

NUTRITION AND HEALTH ATTITUDES IN A MALE NAVY POPULATION AND
THEIR RELATIONSHIPS TO SELECTED PHYSICAL READINESS MEASURES.

by

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(ABSTRACT)

This study examined the relationship between nutrition and health attitudes in 1,887 Navy men stationed aboard ships and shore commands and the relationship of these attitudes to physical readiness measures: 1.5 mile run, sit-ups, pushups, and percent body fat. Five attitudinal factors were developed from a self-report lifestyle questionnaire through factor analysis: General nutrition orientation, high fat food preference, positive exercise attitude, willingness to seek help attitude, and eating locus of control. Results of the self report of habitual eating patterns suggest that the typical Navy man skips breakfast, has a relatively high saturated fat intake and does not meet recommended intake levels of complex carbohydrates. Furthermore, results indicate that Navy men with an external locus of control have a higher percent body fat while younger, leaner Navy men scored higher on their preference for high fat foods. Implications of these results suggest the necessity for a two pronged approach to nutrition intervention programs in Navy populations. The first approach should be directed towards treatment in rehabilitation of individuals who scored high on the external locus of control attitude. These men had higher percent body fat which is unacceptable to the Navy's Physical Readiness Program standards. The second approach should be

directed to younger, leaner individuals in the study who scored high in the high fat food preference category. A preventive nutrition education approach in line with the Surgeon General's recommendations should be incorporated into the Navy's weight control and nutrition education programs.

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CHAPTER I

Introduction

In the last 10 years, awareness that eating practices and lifestyle factors increase the risk of chronic disease has spread throughout the general population. The United States Navy has also recognized the need for active promotion of healthy lifestyles and the reduction of health risk factors. In October of 1982, a directive from the office of the Chief of Naval Operations (CNO) established the Navy Health and Physical Readiness Program (HAPR) [1]. As part of this program, the Navy established minimum standards for physical fitness and weight control, and emphasized the need for all Naval personnel to participate in lifestyle behaviors that promote good health [1].

Central to the HAPR program is the CNO's "Personal Excellence and National Security Program" [2]. In the areas of weight control and nutrition, this directive promotes the incorporation of nutrition education components in Navy training programs. According to the Naval Military Personnel Command (NMPC) and the Naval Health Research Center (NHRC), approximately 20,000 Navy members are categorized as overfat or obese [3]. NHRC recommends nutrition education to expedite compliance with regulations [4].

To develop effective nutrition education programs, deficits in nutrition knowledge had to be identified. In 1984, the Navy Health Research Center (NHRC), an independent evaluating organization of the Health and Physical Readiness Programs appraised nutrition knowledge in Navy recruits [4]. The study revealed that recruits and U.S. high-school graduates were similar in

their nutrition knowledge base [5]. In 1985, NHRC began a Navy longitudinal health study to determine habitual eating practices and lifestyle attributes of naval personnel [6].

There is a lack of documentation to support the theory that nutritional and health knowledge and eating practices and other health behaviors are well correlated. Dunn, Bryson, and Hoskins [7] demonstrated that knowledge about diabetes and its management improved after an education program, but there was no correlation between sound knowledge and good diabetic control. Similarly, evaluation of smoking cessation campaigns has shown that despite increased awareness of smoking hazards and measures helpful in smoking cessation, many clients persisted or relapsed [8]. In the area of nutrition, Sullivan and Schwartz [9] demonstrated poor correlation between knowledge of the role of diet in cardiovascular disease and dietary practices.

Early assumptions that health behavior was mainly a matter of health knowledge have given way to a growing realization that the determinants of health behaviors are very complex. Currently the preferable approach is to identify people's subjective health perceptions, and to determine the degree to which their lifestyles and social environments hamper or facilitate behavioral change and incorporation of new, healthier practices. Other factors to be studied include the disparity between health requirements and other needs and the influences of economic factors and conditions in people's physical environment [10,11,12].

Purpose

The purpose of this research was to identify habitual eating practices of Navy men and examine their nutrition and health attitudes through factor analysis of selected questions from a lifestyle questionnaire. Furthermore, the relationships will be explored between nutrition and health attitudes and selected physical readiness measures. The sections of the review of literature will address Navy nutrition knowledge, Navy Physical Readiness program and body composition standards, highlights of the Surgeon General's Report on Nutrition Recommendations for Healthy Americans, nutrition recommendation to enhance athletic performance, nutrition attitudes and psychological factors relating to eating and health behaviors, intervention strategies, health promotion and worksite wellness, and worksite obesity studies. Appendix A provides a description of a typical day in the life of a sailor.

Limitations of Study

This study was exploratory in nature as research into the eating practices and nutrition and health attitudes of Navy men is limited. The results of this research is a partial description of male naval personnel. The information attained can only be generalized to the male naval population.

Data obtained in this study, except for physical readiness scores (e.g. height, weight and percent body fat), was self-reported. The lifestyle questionnaires were sent out to military personnel. Since the military is their source of livelihood, it may not be possible to rely on all the

information provided by the respondent. Particular questions that require answers which are controversial and/or contrary to Navy directives may be suspect.

Another problem with self report data was reported by Meichenbaum [13] who noted that self reporting leads to over reporting of positive adherence to other health behaviors. Furthermore, the belief that certain foods should be eaten may have made it more difficult for participants to remember what was actually eaten. For this reason it will be difficult to establish habitual eating practices of personnel with a strong confidence level.

Definition of Terms

For the purposes of this study the following definitions will apply:

Chief of Naval Operations (CNO) - Head of the Navy on the military side of the chain of command. Senior commissioned officer in the Navy; reports to the chairman of the Joint Chiefs of Staff (JCS).

Navy Health Research Center (NHRC) - The independent evaluating organization for the Health and Physical Readiness program.

Health and Physical Readiness Program (HARP) - Establishes minimum standards for physical fitness and weight control for naval personnel.

Naval Military Personnel Command (NMPC) - The command that is responsible for the assignment and management of the personnel assets of the entire Navy.

Navy Food Service Systems Office (NAVFSSO) - Provides recommendations about operational procedures and menus, training and assistance to ship and shore food service facilities.

Food Management Teams - Provide training visits to ship and shore food service operations to assist in menu preparation, provision management, sanitation improvement and food service accounting.

Internal Locus of Control - "the belief that attainment of a goal, reward, or outcome is within one's own control or a result of one's own actions" [14].

External Locus of Control - "the belief that attainment of a goal, reward or outcome is in the control of other persons or things more powerful or significant than oneself" [14].

CHAPTER II

Review of Literature

A. Navy Nutrition Knowledge and Physical Readiness Studies.

Part of the Navy's Health and Physical Readiness Program (HARP) calls for the incorporation of nutrition education programs into all accession and training programs. A significant portion of the training is oriented to new recruits. In 1984 a study was undertaken to determine deficits in nutrition knowledge, identify recruits with above average need for nutrition education, and to compare recruits' nutrition knowledge with that of typical U.S. school students [5]. The purpose of that investigation was to establish baseline nutrition education standards for comparison purposes with future education programs.

The approach implemented by the Navy Health Research Center was to test nutrition knowledge of 205 male recruits in four basic training companies at the San Diego Recruit Training Center. The instrument used was a shortened version of the Nutrition Achievement Test 4 developed for use with high school juniors and seniors [15]. Similar results between the high school sample and recruits were indicative of the comparable assessment between the two groups.

Questions answered incorrectly by more than 50% of recruits involved the following types of information: (1) How to assess nutrient recommendations; (2) How to assess the adequacy of one's own diet for meeting nutrient needs;

(3) How to identify the basic four food groups and numbers of servings of each of the recommended groups.

The investigation revealed the need for prioritization of nutrition education for naval personnel. To facilitate these developments the Navy Food Service Systems Office (NAVFSSO) was tasked with the implementation of a comprehensive food and nutrition plan for both shore mess facilities and those aboard ship [4].

NAVFSSO has modified Navy recipes to correspond to the American Heart Association guidelines and Department of Health and Human Services and United States Department of Agriculture dietary guidelines. Food choices lower in fat, cholesterol, sodium and calories are now offered, helping personnel maintain healthier eating styles. However without nutrition education and attitude change programs, behavior change will not necessarily occur.

Little is known on current health habits and nutrition practices of naval personnel, and their relationship to physical readiness measures. In 1985, the Naval Health Research Center, in order to rectify this lack of information, examined data on physical readiness test scores and life style questionnaires [6]. The purpose of the study was to develop a general description of selected dietary habits of a group of Navy men, describe associations between habits, and examine the relationship between dietary practices and physical readiness measures.

Participants were a subgroup from a larger study designed to evaluate physical readiness among male shipboard personnel [6]. Shipboard personnel

completed a questionnaire on health and nutrition, attitudes and lifestyle behaviors. The lifestyle measure was voluntary, unlike the physical readiness tests which are mandatory. One thousand and thirteen men had available surveys and physical readiness test scores.

