated. Patients under drug treatment for 20 and 40 months after the initial experiment also had a higher percentage decrease in nonfatal and fatal cardiovascular complications.

Another study examining the effectiveness of drug therapy in controlling hypertension was conducted by Smith (1977). In this research, a double blind design was employed. Subjects were 389 men and women between the ages of 21 and 55. The average home and clinical blood pressure was 148/99 mm Hg. Subjects were divided into a placebo group and a drug group treated with cholorothiazide plus reserpine. After one year, net blood pressure reduction in the drug treatment group was significantly higher than in the placebo group. The follow-up in this study ranged from 7 to 10 years. Actual cardiovascular complicating events causing patient treatment during this time period were 37% lower in the drug treatment group versus the placebo group.

Diuretics

The available drugs designed to treat hypertension work in different ways to help lower blood pressure. Some act directly on the central nervous system and others directly on the blood vessels themselves. One important class of drugs, diuretics, work to lower blood pressure by increasing the flow of urine. The influence of diuretics in lowering

blood pressure has been well documented. Cranston and Juel-Jensen (1962) obtained an average blood pressure reduction of 26/9 mm Hg using a combined diuretic drug treatment of chlorothalidone and spironolactone. The purpose of this study was to examine the effect of double diuretic treatment in decreasing high blood pressure. Alone each drug was found to significantly lower blood pressure. In combination, the hypotensive effect was only slightly greater.

In another landmark study by Conway and Lauwers (1960), 83 patients were treated with the diuretic chlorothiazide to reduce blood pressure. In 66% of the patients a reduction in blood pressure averaged 26/17 mm Hg. This study lasted over 5 months and showed the effectiveness of long term therapy using a diuretic to lower blood pressure.

Beta Blockers

A second group of antihypertensive drugs is beta blockers. These drugs modify the nervous system to lower blood pressure while controlling blood vessel pressure. Sometimes in the body, due to an erratic nervous system, the heart can beat faster and pump harder. This can cause an increase in blood pressure. A beta blocker "blocks" this response. Reduced nervous system activity occurs. Beta blockers can also act on the blood vessel directly causing the vessel to dilate (i.e., open wider), thereby decreasing pressure.

There are different kinds of beta blockers that act directly on different areas of the body; some act only on the brain centers, some on the heart and/or blood vessels. The effectiveness of hypertension being controlled by the beta blocker, propranolol, was well documented in a study by Frohlich, Tarazi, and Dustan (1968). During a 32 week period an average daily dose of 180 mg of propranolol was administered to 19 hypertensive patients. The medication alone reduced systolic and diastolic blood pressure in 16 patients of the 19 patients. In another study showing the effectiveness of propranolol in lowering blood pressure, Prichard and Gillam (1964) examined 24 patients, 16 of whom were hypertensives. Fifteen out of the 16 patients showed a significant reduction in blood pressure for up to seven months when the study concluded.

By adding beta-adrenergic drugs to a current drug regimen, patients may find an effective way to lower their blood pressure. In a study first published in 1972, 20 patients could not reduce their blood pressure with diuretics, methyldopa or guanethidine. With the introduction of a common beta blocker propranolol and a vasodilation agent, hydralazine, mean blood pressure reduction was 46/30 mm Hg (Zacest, Gilmore, & Kock-Weser, 1972).

Vasodilators

Another type of anti-hypertensive drug is a vasodilator. These drugs relax the smooth muscles within the artery. This results in a dilating process which allows the blood to flow more easily, thus reducing blood pressure.

A study showing the reduction of blood pressure using a vasodilator was completed by Hammer, Ulrych, and Freis (1971). These researchers studied 14 patients receiving a vasodilator called guancydine and other combination of drugs. Guancydine alone was found to reduce systolic blood pressure by an average of 25.5 mm Hg.

Due to the side effects produced by vasodilators, they are rarely used as a single agent to reduce blood pressure. A study by Gottlieb, Katz, and Chidsey, (1972) combined drug therapy with a vasodilator and beta blocker were examined. Eleven hypertensive patients were first given propranolol and blood pressure fell from an average 191/128 mm Hg to 169/108 mm Hg. With the added treatment of vasodilators hydralazine and/or minoxidil, blood pressure was reduced to an average of 142/91 mm Hg. This study suggests that vasodilators in combination with beta blockers will achieve a greater therapeutic value for hypertension.

All three classes of drugs, diuretics, beta blockers, and vasodilators can cause a dilation effect within the arterial system to lower blood pressure. One class of drugs

may be used, or a combination of different anti-hypertensive drugs can be used to lower blood pressure. In review, drugs are the most widely applicable form of treatment for hypertension. These include diuretics, drugs that increase the flow of urine to reduce blood pressure, beta blockers, drugs that decrease the activity of the nervous system, and vasodilators, drugs that relax the muscles of the artery walls allowing the blood to flow more easily, thus reducing blood pressure.

Summary--Hypertension

There is considerable evidence implicating lifestyle practices as contributing to high blood pressure. Current data suggest that techniques such as weight reduction, decreased sodium intake, cessation of heavy drinking, exercise, and stress management may lower blood pressure in hypertensive persons.

Efforts to improve lifestyles should be a permanent part of a hypertensive person's life. If blood pressure cannot be successfully controlled by nutritional-hygienic means alone, drug therapy should produce the needed blood pressure reduction.