Participants in the study were 1013 men stationed on nine Navy ships for whom self-report lifestyle information and physical readiness data were available. Enlisted personnel comprised the majority of the sample, (93%), and the median pay grade was E-4; 7% of the personnel were officers. All pay grades from recruit (E-1) to commander (O-5) were represented. Mean age of the group was 26.2 years (SD = 6.3), with a range of 18 to 51 years. Ninety-four percent were high school graduates and 25% had attended college. Racial composition of the sample was 78% white, 10% black, and 12% hispanic, Malaysan, Filipino, Puerto Rican, Asian or other.

Participants in the study were self-selected, and appeared representative of the population of the nine ships. Demographically, the sample was found to compare favorably with the Navy as a whole, except that females were not surveyed.

Analysis of eating patterns of the respondents revealed that 52% of the Navy men reported they frequently skipped breakfast, while only 11% usually missed lunch, and only 4% skipped dinner. Twenty-six percent habitually snacked between meals. Analysis of results revealed that participants favored foods high in saturated fat, preferred eggs for breakfast, and had a lower than recommended intake of complex carbohydrates [6].

In this research, good dietary and health practices tended to be positively correlated among themselves and negatively related to poor health and nutrition habits. Those individuals with a nutrition orientation tended to eat breakfast, not snack between meals, not drink caffeine, and not smoke. Individuals with a poor diet tended to snack between meals, and had low nutrition orientation [6].

Eating breakfast significantly correlated with better scores on run time, sit-ups and body fat. The healthy diet variable was defined as a composite of the positive answers to the following: "During the last seven days, how often did you ...?"

- a. eat lean meats
- b. eat low fat dairy products
- c. eat or cook with polyunsaturated oils or margarine
- d. eat fruits
- e. eat vegetables
- f. eat high fiber grains or breads

This healthy diet variable was found to correlate positively with number of sit-ups accomplished in two minutes and negatively to percent body fat, while the poor dietary variable correlated negatively to run time and positively to percent body fat. The poor dietary variable was defined as a composite of the positive answers to the following: "During the last seven days, how often did you ...?"

- a. eat high fat meats
- b. eat high fat dairy products
- c. eat or cook with saturated fats
- d. eat eggs
- e. eat refined sugar products
- f. add salt to your food

Nutrition orientation was defined as a composite of the positive answers to the following: "How well does each statement describe you?"

- a. "I eat a balanced diet."
- b. "I watch my weight."
- c. "I limit my intake of foods like coffee, sugar, fats, etc."
- d. "I take vitamins."
- e. "I take health food supplements" (e.g. bran, lecithin, wheat germ)

Nutrition orientation was negatively correlated to run time and percent body fat and positively correlated to sit-ups. Higher scores for number of sit-ups indicated better performance while higher scores for percent body fat and run time indicated poorer performance.

Stepwise multiple regressions were computed to determine the contribution of the dietary variables to physical fitness scores. Nutrition orientation was found to be the most significant predictor of physical fitness. Caffeine intake, between meal snacking and overeating were the next most consistent predictors of fitness scores, entering into three of the five multiple regression equations.

Results of the lifestyle survey implied that prevalent eating habits of ship board men did not meet the dietary guidelines provided by the American Heart Association [16] or the 1988 guidelines outlined by the Surgeon General of the United States [17].

The authors noted that the lifestyle questionnaire used had not been validated against external criteria. They pointed out the disadvantages of self report instruments for their potential response distortion, but

emphasized the reported validity of a number of food frequency and exercise questionnaires [18,19,20]. Moreover, the authors measured good internal reliability with alpha coefficient ranging from .65 to .77 for the composite previously defined. The authors also limit the dietary questionnaire for its lack of representative portion sizes, but emphasize that the purpose of their research was to classify individuals by their usual food patterns and preferences not to determine exact nutrient or calorie intake [6].

The limitation of this research was that personnel surveyed were only assigned to ships and not to shore commands. Shipboard personnel are younger, probably have less opportunities for exercise, and rely more on the Navy mess for their sustenance than do their shore based counterparts. The results obtained could not be generalized to the Navy men as a whole without the consideration of shore based personnel. The researchers concluded that if a basic nutrition orientation could be instilled in personnel, this orientation might generalize to the adoption of recommended nutrition practices.

B. Navy Body Composition Standards.

Body composition is an important component of the Health and Physical Readiness Program. The U.S. Navy has developed body composition standards for induction into the service and continuation on active duty [21]. The Navy evaluates body composition for health concerns and to ensure a physically ready force.

As the aging process occurs, the amount of lean body mass decreases and body fat mass increases. One reason for this phenomenon may be the decrease

in metabolic rate which begins at approximately age twenty [22]. It has been estimated after age twenty for every decade of age gained, the metabolic rate decreases by 10%. If there are no changes in exercise or eating habits from age 20 on, men can find themselves 25 pounds heavier by age sixty. In contrast to what is generally assumed, physical training does not result in dramatic changes in body fat percentage. Genetic endowment seems to be the most important factor in a low body fat percentage [23].

By Navy standards an officer or enlisted male is classified as overfat if percent body fat is between 23%-26%, or classified as obese if body fat is greater than or equal 26 percent. Male personnel greater than 22% body fat are required to participate in a command directed remedial program which must consist of an exercise component but may also include some other component of health promotion [21]. Officer or enlisted personnel who fail any component of the physical readiness test are not eligible for transfer, promotion, or advancement until within standards [24,25,26].

Contrary to civilian dietetic practice where most patients are self-referred for weight reduction, naval personnel are referred for failure to comply with Navy regulations. These patients are often hostile, not desiring nutrition evaluation or weight reduction [27]. After long years of loyalty and dedication, senior personnel may face administrative separation from the service and forfeiture of retirement pay and benefits. Needless to say, body composition is a very controversial arena in the Navy, fraught with much hostility and frustration.

The Navy justifies its weight standards based on two major criteria -- health and performance [27]. Documentation on health hazards of obesity are by far the most important.

Navy-specific Procedures for Determining Body Fat.

Anthropometric formulas for determining body fat are specific to the population for which they were developed. The present Navy tables for men were developed using several hundred randomly selected individuals from the general Navy population [28].

Hydrostatic underwater weighing has been the traditionally accepted method for determination of body density. This method is not practical for the large numbers who must be evaluated -- approximately 597,500 officer and enlisted personnel [28].

The current Navy tables [28] used the traditional, hydrostatic criterion-related validity approach that has been used successfully for many years by human performance laboratories. The Naval Health Research Center was tasked with the development of a field estimation technique that would rapidly and accurately predict body fatness in male personnel [28]. A random selection of 400 male naval personnel representative of Navy demographics were selected for measurement.

Navy Performance Standards.

An important component of the physical readiness program is based on the need for military personnel to be combat ready. Selection for military services is based on other criteria besides medical and health: Criteria are based on selecting the best person to perform the job. Military training programs are expensive, so standards were developed as a predictor of the naval personnel who will successfully complete training and perform well on the job [21].

In their research, Slack, Ferguson, and Banta [29] found that percent body fat was poorly correlated with aerobic exercise performance. The best predictor that correlated across all groups was the 1.5 mile run. He found that there was no substitute for direct aerobic performance testing in the evaluation of physical fitness. Parrish [30], however, in his study of 350 males and females aged 18 to 56 years found that body fat correlated more strongly with overall fitness better than the 1.5 mile run. This study suggested that body fat criteria alone should be used as the method of screening to determine lack of physical readiness. The authors pointed out that this would save time and money while still producing comparable results and maintaining physical readiness standards.

Wilmore [23] found there is a high negative correlation between percentage of body fat and performance in activities where body mass must be moved through space, either vertically, as in jumping, or horizontally as in running. According to Smith [31], there is a positive relationship between lean body mass and oxygen consumption. He reports the greater the proportion

of fat-free body mass the greater the oxygen consumption per kilogram of body weight.

C. Obesity and Health.

Definition of Obesity:

Adipose tissue is a normal constituent of the human body. This tissue serves the important function of storing energy as fat for mobilization in response to metabolic demands. Obesity is an excess of body fat frequently resulting in significant health impairment [17].

Clinical observations have long suggested a connection between obesity and a variety of illness. At the present time, the strongest evidence that obesity has an adverse effect on physical health comes from population based cross-sectional and cohort studies [32].

The most comprehensive data on obesity and prevalence of cardiovascular disease risk factors are the National Health and Nutrition Examination Surveys (NHANES) [33,34]. Both studies consisted of representative samples of the United States population.

Data from NHANES II were analyzed by comparing several parameters from the subjects above, or below, the eighty-fifth percentile of the reference population (i.e. non-institutionalized, non-pregnant, U.S. residents, ages 20-29, 1976-1980). The analysis indicated a strong relationship between the incidence of obesity and cardiovascular heart disease risk factors. Based on the above criteria the incidence of hypertension was

2.9 times higher. The incidence of hypercholesterolemia (blood cholesterol over 250 mg/dl) in the young age group 20-44 years and the 45-74 years old group is 2.1 times higher in obese versus normal weights. The incidence of reported diabetics was 2.9 times higher in overweight versus normal weight [35].