By effectively utilizing non-drug and drug therapies, millions of hypertensives will lower their risk of heart disease. Together with a behaviorally oriented health edu-

cation approach, hypertension care and long-term adherence may be enhanced (Pickering, 1972).

Chapter III

METHODS

Video Equipment

The recording video tape used in this project was 1/2 inch Pro Beta. For viewing, the video material was transferred to a VHS 1/2 inch videotape. The video was filmed with a 3 tube Sharp 800 "broadcast quality" color camera. The video recorder used was an Ampex Cur.75 Beta recorder. Editing of the video was completed on an ACE 25 editing system and graphics were achieved using a Macintosh SE with a laser printer.

Video Models

The models who were filmed in the video "Controlling Hypertension" were recruited by the author of this project. The majority of the models in the video were participants in the De Anza Cardiac Rehabilitation Program, close friends, and relatives. Some models were bystanders who were coaxed into participating. The models were male or female, between 25 and 65 years of age.

The narrator was an experienced radio professional. He memorized the on-screen narrator sequences.

All 28 models in the video signed a written consent form allowing the author and De Anza College to use the

videotaped material for non-commercially or commercially produced broadcast. Also, each model signed an informed consent form at the request of San Jose State University (see Appendices A, B, and C).

Subjects

Thirty five male and female volunteers ages 18 to 65 were recruited by the author to evaluate the educational and productive quality of the video "Controlling Hypertension." The majority of the subjects were recruited from Gym West fitness center in Redwood City. Subjects viewed "Controlling Hypertension" either alone or in a group setting. The author was always present during the evaluation session. The entire viewing session, including pretest, viewing, posttest, and evaluation form completion, took less than 45 minutes.

Procedure

De Anza College was the location where most of the video was taped. The college physiology lab and cardiac rehabilitation exercise area were used as filming locations, while the audio-visual film studio was used for narration scenes. Other off-site locations included a restaurant, business office and park, San Jose State University, a drug store, and a home. De Anza College was chosen because of

the author's affiliation with the college as an instructor in the Cardiac Rehabilitation Program. Other sites were chosen due to the author's friendly relationship with each location's proprietor and/or an employee.

Video production was assisted by Duane Kubo, an instructor for the college's Audio-Visual Department, and Mark Gomes, a student director. Video technology expertise was also available from Joe McFadden, an engineer for Ampex Corporation.

Actual filming of the video took approximately nine days. The time to coordinate each scene was much longer due to the time constraints of the participants, film crew, and location. Weather was also a delaying factor in outdoor scenes.

Editing of the video was completed in a two week period. The complete video, with narration, is twenty minutes in length. Background music was written and performed by Russ Luba and was used only during the beginning and ending credits. The video followed a corresponding script and used graphics when necessary to focus on educational points within the video. Instructions for subjects and film crew are included in the videoscript section (Appendix D).

Evaluation

Evaluation of the video was twofold. First, a Likert rating scale was administered (Likert, 1931). This scale permits an observer the opportunity to record the intensity or degree of impressions made while observing a subject or videotape. The Likert scale questionnaire was administered to the evaluators immediately after viewing the videotape. The rating scale consisted of a series of statements, each followed by assorted answers arranged in hierarchical order to differentiate varying degrees of intensities (Appendix E). The answers are called points. Likert uses a five point scale with descriptions of "strongly agree," "agree," "uncertain," "disagree," and "strongly disagree." Each point reflects a favorable or an unfavorable response. The above points were given a score value from one to five, the five being most favorable. All points are considered be of equal value, and responses were weighted to reflect the degree of agreement. The majority of the questions on the evaluation form were stated in the positive. To counter-balance, some of the questions were stated in the negative. To maintain consistency, the scale was reversed in these cases so that "strongly disagree" equaled 5, a positive response. The average score per question together with the total score of the evaluation will be used to measure the productive quality of the video. Once the evaluations were

completed by the participants, their scores were evaluated. By summing the scores and dividing the total by the number of statements, this would give the video participants' mean attitude score. The final consideration is whether the participants' answers reflect a favorable or an unfavorable attitude toward the video. "No opinion" was also included in the Likert scale answer set to give the test observer the opportunity of not evaluating a statement. A score value was not attached to the "no opinion" answer. According to Kubiszyn and Borich (1984), if a score is equal to or greater than 3.0, a favorable attitude exists. On the other hand, if a mean score is less than 3.0, an unfavorable attitude exists.

Then, evaluation of the knowledge attained from the videotape "Controlling Hypertension" was accomplished using a within group Pretest-Posttest Design. The test was a true-false questionnaire (Appendices F and G) administered to the participants before treatment (videotape) and after. The participants' scores for the true-false knowledge test were expected to improve after viewing the video. Each correct answer in the true-false pretest and posttest was valued at one point. Each wrong answer received a zero point value. To avoid the problem of sequencing, the second true-false questionnaire completed after viewing was reordered. The questions and answers remained the same.

This design provided a comparison between performances by the same group of subjects. A dependent paired t test ($p < .05$) was applied to determine whether the videotape improved knowledge concerning hypertension.

Chapter IV

RESULTS

The viewing of "Controlling Hypertension" resulted in positive evaluations, as well as an increase in knowledge regarding the treatment of hypertension for these subjects viewing the videotape.

The Likert scale evaluation showed an overall favorable attitude by the participants viewing the video. The project's overall mean average attitude score was 4.23. Individual mean attitude scores ranged from 3.66 to 5.00 (Table 1). The mean attitude scores of each individual statement were favorable as well. The scores ranged from 4.02 to 4.48 (Table 2). None of the participants evaluating the video chose "no opinion" on the evaluation form.

The purpose of this project was to improve patient education in the area of hypertension. As predicted, the participants' knowledge was greater after viewing the video "Controlling Hypertension." Posttest scores yielded a mean of 12.23 compared to the pretest mean of 9.45 (Table 3). A dependent paired t test indicated a significant difference between the means, $t (34) = 8.42$, $p < .001$.

Table 1

Likert Scale Individual Mean Attitude Scores

Subject	M Score (total of 9 questions)
1	4.66
2	4.33
3	4.44
4	4.22
5	4.55
6	4.22
7	4.00
8	4.33
9	4.77
10	3.88
11	4.44
12	4.00
13	4.22
14	4.11
15	4.55
16	4.33
17	3.88
18	3.88
19	4.11
20	5.00
21	3.66
22	4.33
23	4.22
24	4.00
25	4.00
26	4.22
27	5.00
28	4.11
29	3.77
30	4.33
31	4.11
32	4.44
33	4.00
34	4.00
35	4.22
All Subjects' M	4.24
All Subjects' SD	.31

Table 2

Likert Test Individual Statement Mean Score

Statement	M	SD
1	4.48	.50
2	4.22	.54
3	4.02	.65
4	4.36	.48
5	4.34	.47
6	4.13	.52
7	4.22	.60
8	4.08	.65
9	4.19	.52

Table 3

Individual Score Totals on Knowledge True-False Test

Subject	Pretest	Posttest
1	13	14
2	13	15
3	8	11
4	6	8
5	11	14
6	12	11
7	9	13
8	8	12
9	13	14
10	7	8
11	8	14
12	10	12
13	8	10
14	10	14
15	9	13
16	13	15
17	10	14
18	4	8
19	13	14
20	7	12
21	7	13
22	13	15
23	8	11
24	12	9
25	7	11
26	9	12
27	12	14
28	5	5
29	9	13
30	14	15
31	10	12
32	8	12
33	7	13
34	13	15
35	5	12
All Subjects' M	9.45	12.23
All Subjects' SD	2.71	2.36

Table 4

Raw Scores of Knowledge True-False Tests

<u>Question</u>	<u>PreTest</u>		<u>Question for All Subjects</u>	<u>Posttest</u>		<u>Percent Increases Correct Answers</u>
	<u>Total Answers Correct</u>	<u>Total Answers Incorrect</u>		<u>Total Answers Correct</u>	<u>Total Answers Incorrect</u>	
1	19	16	1	33	2	40.00
2	35	0	7	35	0	0.0
3	9	26	15	34	1	71.43
4	24	11	8	30	5	17.14
5	25	10	11	30	5	14.29
6	12	23	2	24	11	34.29
7	30	5	6	32	3	5.71
8	15	20	4	33	2	51.43
9	12	23	10	27	8	42.86
10	13	22	14	19	16	17.14
11	19	16	13	23	12	11.43
12	26	9	5	30	5	11.43
13	31	4	3	23	12	(22.86)
14	33	2	12	35	0	5.71
15	31	4	9	33	2	5.71
M	22.27	12.73		27.27	5.6	
SD	8.41	8.41		7.97	4.87	

Chapter V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

After analyzing the data, the viewers appeared to have learned from the educational video "Controlling Hypertension." Past research has shown when an educational video is presented to a motivated and interested audience, learning will take place (Schramm, 1971). In addition, Molstad (1974) has concluded that when instructional technology such as video is carefully used, it will yield learning. The video format of "Controlling Hypertension" included elaborate demonstrations and graphics, serving to disseminate information more widely and more effectively than otherwise possible.

Our favorable knowledge test results indicate that the content of this video was thought-provoking, and instructional. Comparing the total of correct and incorrect pretest and posttest answers on the knowledge test (Table 4), a marked improvement was found in the responses concerning drug therapy. Knowledge improved on questions involving the frequency of drug therapy (51.43%), drug prescription practices (42.86%), and the physiological changes involved with a anti-hypertensive drug regimen (17.41%). Improved scores were also noted in the questions concerning the definition of hypertension and the difference between systolic and

diastolic blood pressure readings (40.0%). Those questions in which subject responses changed little were related to exercise (5.71%), and coronary care risk factors (0%). In these questions, elevated scores were noted on the pretest; one possible explanation for these high scores may be the public's heightened awareness resulting from exposure to educational media.

The only score lowered in the posttest was the question concerning Type A and Type B behavior (-22.86%). Since these scenes depicting Type A and Type B behavior were shot at the same location, viewers may have been confused about the differences between the two behaviors. The author and the director need to attend to this scene to make it less confusing for the viewer.

Since a non-hypertensive audience was used to test and evaluate the video, a question arises if hypertensives would also learn from this medium. A person with hypertension should be more informed of their disease than a non-hypertensive. Based on the author's experience with hypertensives this is not clearly evident. The premise of this project was created due to the lack of knowledge currently held by hypertensives concerning their own hypertension. So a non-hypertensive evaluation group was sufficient in testing the educational content of this video.