Coronary Artery Heart Disease - (CAHD).

The relationship of obesity to the incidence of CAHD has been studied in a large number of cohort studies [32]. In contrast to the consistent relationship of obesity to CAHD risk factors found in the other studies, widely divergent findings have been reported for the relationship of obesity to CAHD. Hence, the eight cohort studies of the U.S. Pooling Project found divergent results, including no association, a "U" shaped relationship and a positive relationship of obesity to CAHD. However, combining data from these same studies uncovered a positive relationship of obesity to CAHD. Possible explanations for the discrepant results include difference in health status of industrial workers in contrast to the health status of the total population, varying duration of follow-up among studies, and inadequate sample sizes [32].

Studies in which obesity predicted CAHD usually found that obesity was not an independent risk factor from the standard risk factors. Studies have been fraught with methodological problems, i.e. failure to control for cigarette smoking, which is strongly associated with lower body weight and is a major risk factor for mortality, the inappropriate control for the physiological effects of obesity (i.e. hypertension and abnormal glucose tolerance) and failure to eliminate early mortality from studies of

individuals with clinical or subclinical illnesses [36]. However, when the Framingham data were re-examined in 5029 men and women of the original study after 26 years, obesity was a significant independent risk factor of CAHD [37]. The data further indicated that weight gain after the young adult years added increased risk of CAHD that could not be attributed to initial weight or risk factors that may have resulted from the gain. The analysis concluded that intervention in obesity should be a primary goal in the prevention of CAHD.

Distribution of fat on the male may be indicative of increased risk of CAHD [38,39]. Men tend to accumulate fat in the abdominal region. Upper body obesity (defined as increased fat around the abdomen) leading to a greater waist to hip ratio has been associated with increased risk factors such as hyperglycemia and glucose intolerance [39].

Cancer

The largest epidemiological study on the obesity and specific malignancies was the American Cancer Society study which involved one million men and women [40,41]. Through the last follow-up year (1972), 93 percent of the subjects were traced. Obese males, regardless of smoking habits, had a higher mortality from cancer of the colon, rectum and prostate.

The evidence is now overwhelming that obesity has an adverse affect on health and longevity. Obesity is clearly associated with hypertension, hyper-

cholesterolemia, Non-Insulin Dependent Diabetes Mellitus (NIDDM) and certain cancers [35].

D. The Surgeon General's Report.

On July 27, 1988 the Surgeon General of the United States announced the release of the Surgeon General's Report on Nutrition and Health [17]. This report presented the consensus of the Public Health Services of the Department of Health and Human Services on the scientific evidence that linked specific dietary factors to chronic disease conditions; on the implications of evidence for public health policies in nutrition education, services, and research; and on recommendations for dietary changes to improve American's health status.

The Surgeon General's report was initiated to identify key nutrition research issues, document the current state of knowledge concerning these issues, and evaluate the implications of this information for public health policies in nutrition education, services and research.

The Surgeon General's report was prepared to alleviate uncertainties in scientific evidence that support dietary recommendations, increase recognition of the importance of diet in disease prevention, and further expand recommendations set forth in the U.S. Senate Report Dietary Goals of the United States (1977) in Healthy People [42], the Surgeon General's Report on Health Promotion and Disease Prevention [43], and the 1980 joint Department of Health and Human Services and U.S. Department of Agriculture report Dietary Guidelines for Americans [44]. The 1985 edition of Dietary Guidelines for Americans [45] recommended that Americans eat a variety of foods; maintain

desirable weight; avoid too much fat, saturated fat and cholesterol; eat foods with adequate starch and fiber; avoid excess sugar and sodium; and drink alcoholic beverages in moderation. These recommendations were presented as dietary guidance policies for chronic disease prevention.

The 1988 Surgeon General's report provides overwhelming evidence in support of the dietary guidelines, and establishes reduction in total fat intake as the primary priority for dietary change. The report's dietary recommendations related to the subject matter of this research are summarized below:

Fats and Cholesterol: Reduction of consumption of fats, especially saturated fats, and cholesterol. Selection of foods relatively low in these substances, i.e. vegetables, fruits, whole grain foods, fish, poultry, lean meats, and low-fat dairy products. Preparation of foods with little or no fat.

Energy and Weight Control: Achievement and maintenance of a desirable body weight through selection of a dietary pattern in which caloric intake is consistent with energy expenditure. Reduction of energy intake by limiting consumption of foods relatively high in calories, fats, and sugars, and minimizing alcohol consumption. Increasing energy expenditure through regular and sustained physical activity.

Complex Carbohydrates and Fiber: Increasing consumption of whole grain foods and cereal products, vegetables (including dried beans and peas), and fruits.

The 1988 Surgeon General's report on Nutrition and Health also recommended special priority issues related to the importance of nutrition and exercise in obesity and weight management for research and investigation. Topics related to this thesis include "The identification of behavioral or environmental factors that predict the development of obesity or the ability to lose weight successfully" [17].

E. Nutrition and Athletic Performance.

Dedication and training combined with genetically endowed physical abilities maximize athletic prowess. However, without an optimal nutrition regime athletic abilities can not be maximized. Most sports nutrition authorities argue that the best nutritional preparation for peak performance is simply a well balanced diet [22,46].

The basic objective for athletes is to adjust their diets to meet the energy requirements of their sport. If energy requirements are met with a balanced diet, other basic nutrient needs will be satisfied according to sports nutrition experts [22,46]. The contribution of total calories from carbohydrate, fat and protein should be in the following ranges: carbohydrate greater than 50%, fat 25-35%, and protein 10-15%.

Ellen Coleman [46] describes a "basic diet plan" that can be used to achieve a balanced diet. This approach emphasizes the basic four food groups. Coleman's adult plan calls for two servings daily from the milk group, two

from the protein rich group, and four each from the fruit and vegetable group and the bread and cereal group. Adjustments for heavy training should include at least eight servings from each of the fruit/vegetable and grain groups to keep carbohydrate percentages at recommended levels.

Athletes are encouraged to consume their daily caloric requirements in at least three meals. A significant portion of calories should be consumed prior to initiation of physical fitness activities. Pushing the majority of food intake to the later hours of the day should be discouraged due to the promotion of increased lipogenesis which may lead to increased body fat [47].

Carbohydrate

A high carbohydrate diet has been shown to enhance athletic performance. A high carbohydrate diet is associated with a higher initial glycogen concentration and increasing time to exhaustion than either a high fat or a mixed diet [47].

This relationship is most notable in endurance events in prolonged training with a low carbohydrate intake (40% or less total carbohydrate). Costill and Miller [48] suggest that a gradual decline in muscle glycogen stores may be related to the chronic fatigue experienced by athletes in repeated strenuous training bouts.

Researchers also examined the effect of type and amount of carbohydrate after strenuous running. The form of carbohydrate does seem to be a factor in glycogen repletion. Consumption of complex or simple carbohydrates resulted in similar muscle glycogen levels two hours after exercise. However, forty-

eight hours after exercise the complex carbohydrate diet results in significantly higher muscle glycogen levels ($p < 0.05$) [49].

Fat

High fat diets are known to cause a shift in metabolic response toward fat oxidation, a factor which could be expected to prolong endurance capacity by sparing muscle glycogen. Early investigators examined the possibility but met with little success and reported significantly reduced capacity under the influence of a dietary high fat intake [49]. Fat intakes above 35% have also been associated with long term health problems such as cardiovascular disease [17].

Protein

High protein diets are not usually beneficial to athletes [22,46]. The recommended daily allowance for sedentary individuals is 0.8 grams per kilogram of body weight to maintain nitrogen balance. The average American diet contains approximately 15 percent protein and may supply more than 1.5 grams of protein per kilogram of body weight. Research has shown that exercise promotes a decrease in protein synthesis unless exercise is continued longer than four hours [50]. When exercise is prolonged, increased synthesis will occur, causing either an increase or no change in protein catabolism and an increase in amino acid oxidation. Further, significant subcellular damage to muscle has been shown following exercise. These observations suggest that protein requirements may be greater in athletes than sedentary individuals. Recently researchers have recommended levels of protein between 1.2 and 2.8

grams per kilogram of body weight [51]. This added quantity is easily obtained in the average American diet.

F. Nutrition Attitudes and Psychological Factors Relating to eating Behaviors.

Obesity is a multi-faceted syndrome affecting a wide variety of people. According to Rodin [52], the onset and degree of overweight are determined by genetic, metabolic, psychological and environmental factors. After a comprehensive review of obesity research, she challenged the validity of using the "internal-external" distinction to explain differences between overweight and average weight persons. Rodin discussed the substantial data contradicting the simplistic notion that all overweight people are externally responsive and lack internal sensitivity, and that average weight persons demonstrate the opposite pattern. She concluded that it may not be possible to identify the "magic" solution to conquer obesity, since obesity is not a simple syndrome, does not have a unique cause, and probably does not have a single cure.

Since obesity is influenced by many interrelated psychological and physical factors, varied intervention techniques should be employed to effect successful treatment. Before an appropriate treatment strategy is selected, a comprehensive evaluation process to identify patterns of cognitions, affect and behavior should be performed [53].

A Model for Psychological Assessment of Obesity.

Storlie [53] developed a theoretical model for comprehensive psychological assessment of obesity. This approach included four major categories for evaluation pertinent to this research: (1) cognitive processes; (2) affect; (3) social influences and (4) weight-related behaviors.

Nutrition Knowledge.

Nutrition knowledge by itself does not necessarily lead to changes in nutrition practices. In her study of high-school graduates, Schwartz's [54] findings supported the relationship of knowledge/attitudes and attitudes/practices, but did not support a direct relationship between nutritional knowledge and practices. Further support for the concept that attitudes mediate practice was evidenced in Carruth, Mangel, and Anderson's [55] study of nutrition education paraprofessionals. The researchers concluded that neither nutrition knowledge or exposure to nutrition education training were as powerful in predicting nutrition-related behaviors as attitudes, flexibility traits and age. They also emphasized the importance that family or communal living systems play in changing food practices. Also, Burns and Rivers [56] also found that flexibility or lack of inhibition or conservatism was a personality trait associated with better nutritional attitudes and practices. A recent study of United Kingdom residents by Shepard and Stockly [57] concluded that although personal attitudes were good predictors of consumption, nutrition knowledge was not related to attitudes or food consumption.

Cognitive Processes.

Storlie's [53] second major category in the psychological assessment model was cognitive processes. An individual's cognitive processes are influenced by many factors. Past experience, social systems, and the environment help shape a person's attitudes, values and beliefs. These conditions affect how an individual views the world and what action he chooses to take.

Storlie's model examined cognitive processes that influence an individual's ability to self-direct behavior. The first construct, "locus of control", refers to an individual's beliefs about the relationship between a behavior and its outcome. According to Rotter [58], behavior varies according to an individual's general expectation that outcomes are determined by his actions or by external forces beyond his control. Persons with an "external" locus of control believe that events in their lives are determined by factors over which they have no influence, i.e. chance, luck or powerful persons or institutions. Individuals with an "internal" locus of control believe their own actions cause or at least significantly influence events in their lives.

The possibility that locus of control influences weight control behaviors has been investigated in several studies. Wallston et. al. [59] developed a "Health Locus of Control (HLC) Scale" to measure expectations concerning locus of control for prediction of health-related behavior. A validation experiment using the HLC scale found that persons classified as HLC "internals" who placed a high value on health sought more health-related information than other subjects.

A second validation study revealed that individuals with external locus of control experienced greater personality shifts in structured group therapy in a weight reduction program whereas "internal" individuals responded better to unstructured therapy [60].

Eden, Kamath, and Kohrs, et. al. [14] utilized the locus of control construct to investigate healthy people's beliefs about the internal and external factors which control or determine their nutrition behavior. The major finding of this study was that locus of control theory as presently defined with two or three dimensions (internal, external by powerful others, external by chance) proved to be too narrow a construct to explain the subject's responses and beliefs. Analysis suggested that locus of control is a complex, multidimensional construct having six dimensions. These six categories differentiated between individual's expectations about factors controlling outcomes of behavior defined as better health and weight maintenance, and those controlling actual personal behaviors or the ability to control or change one's personal eating habits. Another significant finding of the Eden study was that subjects who expressed a greater willingness and ability to change nutrition behavior appeared to assume responsibility for choosing what is right or best, and had clearly defined guidelines of what is acceptable. The authors concluded that further research was needed to validate this expanded concept of locus of control theory related to nutrition and health practices.

Another cognitive process that Storlie discussed in her psychological assessment model is irrational belief. According to Albert, Ellis [61],

irrational thoughts lead to emotional problems and self defeatist attitudes, which in turn perpetuate self-defeating behavior. This premise is the cornerstone of rational-emotive therapy (RET). The theoretical model RET uses to describe this behavior process is known as the A-B-C theory: An activating event, A, is linked to an emotional response, C, through the individual's belief system B.

The A-B-C model has similarities to Rotter's locus of control construct. Both of these theories are important to the study of eating behaviors and weight control. Evidence of the relationship between irrational beliefs and locus of control surfaced in Rosenbaum's [62] preliminary findings on a new schedule of self-control behaviors. The Self-Control Schedule (SCS) was designed to assess individual tendencies to apply self-control methods to the solution of behavioral problems. When compared to individuals scoring low on the SCS (low self-control tendency) subjects scoring high on the SCS were found to have an internal locus of control and to hold fewer irrational beliefs. Rosenbaum suggested that the relationship between a subject's score on the SCS and his ability to benefit from intervention treatment utilizing self-control techniques should be investigated.

Hollis, Carmody, and Connor [63], also investigated the importance of attitudes in the adoption and maintenance of a variety of health habits. They developed a Nutrition Attitude Survey (NAS) to measure attitudes related to adoption of a low-fat, low-cholesterol diet. In a study of 415 healthy men and women, four nutrition attitude factors were found: Helpless and Unhealthy, Food Exploration, Meat Preference and Health Consciousness. Each

attitude factor was demonstrated to have unique associations with independently measured dietary, psychological and physiological variables. The Helpless and Unhealthy and the Meat Preference attitude factors were found to be inversely related to various measures of healthy eating practices. The Health Consciousness attitude factor appeared to identify attitudes more conducive to an alternative low-fat eating pattern. The Nutritional Attitude Survey appeared to be a useful instrument in assessing nutrition attitudes related to eating behaviors, emotional distress, medical symptom reporting, and cardiovascular risk factors. This study reinforced the importance of assessing the expectations and belief systems of individuals before attempting to change eating behaviors and ultimately lifestyles.

The last of the cognitive process Storlie [53] discussed is values. She stressed the importance of assessing personal priorities and value systems since both influence commitment to change and consequently changes in behavior. For example, if an individual does not value eating a healthy diet, he will not make it a priority in his life and will probably not change his eating patterns.

Affect.

The third major category in Storlie's [53] psychological assessment model was affect. Obesity is related to varying states of emotional adjustment [64]. However, not all obese persons evidence emotional disturbances. The assessment process should include an evaluation of the individual's emotional functioning. The key areas covered in the assessment process are: (1) If the individual has any emotional problems, and (2) If emotional disturbances are

present (a) Do they trigger overeating or (b) Does the individual's obesity cause emotional problems. Storlie stressed emotional disturbances must be identified early in the treatment process and corrected to effect lasting results.

Social Influences.

Identification of social influences was the fourth category in Storlie's [53] assessment model. Since lifestyle changes are an integral part of an obese person's efforts to lose weight, social factors should be evaluated prior to treatment. Storlie recommended that the following social influences on weight-related behavior be assessed: social adjustment, interpersonal skills, communication abilities, family relationships, socioeconomic position, and the media.

Weight Related Behaviors.

The last category in Storlie's [53] psychological assessment model was weight related behaviors. Since most behavioral intervention for obesity is based on the assumption that behavior change produces weight loss, an individual's eating habits and activity patterns should be assessed. Strunkard and his associates [65, 66] determined that obese eating behaviors varied substantially and recommended that each should be analyzed individually. Storlie recommended that certain eating patterns should be evaluated. These behaviors included food selections, snacking and meal patterns, eating rate, and sensitivity to environmental cues.

Assessing an individual's activity patterns was an important part of Storlie's comprehensive assessment model. She suggested that an individual's overall activity level can be estimated by measuring or scoring these activities: (1) lifestyle habits - use of stair, walking for transportation, use of labor saving devices; (2) occupation - sedentary, active, or strenuous; (3) recreational - frequency and type of sports participation; and (4) fitness routines - frequency, intensity and activity type. Although these techniques can only estimate activity level, they can be used to establish an activity baseline for comparison with post-treatment activity levels.

Storlie concluded her discussion of the psychological assessment model by reemphasizing the importance of evaluating the interrelated variables determining obesity prior to treatment. She believed that use of such a standardized approach will increase understanding of obesity, facilitate research endeavors and strengthen the intervention process.

Lifestyle, Attitudes and Health Behaviors.

The effect of the lifestyle, attitudes and health behavior on dietary intake and nutritional status was studied by Baird and Schutz [67]. In their survey of women active in community organizations, the following variables were measured: Dietary intake, weight, blood pressure, serum nutrient levels, serum cholesterol, as well as food-related attitudes, perceptions and behaviors. Distinct patterns emerged from the complex interrelationships among individual food attitudes, behavior and nutritional status. Eating in response to depression, anxiety, and immaturity was associated with lower nutrient intake and serum levels, elevated serum cholesterol, and higher blood

pressure. Subjects with the best nutritional and physiological profiles achieved high scores on measures of food taste diversity, food enjoyment, self-discipline, relaxation ability, health consciousness, and consumer competence. The results of this study support the premise that attitudinal and emotional factors are significant predictors of nutrition behavior, nutrient levels, and risk factor status.