Whether the video material presented to the viewer was new is important to note. Although some information could have been learned in a prior setting, both new information and reinforced information are valuable in battling the lifelong struggle of hypertension. By offering a medium vehicle such as video, topics such as hypertensive education can be more easily introduced to promote patient awareness, understanding and behavior change intervention. The importance of adequate knowledge and accurate beliefs regarding the difference between cure and control concerning hypertension has been well documented (Levine, Morisky & Bone, 1982). Specificity of knowledge concerning the kind of hypertensive therapy as well as the purpose of the therapy is important in relation to achieving and maintaining behavior change (Martin & Dubbert, 1984). The video "Controlling Hypertension" presented with group support and added learning material may contribute to increased adherence to behavior blood pressure control. A simple written outline describing the video's content accompanying viewing to be used for note taking may also facilitate greater learning. Another idea would be to administer a short quiz after viewing. Health education has been defined as "any combination of learning experiences designed to facilitate voluntary adoption of behavior conducive to health" (Green, Kreuler, Deeds & Partridge, 1980). Whether the video "Controlling

Hypertension" alone would facilitate a positive behavior change versus being viewed together with added educational support is worthy of further research.

In conclusion, our favorable knowledge test results indicate that the content of this video was sufficiently appealing, comprehensive, and attention-getting, thereby resulting in improved understanding of ways to control hypertension.

The Likert evaluation results concerning the educational and productive quality of the video indicated an overall positive response. However, there were two areas where scores, although still positive, were slightly lower in relation to other subject areas. The first score was question number three which referred to the quality of the graphics in the video ($M = 4.02$). The text graphics in some portions of the video looked a little blurred and crooked. This was surprising since everything appeared clear and in-line during the editing process. The problem occurred when a commercial television and VCR were used to broadcast the video. Since the original tape was recorded in Beta format then transferred to VHS format, the graphic quality of the videotape may have been affected. The author and technical advisor need to attend to this technical difficulty so as to present a better graphic presentation to the audience.

The second lowest score was question number eight which referred to the quality of color in the video ($M = 4.13$). Once again the transfer problem from Beta format to VHS format may be to blame or the actual television/VCR hook-up could have distorted the color. In both cases during the editing process the graphic and color quality looked very good.

Some of the respondents taking the Likert evaluation also filled out a comments/questions form at the end of the test. Most positive comments were regarding the video tape's educational content and structure; many respondents found the tape easy to remember and follow. An example of some comments were as follows: "Good tape; clear and informative, length was just right." Additional positive comments were addressed to the quality of the narration, being easy to listen to and clear. "Narrator's voice was very clear and easy to listen to. Things said seemed easier to remember because of the structure of the information presented."

It is important to note that the video may have presented too much information on hypertension to the viewer. Inevitably, some information presented may better apply to the viewer's individual interest than other information. As the viewer contemplated the relevant information, the video continued to dispense more information without stopping. As

noted in Chapter two, video learning is improved when viewers are free to interrupt the tape at any time when an explanation is needed (Hartley, 1968). Future group showings of "Controlling Hypertension" may prove more effective and beneficial for the viewer by having health care professionals available to answer questions during viewing. If the tape is viewed alone, the observer will benefit by stopping the tape, noting the question, and having it answered by a health care professional at a later time.

Another important factor to note in video education are the environmental conditions. The video should be viewed in a quiet, nondistracting area free of interruptions (Kelley, 1964). Our video was shown in such a nondistracting group setting. It will be interesting to see whether the benefit of video viewed in a group setting is different than video viewed in an individual's home environment.

Another possible research area concerns the additional educational benefit of supplying supplemental materials such as a workbook to help the viewer follow and take notes. Video education offers the learner control of the learning environment. With the greater control and standardization offered by video education, a learner can reflect on the material, analyze, and restructure it as best suits their needs.

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Appendix A
Model Release

Appendix A
Model Release

I agree to be videotaped and grant Niel Bergquist, his legal representatives, assignees, those for whom he/she is acting, and those acting in his authority and permission, the absolute right and permission to copyright, use and publish said videotape.

I hereby release and discharge Niel Bergquist, his legal representatives, licensees, and assignees from any and all claims and demands arising out of or in connection with the use and publication of said videotape.

Date: _____

Signed: _____

Address: _____

Appendix B
DeAnza College Release Form

DeAnza College

21250 Stevens Creek Blvd.
Cupertino, CA 95014

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Release Form

De Anza College
21250 Stevens Creek Boulevard
Cupertino, California 95014

I have agreed voluntarily to appear without compensation in a motion picture film or video tape produced by you.

You shall have the right to exhibit and televise said film or tape. As between you and me, the film or tape, all copies thereof and all rights therein shall be your sole and exclusive property.

You shall have the right and may grant others the right to disseminate, print and publish my name and likeness and biographical material in connection with the publicity and promotion of the film or tape but not for the direct endorsement of any product.

I hereby release and discharge you and your respective agents, employees, successors, assigns and licensees from any and all claims, liabilities and obligations of any kind or nature which may arise from my appearance or participation on the film or tape or any exhibition thereof.

I agree that you have no obligation to exhibit or televise my performance or otherwise use me on your film or tape.

Very truly yours,

Address:

Date:

f-

Appendix C
Informed Consent Form

Appendix C
Informed Consent Form

You are invited to participate in a study which is the final part of my coursework necessary to complete my Masters degree in Human Performance from San Jose State University. The intent of this study is to examine the effects of viewing a videotape on Controlling Hypertension, and determining if knowledge concerning hypertension is improved.

If you decide to participate I will administer to you a pretest true-false questionnaire that will be used to measure your knowledge before viewing the videotape. Actual viewing of the videotape will be approximately 20 minutes in length. After viewing, you will be asked to take a posttest true-false questionnaire similar to the pretest. The total time in participating should last less than 45 minutes.

Any information obtained in connection with this project and that can be identified with you will remain confidential and will be disclosed only with your permission.

You are making a decision whether or not to voluntarily participate. Your signature indicates that you have decided to participate, having read the information provided above.

Signature _____

Date: _____

Signature of Investigator: _____

Date: _____

Appendix D
Videoscript

Appendix D
Controlling Hypertension

	<u>Graphic</u>	<u>Spoken Script</u>
Title,	Heart beats	
"Controlling	graphic	
Hypertension,"	effects	
with heart beating		
on screen before		
narration begins.		
Narrator on		
screen.		High blood pressure is one
		of the most serious diseases
		in the United States today.
		A persistent elevation in
		blood pressure can, with
		time, cause your heart to
		overwork. Hypertension
		contributes to about one
		million deaths per year and
		costs the American taxpayer
	emphasize	18 billion dollars. It
	18 billion	affects approximately 1 out
		of every 4 American adults.

GraphicSpoken Script

High blood pressure and hypertension are synonymous yet many people are confused as to the exact meaning of hypertension. Hypertension doesn't mean that you are overly tense or nervous. It is merely another way of describing a disease. In simple terms, hypertension means that the blood circulates at a pressure higher than normal. Hypertension is often called the "silent disease." That is, there are often very few characteristic symptoms until as late as 15 to 20 years after onset. Persons with hypertension may experience lightheadedness, extreme fatigability, palpitations, headaches, blurred vision,

Narration off
screen,* graphic
titles on screen,
lightheadedness,
extreme
fatigability,

Black letters,
white background.
All six symptoms
on screen. Change
color of heart to
produce effect.

	<u>Graphic</u>	<u>Spoken Script</u>
	palpitations, headaches, blurred vision. confusion. Heart beating.	and confusion. Untreated, hypertension can increase the risk for stroke, heart disease, and kidney failure. When blood pressure is consistently high, it pushes against the artery walls with excessive force. Over a period of time the artery walls become hard and thick and lose their elasticity. The worst point in this pro- cess is when the artery has completely clogged, result- ing in a heart attack, or a condition known as Athero- sclerosis. Having high blood pressure contributes to wear and tear on the arteries and creates a strain on the heart. This is a blood pressure cuff. We've all had our blood pressure measured with one
Artery on screen	Changing diameter.	
Blood pressure unit on screen		

Graphic

Blood pressure
being taken -
nurse and patient.

Blood pressure
meter on
screen.

Close up.

Higher number
shot.

Lower number
shot

Spoken Script

of these at the doctor's
office. When your blood
pressure is taken, two
numbers are determined.
These numbers make up your
blood pressure reading.
They refer to the pressure
within the arteries during
the two phases of the heart
cycle. The first number is
called the systolic pres-
sure. This is the highest
number. This designates the
pressure during the period
when the heart is actually
contracting or pumping the
blood out and through the
body. The second number,
the diastolic pressure,
designates the lower pres-
sure which is present during
the longer resting phase
between the heart's contrac-

<u>Graphic</u>	<u>Spoken Script</u>
Mercury in meter rising.	tions. Therefore, we can call the systolic pressure the actual pumping pressure and the diastolic pressure the resting pressure of the heart. Systolic pressure is determined by the amount of blood the heart pumps with each beat, and by the elas- ticity of the arteries.
Blood pressure being taken--nurse and patient.	Diastolic pressure, on the other hand, is determined by the resistance to the flow of the circulating blood
120/80 graphic on screen.	within the arteries. For most adults, a normal blood pressure reading is considered to be 120/80. One hundred and twenty is the systolic pressure and 80 is the diastolic pressure. For older people, we find that the arteries have lost some elasticity which causes

	<u>Graphic</u>	<u>Spoken Script</u>
140/90 graphic on screen.	Black numbers, white background.	them to become stiffer with age. This can cause the pressure to rise. There fore, for people over 50, readings of 140/90 may be considered normal. For most adults, however, the risk of cardiovascular complications increases as blood pressure rises above 140/90. We should note, however, that blood pressure can also fluctuate normally through- out the day. For example, it rises during exercise, after eating, during sexual relations, during cold weather, and when you are emotionally upset or under stress. Other factors cause a decrease in blood pres- sure, such as lying down and relaxing. When your doctor takes your blood pressure
Exercise bike scene at DeAnza College. (Cardiac Rehabilitation class.)	Narrator emphasizes "normal." Normal class activity.	
Patients lying down for cool down.		

GraphicSpoken Script

and finds it to be high, he will often have you rest and relax so it can be re-measured in a few minutes.

This is an effort to get a more accurate reading of your blood pressure in less stressful conditions. This is an example of how brief periods of increased blood pressure are not usually a problem. The problem occurs when the blood pressure is consistently higher than normal. *This consistent high blood pressure, hypertension, is a puzzling disease, since the cause is unknown in over 90% of all cases. Due to medical progress the disease can be controlled through diet, weight reduction, exercise, and medication.* Diet can

Narrator on screen.*

Graphic

Narrator off screen. Staged scene
 Restaurant scene. with friend
 and director
 (waiter).