The researchers concluded that if health is a complex phenomenon influenced by numerous social, environmental and personal factors, effective health management must understand and address these factors. Nutrition education could be expanded to include positive, healthful changes in attitudes and lifestyle to more effectively change detrimental eating behaviors.

A study by Mechanic and Cleary [68] further supported the concept that positive health behavior is associated with psychological well-being and subjective health status. The association patterns revealed in the study support the premise that positive health behavior is part of a complex lifestyle that may include the ability to anticipate and handle problems, and cope actively. The lifestyle that fosters positive health behaviors was strikingly similar to the description of people having an internal locus of control. In fact, the respondent's sense of internal control was found to be positively associated with a high score on positive health behavior. Again the researchers concluded that health behaviors are tied to an individual's attitudes, values, environment and social learning.

G. Intervention Programs.

Nutrition intervention programs frequently achieve poor results. In his study of food perceptions and preferences of obese adults, Drewnowski [69] pointed out that obese persons rarely behave as a homogeneous group. In his study, obese participants demonstrated more varied food preference profiles that were not linked to perceived nutrition, as compared to normal-weight subjects who generally reported liking more nutritious and lower calorie foods. This response diversity suggests that obese individuals have internal inconsistencies in their food-related attitudes. Drewnowski suggested that the practice of grouping and studying obese individuals solely on weight basis may mask significant behavioral differences. He agreed with Storlie in that assessment techniques should deal with this variety of response and should evaluate individual food preference patterns and food consumption.

Research by Tapp and Goldenthal [70] confirmed that health behavior is not a unitary dimension. Their factor analytic study of health practices in nutrition, tobacco use, alcohol use, drug use, safety practices, exercise, rest and relaxation, and personal health revealed three distinct dimensions of health behaviors. Factor 1 reflected health promotional activities, factor 2 was characterized by avoidance of health risks, and factor 3 evidenced a lack of awareness of good health practices. These behavioral clusters may represent different motivational patterns related to health: One which actively engages in health practices and one which passively protects health status through avoidance of harmful activities. The researchers recommended

that intervention strategies address both these behavior patterns to optimize treatment efficiency.

Lewis, Sims, and Shannon [71] suggested that nutrition intervention programs may fail due to lack of understanding of the complex interrelationships of the variables determining health behavior. They designed a social cognitive model consisting of factors hypothesized to determine adults nutrition and health behaviors: Social environment, reinforcement, commitment, behavior modeling, knowledge, and attitude. Their study tested the model's power for predicting selected food consumption behaviors. The results obtained indicated that social cognitive theory may have extensive applicability to changes in food behaviors. The variables of social reinforcement, behavior modeling, and nutrition knowledge appeared to influence food consumption indirectly through other factors such as attitude and behavior commitment.

Lewis, et. al. also found that the best predictor of a behavior is the person's intention to perform the behavior. This result confirmed findings by Johnson and Johnson [72] that commitment to a particular course of action significantly influences the performance of the action. Lewis' results were consistent with the previously discussed finding by Schwartz [54] and Carruth [55] that attitudes mediate practices and are powerful predictors of health behaviors. Lewis also suggested that an internal factor (attitude) and an external factor (taste enjoyment) may work jointly to form an intervening variable, a "behavioral intention" or commitment which then leads to the actual behavior. Based on the role that commitment played in this study,

Lewis stressed that this variable should be a high priority in planning intervention programs aimed at changing food practices or health behaviors.

H. Health Promotion and Worksite Wellness.

Health promotion is the science and art of helping people change their lifestyle to move toward a state of optimal health. Health promotion reduces risks and fosters optimal health by changing knowledge, beliefs, attitudes and most importantly lifestyle practices and behaviors. Health promotion is in its infancy. Its major components include information from many different disciplines, ranging from exercise physiology and nutrition to government policy. The Navy has recognized the need for active promotion of healthful lifestyles. However, little is known on the Naval personnel who are involved in active health promotion, the advantages of Navy sponsored health promotion activities, or the effectiveness of current programs. This section will survey the literature on characteristics of men who take part in health promotion activities, strategies for health promotion, attitudes and behaviors in the health promotions continuum, and worksite health promotion programs.

Predictors of health promotion participation.

As health promotion activities become more wide spread, it is important to determine what segment of the population will utilize the activities. Freeborn [73] surveyed 2,603 members of a health maintenance organization (HMO) on social, economic, attitudinal data to describe the relationship between health status and socioeconomic status and determine which factor had a greater effect on the utilization of ambulatory care services. Although

findings differed according to the variables considered, in general the results indicated that health status correlated more highly than socioeconomic status with utilization of services. An exception was the use of preventive services which was not correlated significantly with health status but to education and to a lesser extent income [73]. Greenlich, Barley, Weld, et. al.'s [74] findings were similar to previous studies attempting to determine the characteristics of persons most likely to participate in screening campaigns, i.e. to prevent heart disease [75], to detect breast cancer [76] and to detect cervical cancer [77]. In general, persons most likely to participate are older, have more dependents, are higher in socioeconomic status and are more likely to routinely use medical care.

Hollis, Sexton and Connor [78] took a random sample of 501 families and gave them an opportunity to join a five-year intervention program promoting a low-fat, low cholesterol eating plan to reduce risk of cardiovascular disease. A previous home health survey allowed comparisons of respondents from joining and non-joining families in terms of reported health status, health beliefs, health locus of control, knowledge about health and nutrition, and demographic variables. "Joiners" were similar to "non-joiners" in terms of perceived susceptibility to disease, family health histories, and reports of familial hypercholesterolemia. Families with hypertensive members were less likely to join. Positive predictors of participation included higher occupational status, greater knowledge about heart disease, a more internal health locus of control, and the belief that there were few barriers to the adoption of a

prudent diet. Hollis found widespread community interest in optimal nutrition and offers some good predictors of participation in health promotion programs.

Strategies for Health Promotion.

Due to the shortage of professional personnel in the Navy, one-to-one programs to help facilitate behavior change are unlikely. Syme [79] argued against one-to-one behavior change programs because of the difficulty in making behavior changes and because one-to-one programs do little to modify forces in the community that continually produce new people at risk. Syme proposed that in addition to one-to-one programs, environmental strategies are needed for disease prevention. Syme used the Multiple Risk Factor Intervention Trial (MRFIT) to support his case. This research was an ambitious effort organized to test the hypothesis that mortality rates from Cardiovascular Heart Disease could be reduced if people change their behavior. The results of this trial were disappointing: After seven years very few participants had made and incorporated long term behavior changes. These findings were not anticipated because the research plan was carefully developed to use men who knew of their high risk of Cardiovascular Heart Disease (CVHD) and volunteered to participate. Individual differences were taken into account, and a variety of approaches including group, family and individual support and the latest research from the behavioral literature were incorporated into the trial. Further, the professional staffing at the MRFIT clinics enabled close, continued follow-up for seven years. Despite the program's comprehensiveness, only modest results were achieved.

Syme pointed out that environmental factors are rarely considered in behavior change programs. He used cigarette smoking as an example of a hazardous health habit for which our social environment does not necessarily support the desired behavioral changes. Smoking cessation programs have modest success rates, only about 25% of participants who enter programs will not be smokers at the end of one year. Syme viewed the major problem with cessation programs is that the behavior to be changed is treated as an individual problem rather than a social one.

A wide variety of environmental factors served to promote the continuance of the habit [79]. These include social cues associated with smoking, such as relaxation, sexual attractiveness, adulthood, the frequent advertising of cigarettes, the subtle advertising by recording and movie stars and the easy accessibility of cigarettes. Behavior change programs must not only look at the individual's risk profile but also the environmental context within which people live.

Health Promotion and the Knowledge-Attitude-Behavior Continuum.

Two beliefs have characterized health promotion campaigns: First, upon presentation of factual information, people will change behaviors to correspond with the facts; Second, convince people to change attitudes about a habit and they will drop that habit from their behavioral repertoire. Allport [80] presented these beliefs in his classic model. This model postulated that people acquire information about a behavior, which in turn leads to the development of a predisposition to respond, and then to a corresponding change in behavior which is in agreement with the attitude.

After more than fifty years of research this model demonstrates relationships which are positive but very small.

Work Site Health Promotion Programs.

The community in which an individual lives has a profound effect and influence on the individual's life. In this sense, community means not only where the individual lives but in another sense can mean people sharing common interests and characteristics [81]. Some communities such as the Navy have a major effect on the way people live and on their preferred lifestyles. Recently, worksite communities have undertaken the role of therapist in supplying cues and consequences to behaviors to improve lifestyle and health behaviors [81]. Like these communities, the Navy is involved in health promotions but has not evaluated the current techniques.

A major impetus for occupational health promotion has been skyrocketing health care costs. According to the U.S. Census Bureau, in 1984, \$387.4 billion was spent on health care and companies paid \$107.2 billion of this sum [82]. It is estimated that as many as 50,000 organizations may be actively involved in worksite health promotions.