Spoken Script

influence blood pressure in
 a negative way by causing
 your blood pressure to rise.
 There is evidence that too
 much salt in your diet can
 increase your chances for
 developing high blood pres-
 sure. Conversely, by reduc-
 ing sodium consumption,
 blood pressure can be
 reduced.

One tenth of Still shot.
 a teaspoon
 of salt.

Salt is a compound made up
 of sodium and chlorides.
 High blood pressure appears
 to occur as a result of the
 sodium present in salt. The
 body does need sodium, at
 least 230 milligrams per day
 or the equivalent of about
 one tenth of a teaspoon of
 salt. Consuming more than
 approximately four grams per
 day however, appears to

Full teaspoon
 of salt, about
 4 grams.

<u>Graphic</u>	<u>Spoken Script</u>
<p>Food on screen, then graphic. Name of food and mg's of salt per serving. No audio.</p>	<p>excessively elevate most people's blood pressure. Here are some examples of common foods and the sodium levels present in those foods: Instant pudding--404 mg. per serving Pickles--1137 mg. per serving Big Mac--1510 mg. per serving TV dinner--1152 mg. per serving Beefaroni--1186 mg. per serving Canned string beans--279 mg. per serving.</p>
<p>Salt pouring in a pile of salt.</p>	<p>Food-still: blue background, black bottom. Graphic-still: black letter, white background.</p> <p>Still shot.</p> <p>This extra sodium must be removed through the kidneys, but it first must be diluted with water. The extra water volume in the blood needed to carry the sodium through</p>

GraphicSpoken Script

Lemon, herb and
spices on
screen.

Still shot on
plate.

Soy sauce,
worcestershire
sauce, meat
tenderizers,
garlic salt and
onion salt
on screen.

Still shot:
blue background,
black bottom.

Big Mac container
on screen.

Still shot.

the kidneys causes extra
pressure in the blood
vessels, thus raising blood
pressure. A way of reducing
sodium levels is to decrease
salt consumption.

Try removing the salt shaker
from the table. Use a bit
of lemon, herb, or spices in
place of salt. Avoid soy
sauce, Worcestershire
sauce, meat sauce, meat ten-
derizers, garlic salt, and
other flavored salts. After
a while you will probably
find that you lose your
taste for salt, and that the
natural flavors of foods
will come through without
being masked by salt.

Sodium is also used as a
flavor enhancer or as a pre-
servative in almost all
prepared foods. Since our

GraphicSpoken Script

Food label on screen.	Pan down label.
Fresh fruit on Vegetables on screen. screen. Beans and rice on screen.	Still shot.
Restaurant scene.	Friend being served. Act natural.

hectic lifestyle dictates
 the use of convenience foods
 and eating many meals on the
 run, we're exposed to much
 more sodium than we realize.
 Begin reading labels to
 check the amount of sodium
 contained in foods. Try
 Try replacing some of the
 processed foods in your diet
 with foods with less salt or
 no salt. Some foods which
 are low in sodium are fresh
 fruits, vegetables, fresh
 meat and poultry, and
 cereals and grains. Also
 remember, when you go out on
 the town, ask for low salt
 foods in restaurants.
 You'll be surprised at how
 many restaurants are pre
 pared to fulfill such
 requests.

	<u>Graphic</u>	<u>Spoken Script</u>
Patient weighing himself at DeAnza College's Physiology Lab.	Please weigh yourself.	Another factor affecting blood pressure is obesity. Defined, obesity is being overfat. Hypertension is twice as common in over- weight persons as it is in those with normal weight based on age and height. The increased incidences of hypertension in the obese seems to be due to their higher salt consumption. Weight loss in the obese often results in a reduction in blood pressure. As the quantity of food consumed decreases, so does the salt intake.
Budweiser can on screen.	Still shot: blue background.	Alcohol consumption can also raise your blood pressure. Alcohol consumption is de- fined as consuming 2 or more ounces of alcohol a day and has been associated with a

GraphicSpoken Script

Technical Adviser Be impatient
on screen and tense.
in business
office.

higher prevalence of hyper-
tension.

The evidence for psycho-
logical stress as a primary
cause of hypertension is
inconclusive, but some
evidence does exist which
links personality to hyper-
tension. I'm sure by now
you have heard of type A and
type B behaviors. Type A
behavior refers to someone
who is extremely competi-
tive, achievement oriented,
aggressive, impatient and
tense. With this type of
behavior we commonly see an
increase in blood pressure.

Technical Adviser Be relaxed
on screen in and calm.
business office.

Type B behavior can best be
illustrated by reversing
many type A characteristics.
A type B person is generally
easy going and relaxed. If
you think that stress is re-

GraphicSpoken Script

Project advisor
on screen hooked
up to Biofeedback
Unit at SJSU.

Act natural
Greg! Relax!

lated to your hypertension,
here are some ways of controlling stress.

Biofeedback is a method in which one can be trained to develop control over normal body responses such as blood pressure. In this method, bodily responses such as heart rate, ventilation, and blood pressure are monitored while you practice a relaxation technique. Once a technique begins to work, you will receive feedback from the bodily response measuring devices. Using this method studies have shown blood pressure to fall considerably.

Cardiac patients
on mats doing

Zoom in then
out.

Relaxation methods such as
yoga, transcendental medita-

	<u>Graphic</u>	<u>Spoken Script</u>
cool down exercises.		tion, and the relaxation response have also been used in the treatment of hyper- tension. With these methods, many different easy to learn techniques of relaxation can be used.
	Pan to chest (breathing)	One can sit comfortably with their eyes closed and just concentrate on breathing.
Patients raising legs and relaxing		Another relaxation tech- nique is done by tightening and relaxing each muscle of your body, starting at your feet and going up to the head. These techniques and many more are being used by cardiac patients with great confidence as they seem to cause a calmness which results in a decreased emo- tional state and lowering blood pressure. Regular exercise will result in a
Patients raising arms and squeezing fists and relaxing.		

	<u>Graphic</u>	<u>Spoken Script</u>
Cardiac patient on treadmill.	Zoom in and out.	reduction in both systolic and diastolic pressure. Exercise may also lower blood pressure by slowing your heart rate. Regular exercise also produces many benefits such as an in- creased feeling of well- being, more energy for normal daily activities, and greater ability to relax and sleep better. In addition, exercise assists in con- trolling body weight and developing a more positive self image. Activities to help control hypertension should be done in a continu- ous aerobic manner. The term aerobic refers to movements that require oxygen for energy. Examples of aerobic activities would be jogging, swimming, walk
Two rehab patients exercising on stationary bicycles		
Examples of each activity.	Quick edits.	

Graphic

Rehab patient
on treadmill.

Narrator on screen.*

Spoken Script

ing, or hiking, bicycling,
or exercising on a treadmill.

Before you start any exercise program be sure to get a complete physical examination. Always check with your physician or cardiac nurse if you feel dizzy, short of breath, or experience chest pain, undue or excessive fatigue, or prolonged discomfort.

*We have just examined how you can help control hypertension through diet, exercise, and stress reduction, but the most common way to fight hypertension has been with drug therapy. The first drugs with long term effectiveness in the treatment of hypertension were introduced in the 1950's. A

GraphicSpoken Script

Change camera
angle for
emphasis.

wide variety of additional
drugs have become available
since that time. However,
hypertension is not cured by
drugs. It is controlled.
To be effective, anti-hyper-
tensive drugs must be taken
on a regular basis and
exactly as prescribed.

Mother-in-law
in bathroom.

Otherwise your blood pres-
sure will simply return to
its original state.*

Close up of
pills in hand.
Zoom out.

One of the major problems in
drug treatment is that many
people find themselves feel-
ing better taking the medi-
cation. So, once they feel
better, they stop drug
treatment. You must remem-
ber the importance of taking
your medication. The only
person who should tell you
to stop is your physician.

	<u>Graphic</u>	<u>Spoken Script</u>
Drug bottles on shelf.	Pan.	Probably the most common
Graphic letters on screen:	Black letters, white background.	reason for a patient stopping anti-hypertensive medication is the presence of side effects from the drug.
dizziness		Some common side effects are
weakness		dizziness, weakness, nausea,
nausea		headaches, and sexual dysfunction.
headaches		Another reason that patients stop taking their medication is a lack of understanding of the purpose of the drug. In addition, they may find it hard to find time to take the drug or may forget. If you are tempted to stop the medication for any reason, please talk with your physician. Other medications can be prescribed to fit your schedule better and reduce any uncomfortable side effects you may experience.
sexual dysfunction		
Outside drug store, walking in.		
Inside store talking to pharmacist.		

	<u>Graphic</u>	<u>Spoken Script</u>
Drug bottles on shelf at drug store.	Pan.	Since the cause of hyper- tension is unknown in more than 90% of all cases, physicians sometimes pre- scribe more than one medica- tion. I'm sure you have probably gone through this yourself. If one medication fails to control your blood pressure, your doctor may either switch medications or add another. What he is seeking for is the best combination to control your blood pressure with the least side effects. Some patients may take as many as four or five anti-hyperten- sive drugs at once. The available drugs designed to treat hypertension work in different ways to help lower blood pressure. They either
Mother-in-law in bathroom (repeat scene).	Close up, pills in hand.	
Heart beating -- graphic.	Still shot.	

	<u>Graphic</u>	<u>Spoken Script</u>
Diuretics on screen.	Black letters, white background.	act directly on the central nervous system or the blood vessels themselves. The first group of drugs that you may be familiar with are called diuretics. Diuretics work to lower blood pressure by increasing the flow of urine. By going to the bathroom more frequently you are reducing the pressure within your blood vessels.
Beta-blockers on screen.	Black letters, white background.	Our next group of drugs are called beta blockers. These
Artery dilating--graphic.	Diameter increases and decreases.	drugs modify the nervous system and control blood vessels in a manner that allows the vessels to dilate, that is open wider to decrease pressure. Sometimes in the body, due to an erratic nervous system, we find that the heart can beat faster and pump
Heart--graphic.	Beating fast.	