Promotion programs frequently address the areas of cardiovascular risk reduction, including hypertension control, smoking cessation, weight reduction, eating habit changes, fitness and stress management. Special advantages to nutrition education at the worksite include the possibility of harnessing sources of social support and influence, availability of a daily eating situation, and opportunities for follow up, monitoring and reinforce-

ment. Another desirable effect of health promotion programs is not only health enhancement but opportunities for employees to enhance morale and improve productivity. From a public health prospective, worksite programs offer the advantage of reaching a larger, diverse group. The U.S. Census Bureau estimates that 70% of all adults between 18-65 are employed [83]. Worksite programs allow greater ease for longitudinal evaluations and the opportunity for ongoing programs. Company policies reinforcing healthful lifestyles can further good habits acquirement in employees. The U.S. Navy has opportunities to provide health promotion and weight reduction programs at the worksite for its employees. The next section of the review of literature will focus primarily on worksite nutrition education programs for weight reduction.

I. Worksite Obesity Studies.

Weight control programs at the worksite are the most popular of the health promotion programs. Stunkard and Brownell [84] stated that "on-the-job ... training for improvement of health behavior could be the next major advance in the delivery of behavioral treatments for obesity." However, there have been few evaluations of the effectiveness of this type of program.

Stunkard and Brownell evaluated the effectiveness of one worksite weight control program. Attrition rates varied from 31% to 82% and the mean weight loss was 1.2 kg per person at a six month follow-up. Stunkard and Brownell concluded that their results were comparable to commercial self help groups. It was noted that high attrition, less than desirable weight loss, and a very

small sample size limited their conclusions.

Abrams and Follick [85] investigated the feasibility of conducting a worksite weight control program with a structured maintenance training protocol. Three groups completed a 10 week behavior modification program which included organizational behavior modification strategies along with the traditional methods. After treatment, two groups attended a four-session structured maintenance program and one group received a non-specific contact control. There were no significant differences in weight loss across the three groups during treatment and maintenance phases. At three and six month follow-ups, the structured training group maintained weight loss significantly better than the non-specific control.

Brownell and Stunkard [86] conducted three consecutive studies of weight reduction at the work site. Subjects were personnel who attended 16 week behavioral programs. They found no significant differences over the three studies but were able to decrease attrition rates from 57.5% to 33.8% and weight loss maintenance improved. More frequent weekly group meetings resulted in less attrition but not in greater weight loss. Worksite weight control programs were found to be as effective commercial self-help, and lay leaders produced equivalent results to professional therapist at one-third the cost.

Foster, Jeffrey, et. al. [87] conducted a follow-up on two worksite programs at the end of one year of treatment. Participants regained 75% of the weight they lost in treatment; only 21% of participants continued to lose weight or maintained post treatment weight. They concluded that worksite

weight control programs did not offer special advantages over hospital based or commercial weight loss groups.

There have been no published studies evaluating the Navy weight control programs. The studies evaluating worksite weight reduction programs are very few. It is difficult to generalize any of these studies to male naval personnel because the vast majority of participants have been female. Brownell [86] challenged researcher and clinicians to work on methods to improve weight loss by:

- 1) Considering other treatments for patients.
- 2) Developing criteria to match patients to treatments.
- 3) Developing criteria for screening patients to determine if there would be a better time to diet or better time to join a program.
- 4) Exploiting the social environment as a means to improve long term adherence. More research is necessary to determine the factors in the family, worksite, community, etc., that can be used to facilitate weight loss.

There is much work to be done in improving weight reduction and long term maintenance weight reduction at the worksite.

CHAPTER III

Material and Methods

Subjects

Participants were 1887 male naval personnel for whom life style questionnaires were available. These men were stationed aboard ships and at shore commands. Enlisted personnel comprised the majority of the sample (86.4%), and the median pay grade was E-5; however all pay grades from Recruit (E-1) through Captain (O-6) were represented. Mean age of the group was 30 years, with a range of 17 to 55 years. The mean length of time on active duty was 10 years. The mean education level was trade or technical school level. The demographics revealed similarities to the total Navy as a whole except for the elimination of female personnel [3].

Data Collection

The Navy Health and Research Center selected the sample in a two-step process. First, 119 command units (UICs) were randomly selected from approximately 5,000 in the Navy. Second, individuals were randomly selected from each of the 119 command units.

The 119 primary commands were selected using a stratification procedure based on command size. This ensured that the commands selected would appropriately represent the percentages of individuals at commands of varying sizes throughout the Navy. No units with fewer than 10 individuals were considered for selection, a sampling restriction that eliminated less than 10%

of the Navy's total force. Of the 119 originally targeted units, nine were unable to participate, leaving 110 actively participating units.

No stratification procedures were judged necessary for selecting individuals within commands because of the large initial sample drawn (over 5,000 individuals). Up to 60 individuals were selected from each targeted command using March 1985 computerized personnel tapes from the Naval Military Personnel Command. A check of the selected sample confirmed that the targeted sample percentages of men and women, officers and enlisted, different pay grades, ship versus shore duty, and different ethnic groups were basically equivalent to the population percentages in the Navy at the time. Targeted sample percentages were on the average within 0.7% of the population percentages.

Because of the time lag between updating the personnel tapes used for selecting the sample and actually contacting commands to request information on specific individuals, some of the originally targeted participants were no longer at the participating commands. Thus, lists of randomly selected replacement individuals were provided to participating commands so that names could be selected from the replacement lists until approximately 50 individuals per command were identified for study participation. The total number of individuals requested from small commands (less than 60 people) was proportionately less.

In the second year of the study, (1987), lifestyle questionnaires were sent to all participants still stationed at a Navy command according to Navy records (approximately 5,000 individuals). These participants were no longer

concentrated in 110 activities, but instead scattered over 1,400 commands. Questionnaires sent to a command were accompanied by a Commanding Officer to Commanding Officer letter asking that the command fitness coordinator distribute the questionnaires to the designated participants. Of those questionnaires distributed, 2,167 were returned.

Assessment Components

Lifestyle Questionnaire

Participants completed a self report "lifestyle" survey concerning health-related behaviors, attitudes, and perceptions (see Appendix C for the complete questionnaire). Lifestyle is defined as a person's general pattern of living, including healthy and unhealthy behaviors [88]. Health-related behaviors are a person's actions that are associated with positive or negative health [88]. Perception is defined as a conscious impression of objects or situations [88]. This study focused on fitness status, aerobic exercise frequency, dietary practices, nutrition attitudes and willingness to participate in health promotion programs. The lifestyle questionnaire was developed and validated by the Navy Health Research Center.

The lifestyle questionnaire was reviewed by the author. One hundred forty-five questions were chosen, from four hundred seventy questions. The questions chosen reflect demographic data [see Appendix C page 112], eating practices [page 124], aerobic exercise frequency [page 114], nutrition attitudes [page 125] and willingness to seek help with health problems [page 127]. To establish content validity the author's selected questions were

reviewed by two military dietitians and two civilian dietitians. Thirteen questions were eliminated (see Appendix B for the questions eliminated).

Because the emphasis of the planned research was to focus on nutrition attitudes and eating practices of Navy men, many questions were eliminated from the lifestyle survey. The questions retained were judged by the four registered dietitians and the author to be the best, least nebulous questions to attain the above stated goal. All questions are delineated in Appendix B.

In the first section, Health and Fitness Status, ten questions were retained. These questions were retained because they appeared representative of health and fitness status without providing redundant information.

The next section of the questionnaire was on Current Physical Activity. The questions retained were those that reflected frequency, duration and history of aerobic exercise only. The focus of the research was directed to activities to enhance cardiovascular fitness rather than muscular flexibility or strengthening exercises.

The third section of the questionnaire reflected substance consumption of tobacco, alcohol, and caffeine. Because of the focus on nutrition and the need to limit the research, questions on alcohol and caffeine consumption were not included. Six questions concerning the use, history, and frequency of smoking were included. These questions were not developed in the current project but will be investigated by the author in subsequent research.

The fourth section was health attitudes and behaviors. Six questions were retained which were not included in the following eating practices and nutrition attitude sections.

In the fifth section on "physical symptoms" ten questions were retained. The author was interested in investigating self-report hypertension, shortness of breath, and control of hypertension in future research. Questions which delineated these responses were requested from the Naval Health Research Center.

The major thrust of the research focused on nutrition practices, eating patterns and the nutrition attitudes sections. Questions on over-eating, fasting, attitudes towards overweight individuals and eating in response to depression were not included in the analysis to limit the research. Salt usage was not included in food frequency patterns because of the difficulty in quantifying the amount consumed with the survey method and the author's desire to focus on other nutrition issues.

The last section included questions concerning the use of health promotion facilities. An important component of developing a health promotion or intervention program is determination of the population segment that will utilize the activities [81].

Data Elimination

The selected self report variables were subjected to computer analysis for elimination of those variables which showed small variation in response rates. (See Appendix C for the questions that were eliminated.)

Data Retrieval

The response data on the lifestyle questionnaire along with demographic data and physical readiness scores were obtained from the Naval Health Research Center, San Diego, California, after written permission was obtained from the commanding officer. Data were sent on computer tape to be downloaded for the statistical analysis.