	<u>Graphic</u>	<u>Spoken Script</u>
Heart--graphic.	Beating slower.	<p>harder. This can cause an increase in blood pressure.</p> <p>A beta blocker, in effect, blocks this response.</p> <p>Reduced activity in the nervous system occurs.</p> <p>There are different kinds of beta blockers that act directly on different areas of the body; some act only on the brain centers, some on the heart and/or blood vessels. Another type of anti-hypertensive drug is a vasodilator. These drugs relax the smooth muscles within the artery. This results in a dilating process which allows the blood to flow more easily, thus reducing blood pressure.</p> <p>Remember all three classes of drugs can cause blood vessels to dilate. One drug</p>
Vasodilators on screen.	Black letters, white background.	
Artery--graphic.	Artery diameter increases then decreases--slow motion edit.	

<u>Graphic</u>	<u>Spoken Script</u>
Drug bottles on drug store shelf.	can be effective, or a combination must be used.
Diuretic graphic on screen.	In review, drugs are the most widely applicable form of treatment for hypertension. These include
Beta-blockers graphic on screen.	diuretics, or drugs that increase the flow of urine to reduce blood pressure,
Vasodilators graphic on screen.	beta blockers, or those that decrease the activity of the nervous system, and vaso-
Blood pressure meter on screen.	dilators, or drugs that relax muscles of the artery walls, allowing the blood to flow more easily, thus
Mercury dropping.	reducing blood pressure.
	Due to these treatments in hypertension we have seen death rates reduced by as much as 35% in the last 10 years. For treatment to be successful, you have to realize that along with drug

	<u>Graphic</u>	<u>Spoken Script</u>
Drug store scene.	Regular business.	therapy, behavioral and lifestyle changes must also occur, hopefully to where medication can be reduced or stopped.
Swimmers		No single factor alone determines who will suffer hypertension. Uncontrollable factors that might cause hypertension include heredity, age, race, and sex. Controllable factors are cigarette smoking, diet, obesity, physical inactivity, and emotional stress. By evaluating your overall picture and acting on the factors associated with the hypertension, you can look forward to a long life free of many of the fears that frequently accompany the diagnosis of hypertension.
Cardiac Rehab cool down scene (3 men).		
Nurse taking patients' blood pressure (repeat scene).		
Both nurse and patient laughing.		

Appendix E
Evaluation Form

Appendix E
Evaluation Form

Indicate the extent to which you agree or disagree with each statement by circling the appropriate letter below each statement.

SA--Strongly Agree

A--Agree

U--Uncertain

D--Disagree

SD--Strongly Disagree

N--No Opinion

1. The educational content in this videotape was informative.
SA A U D SD N
2. The narrator's voice was clear and understandable.
SA A U D SD N
3. The videotape's use of graphics was poorly done.
SA A U D SD N
4. The videotape was organized and easy to follow.
SA A U D SD N
5. The length of the videotape was too long.
SA A U D SD N
6. The information in the videotape reminded me of ways to control hypertension.
SA A U D SD N

7. The videotape contained too much information and was hard to comprehend.

SA A U D SD N

8. The quality of color in the videotape was good.

SA A U D SD N

9. The videotape held my interest.

SA A U D SD N

10. Comments:

Appendix F
Pretest Questionnaire

Appendix F
Pretest Questionnaire

Please circle the best answer:

1. Hypertension is defined as being overly tense or nervous.
T F
2. Hypertension is considered a risk factor in the development of heart disease.
T F
3. The "diastolic pressure" is the increased arterial pressure caused by the heart's contraction.
T F
4. Eating more than 4 grams of salt per day can increase blood pressure in some people.
T F
5. Alcohol consumption over 2 or more ounces per day may raise your blood pressure.
T F
6. Biofeedback is commonly used in Transcendental Meditation.
T F
7. Aerobic exercise refers to short bursts of energy at a high physical intensity.
T F

8. Usually the use of drugs to treat hypertension is only needed for a short time.
T F
9. Anti-hypertensive drugs can never be prescribed together with any other drug.
T F
10. Diuretics help lower blood pressure by acting directly on the central nervous system.
T F
11. A vasodilator medication causes the smooth muscles of the artery to constrict.
T F
12. The spleen is responsible for removing excess sodium from the body.
T F
13. "Type A" behavior is often associated with stress.
T F
14. Obesity is a controllable risk factor when fighting heart disease.
T F
15. Bowling is a beneficial exercise in the prevention of heart disease.
T F

Appendix G
Posttest Questionnaire

Appendix G
Posttest Questionnaire

Please circle the best answer:

1. Hypertension is defined as being overly tense or nervous.
T F
2. Biofeedback is commonly used in Transcendental Meditation.
T F
3. "Type A" behavior is often associated with stress.
T F
4. Usually the use of drugs to treat hypertension is only needed for a short time.
T F
5. The spleen is responsible for removing excess sodium from the body.
T F
6. Aerobic exercise refers to short bursts of energy at a high physical intensity.
T F
7. Hypertension is considered a risk factor in the development of heart disease.
T F

8. Eating more than 4 grams of salt per day can increase blood pressure in some people.
T F
9. Bowling is a beneficial exercise in the prevention of heart disease.
T F
10. Anti-hypertensive drugs can never be prescribed together with any other drug.
T F
11. Alcohol consumption over 2 or more ounces per day may raise your blood pressure.
T F
12. Obesity is a controllable risk factor when fighting heart disease.
T F
13. A vasodilator medication causes the smooth muscles of the artery to constrict.
T F
14. Diuretics help lower blood pressure by acting directly on the central nervous system.
T F
15. The "diastolic pressure" is the increased arterial pressure caused by the heart's contraction.
T F