Dietary Variables

The study focused on 14 dietary variables and four individual items concerning eating patterns.

Eating Patterns Variables:

These four variables, breakfast, lunch, dinner, and snacking were answered on a multi-point scale of short time ranges: "never this week", "1-2 times", "3-4 times", "5-6 times", and "every day" during the previous seven days.

Dietary Variables (Food Choices):

The habitual food choice items: Eat high-fat meat; eat lean meat; eat fish; eat high fat dairy products; eat low fat dairy products; eat or cook with butter, lard, etc.; eat polyunsaturated fats; eat fried foods; eat eggs; eat refined sugar products; eat leafy vegetables; eat starchy vegetables; eat fruits; eat high fiber grains; were answered on the multi-point scale of "never this week", "1-2 times", "3-4 times", "5-6 times", "every day", "twice every day", and "3 or more times every day this week" during the previous seven days.

Terry Conway, a research psychologist at the Navy Health Research Center, prioritized the conceptual scales for the nutrition attitude page of the lifestyle questionnaire. Some of the items were taken from the research of Carruth, Anderson and Mangel [55], and Hollis [63], but the proposed scales had not been used by other researchers. Conway stated that her scaling must be examined empirically when the data are available. Figure 1 denotes Conway's apriori conceptualizations.

Item 1: Willingness to Alter Eating Habits

I am willing to change my eating habits to improve my health.

When I learn new things about good nutrition, I try to change my eating habits accordingly.

Item 2: Food Flexibility

I like to try new and different kinds of foods.

I like variety in what I eat.

Item 3: High Fat Lover

My favorite meal would include a thick, juicy steak.

I think a little extra fat left on meat really improves its tastiness.

Item 4: Helpless Poor-Nutrition Eater

It seems like everything I enjoy eating is bad for me.

When it comes to food, I have no will power.

I just can't seem to change certain bad eating habits.

I have a really hard time controlling the amount of junk food I eat.

Figure 1

Conway's Apriori Conceptual Nutrition Attitude Scales

For the purposes of clarification the following definitions will be used:

- 1) Flexibility is defined as the willingness or disposition to be persuaded to change or adopt new or different eating habits.
- 2) "High fat lover" is defined as an individual who has strong preferences for foods which contain a high percent fat content.

- 3) Helpless poor-nutrition eater is defined as an individual with an external locus of control or one who feels that changing eating habits is outside of his control [63].

Other responses related to physical fitness

The following aerobic exercises (variables) were evaluated for frequency, duration, and history: running, swimming, bicycling, continuous walking for exercise, aerobic dance or aerobic exercise class.

Aerobic Exercise Frequency:

The five exercise frequency questions were answered on an eight-point multi-point scale based on the question "how often per week or month do you exercise": "never", "1-4 times per month", "2 times per week", "3 times per week", "4 times per week", "5 times per week", "6 times per week", and "7 times per week".

To determine a score for exercise frequency, values for running, walking, swimming, aerobic exercising and biking were summed.

Aerobic Exercise Duration:

The five exercise duration questions were answered on an eight-point multi-point scale based on the question "time you spend exercising during one workout period": "not applicable", "less than 10 minutes", "11-20 minutes", "21-30 minutes", "31-40 minutes", "41-50 minutes", "51-60 minutes", and "more than one hour".

To determine a score for exercise duration, values for duration of running, walking, swimming, aerobic exercise and biking were summed.

Aerobic Exercise History:

The five exercise history questions were answered on a seven-point multi-point scale based on the question "how long have you been exercising": "not applicable", "less than one month", "1-3 months", "4-11 months", "1-2 years", "3-4 years", and "5 years or more".

To determine a score for exercise history, values for history of running, walking, swimming, aerobic exercise and biking were summed.

Exercise in leisure or work:

The following questions were answered on a seven-point multi-point scale "never", "seldom", "occasionally", "fairly often", "quite a lot", "most of the time", and "all of the time". The questions asked were: "In your leisure or exercise activities, how often do you work up a good sweat?" and "in your work activities, how often do you work up a good sweat from physical activity?"

High Blood Pressure:

Responses to the following questions were examined: "Doctor said you have high blood pressure", responses were "Yes", "No", or "Don't know".

"If yes, is it controlled?" Responses were "Yes", "No", or "Don't know". "If controlled, is it with 'medication', 'weight control', 'exercise', 'diet' or 'other'".

Health Promotion Program:

Eleven questions were examined with the possible responses of "no", "would like to", and "yes" to levels of interest in regular participation in: Fitness center, smoking clinic, weight reduction clinic, alcohol rehabilitation, drug rehabilitation, stress management, command sports, command exercise, blood pressure, cholesterol screening, and regular participation in other activity.

Physical Fitness Measures

Eight hundred seventy seven personnel were evaluated on a four-part test of physical fitness and body composition as mandated by Navy regulations (Department of Navy, 1982). Since physical readiness data was missing on 948 personnel, these respondents were not included in this portion of the analysis. Each command supervises its own fitness testing, following standardized procedures set forth in the Navy Instruction, OPNAVINST 6110.1C [1].

The four test components are as follows:

- a. **1.5 mile run.** The run tested cardiorespiratory endurance and stamina. The test is completed on a relatively flat, smooth surface, and performance is measured as the time to run/walk the distance.

- b. **Sit-ups.** This test measures muscular endurance. Performance is measured as the number of sit-ups done in a two-minute period. Participants lie flat on their backs with knees bent, heels positioned about 10 inches from the buttocks, arms folded across the chest, and feet held by a partner. A sit-up is performed by curling the upper torso until the elbows touch the thighs and then curling back down until the shoulders touch the floor.
- c. **Push-ups.** This test measures muscular endurance. Performance is measured as the number of push-ups completed in two minutes. Participants assume a front leaning position with hands approximately shoulder width apart. The arms, back, buttocks, and legs must be straight from head to heels and must remain so throughout the test. Push-ups are begun by bending elbows and lowering the entire body until the top of the upper arms, shoulders, and lower back are aligned parallel to the deck. Participants must return to the starting position by extending elbows until the arms are straight.
- d. **Body Composition.** This test indicates the percentage of body weight attributable to fat and is estimated from body circumferences using the equation of Wright, Dotson, and Davis (1981). Two circumferences are measured on males: (a) neck circumference, measured around the neck at a slight angle with the tape passing just below the larynx, and (b) abdominal circumference, measured around the abdomen at the level of the umbilicus.

The HAPR instructions require that naval personnel be assessed biannually on these four components of physical fitness. At each command, personnel assigned as command fitness coordinators (CFCs) and their support staffs are responsible for administering the tests to all personnel except those who have received a medical waiver or who are classified as obese (body fat > 26%). Male personnel who are classified as "overfat" (body fat > 22% and < 26%) must still take the physical readiness test.

Body composition comparison measures:

For comparison of body fat measurements currently in use the United States Navy, two other indices of body composition were derived. The belly measurement (waist circumference divided by the height measurement) and a weight to height comparison (weight divided by height) were calculated.

Definitions Pertaining to Methodology

Certain terms were developed for the analysis and interpretation of the data. The term Locus of Control signifies the mean value of the following nutrition attitudes:

"willing to change eating habits", "learn new things about nutrition, I try to change", "everything I enjoy is bad for me", "when it comes to food, I have no will power", "can't seem to change bad eating habits", "have a hard time controlling the amount of junk food I eat"

The term General Nutrition Attitude signifies the mean value of the following:

"I eat a balanced diet", "I take health food supplements, i.e. bran, wheat germ, etc.", "I eat breakfast", "I eat lean meat", "I eat fish", "I use low fat dairy products", "I use unsaturated fat", "I eat leafy vegetables", "I eat fruit", "I eat high-fiber grains", "I like to try new and different foods", "I like a lot of variety in what I eat"

The term Fat Attitude signifies the mean value of the following:

"I eat snacks", "I eat red meat", "I eat high-fat dairy products", "I eat or cook with butter, lard, etc.", "I eat fried foods", "I eat refined sugar products, i.e. cakes, pies, cookies", "my favorite meal would be a thick, juicy steak"

The term Exercise Attitude signifies the mean of exercise frequency, exercise duration, exercise history, and the variables:

"how often do you work up a sweat in work or leisure", "how often do you go to the gym or fitness center"

The term Willingness to Seek Help signifies the mean of the responses for the following:

"I watch for possible signs of major health problems, e.g. cancer, hypertension, heart disease",

"do you regularly participate in any of the following programs or would you like to participate if they were more readily accessible?"

Smoking clinic, support groups, weight reduction club, stress management counseling, command-organized sports, blood pressure screening, cholesterol testing.

Analysis Procedures

The data were analyzed using the SAS statistical software package. SAS [89] is copyrighted 1984, 1986 by the SAS Institute, Cary, NC.

The purpose of the demographic analysis was to describe the basic characteristics of the subject population. Demographic data were collected with the lifestyle questionnaire. The information collected included age, sex, race, education level, marital status, height, weight, number of years in the Navy, and military pay grade. Frequency distributions and variable percentages were tabulated.

Data Elimination Procedures

The reduced set of self report variables were subjected to factor analysis to reduce the variables into a smaller, more manageable set of measures. Factor analysis disentangles complex interrelationships among variables and identifies which variables are related together as unified concepts. A more detailed explanation of factor analysis is provided in Chapter IV, Results.

Factor analysis was completed on all male personnel regardless of race. It was assumed that being male and in the Navy made participants part of a

unique community or culture. Female personnel were not used in the sample because they represented a small percentage, (13%, N = 280) of the total population, and the need to limit the study for a master's thesis.

Pearson correlation coefficients were tabulated for the factor analysis summary variables; rank, age, caucasian, education level, marital status, self reported high blood pressure and the physical readiness measures. The statistical procedure explores the interrelationships among variables.

Next, stepwise multiple regression equations were computed with the six summary variables, the physical readiness variables, and the following personal variables: Rank, age, education level, and marital status. This statistical procedure was used to determine the most consistent predictor of physical readiness scores, then the next most consistent predictor, and so forth in a stepwise fashion until non-significance was achieved.

The sample population was categorized six ways and divided into approximately three equal groups for descriptive and illustrative purposes. The categories were fat attitude, age, locus of control, exercise attitude, body fat and "belly". The means and standard deviations will be reported by category.

First, Navy men were divided into three groups according to their high fat food preference attitude according to the following criteria: 1) If the mean value for the sum of the answers for the variables which made up the fat attitude was less than 1.7, those individuals were placed in category one. 2) If the mean value of the variables was greater than or equal to 1.7 but less

than 2.26, those individuals were placed in category two. 3) If the mean value of the variables was greater than or equal to 2.26, the individuals were placed in category three. This breakdown is summarized in Figure 1.

Mean Value for High Fat Food Preference Attitude	Fat Attitude Category
< 1.7	1
$\geq 1.7, < 2.26$	2
≥ 2.26	3

Figure 1 Fat Attitude Categories

Second, the respondents were categorized by age. Individuals whose ages were less than 25 were placed in category one. Those aged 25 to 32 were placed in category two, and those aged 33 and older were placed in category three. This breakdown is summarized in Figure 2.

Age	Age Category
< 25	1
25 - 32	2
33 and over	3

Figure 2 Age Categories

Third, for descriptive purposes the respondents were divided into three categories for the locus of control factor. If locus of control factors were less than 2.6, the individuals were placed in category one. If the locus of control factors was greater than or equal to 2.6 but less than 3.8 the individuals were placed in category two. If the locus of control factors were greater than or equal to 3.8 the individuals were placed in category three. This breakdown is summarized in Figure 3.

Locus of Control	Locus of Control Category
< 2.6	1
$\geq 2.6, < 3.8$	2
≥ 3.8	3

Figure 3 Locus of Control Categories

Fourth, the respondents were divided into three categories based on exercise attitude factors. If exercise attitude was less than 3.55, the individuals were placed in category one. If the exercise attitude was greater than or equal to 3.55 but less than 5.7, the individuals were placed in category two. If the exercise attitude was greater than or equal to 5.7, the individuals were placed in category three. This breakdown is summarized in Figure 4.

Exercise Attitude	Exercise Attitude Category
< 3.55	1
$\geq 3.55, < 5.7$	2
≥ 5.7	3

Figure 4 Exercise Attitude Categories

Fifth, body fat percentages of Navy men were divided into three categories. If body fat was less than 13%, individuals were placed in category one. If body fat was greater than or equal to 13% but less than 19% then individuals were labeled group two. If body fat was greater than or equal to 19% then the individuals were placed in category three. This breakdown is summarized in Figure 5.

Body Fat Percentages	Body Fat Category
< 13%	1
$\geq 13\%, \leq 19\%$	2
$\geq 19\%$	3

Figure 5 Body Fat Categories

Finally, the respondents were divided into three categories for the belly measurement (abdomen circumference/height). The abdomen circumference was measured in inches and multiplied by a factor of ten to remove the decimal place. The height was measured in inches. If the belly measurement was less

than 4.65, the individuals were placed in category one. If the belly measurement was greater than or equal to 4.65 and less than 5.07, the individuals were placed in category two. If the belly measurement was greater than or equal to 5.07, the individuals were placed in category three. This breakdown is summarized in Figure 6.

Belly Measurement (Abdomen Circ./Height)	Body Fat Category
< 4.65	1
$\geq 4.65, < 5.07$	2
≥ 5.07	3

Figure 6 Belly Measurement Categories

CHAPTER IV

Results

Data and Factor Analysis

Data analysis was performed by factor analyzing the self-report variables. This statistical manipulation is a means for examining how the variables group themselves into independent and orthogonal clusters. The method of factor analysis imposes a set of mathematically defined vectors on the space defined by the intercorrelations among the questionnaire variables. The correlations between the questionnaire variables and the vectors (called factor loading's) reflect the extent to which the vectors account for covariation among those questionnaire variables that are highly interrelated.

By examining the cluster of items that correlate highly with these vectors it is possible to discriminate more easily which of the categories of nutrition and health attitudes are grouped together. Also, the numerical value of the factor loading ranks the relative importance of the questionnaire variables to that particular cluster. Hence, it is possible to interpret the meaning of a factor in terms of the common meaning of the nutrition/health attitudes that correlate highly with the factor. This interpretive process disentangles complex interrelationships among variables and identifies which variables are related as discernible, unified concepts.

Six factors were extracted and rotated orthogonally by the VARIMAX rotation procedure [90]. These six factors had Eigenvalues greater than

and represent 39% of the total variance in the matrix. The results are summarized in Table 1. Interpretations were possible for each of the six factors. In an attempt to delimit this project, factor six, Tobacco Usage, was not be developed in this research but will be investigated by the author in a subsequent report.

Table 1

Factor Analysis of Self Report Variables

Variables	Factor 1 Gen. Nutri. Attitude	Factor 2 Attitude Toward Fat	Factor 3 Amount of Exercise	Factor 4 Eating Locus of Control	Factor 5 Willingness to Seek Help
Rating of Personal Fitness			0.41457		
Exercise Frequency			0.75045		
Exercise Duration			0.76140		
Exercise History			0.72223		
Sweat Resulting from Leisure			0.54945		
Sweat Resulting from Work			0.39035		
Balanced Diet	0.52165				
Watch for Health Problems					0.31787
Limit Use of Coffee/Sugar/Fats	0.32803				
Take Health Food Supplements	0.29378				
Frequency of Eating Breakfast	0.44229				
Eat Snacks Between Meals		0.31896			
Eat High Fat Meat		0.67751			
Eat Lean Meat	0.48594				
Eat Fish	0.41050				
Eat High Fat Dairy Products		0.57151			
Eat Low Fat Dairy Products	0.49549				
Eat/Cook with Butter		0.65685			
Eat Polyunsaturated Fats	0.37111				
Eat Fried Foods		0.70446			
Eat Eggs		0.54438			
Eat Sugar		0.49869			
Eat Leafy Vegetables	0.64866				
Eat Starchy Vegetables	0.41410	0.49278			
Eat Fruit	0.66188				
Eat High-fiber Grains	0.62990				
Willing to Change Eating Habits					0.50565
Change Habits with Learning	0.43095				0.46762
Like to Try New Foods	0.45810				
Like Variety in Eating	0.45616				
Favorite Meal = Steak		0.35207			
Appear to Enjoy Unhealthy Foods				0.60890	
Lack of Willpower = Food				0.78415	
Can't Change Bad Eating Habits				0.77105	
Difficult Control Eating Junk Food				0.71920	
Willingness to Use Gym			0.37494		
Willingness Attend Smoking Clinic					0.60864
Willingness Attend Stress Mngmt.					0.59286
Willing Attend Cmd. Spnsrd. Sports					0.54346
Willing Attend Cmd. Exercise Prgms.			0.34139		
Willing Attend BP Screening					0.50629
Willing Attend Cholesterol Testing					0.47373

Factor loadings express the correlations between individual variables and factors. Normally, a cut off value of about 0.30 is used for such determinations.

Factor one was labeled "General Nutrition Attitude" and is characterized by a cluster of loadings on nutrition habits. The following survey variables which constituted this factor were: "I eat a balanced diet", "I limit my intake of foods like coffee, sugar, fats, etc.", "I take health food supplements", "I eat lean meat", "I eat fish", "I drink skim milk", "I use unsaturated fats", "I eat leafy green vegetables", "I eat starchy vegetables", "I eat fresh fruits", "I eat high fiber foods", "I try to change my problem habits when I learn new information", "I like to try new and different foods", and "I like a lot of variety in what I eat".

The attitudes and behaviors in factor one reflected nutrition habits promoting the individual's nutritional well-being when actively pursued and followed routinely. If they were not regular nutrition habits, this factor would reflect a passive approach to eating and nutrition habits. Thus, factor one reflects an underlying dimension of active-passive nutrition behaviors and attitudes.

Factor two reflected the "Attitude toward fat". The variables that clustered under this factor were: "I eat snacks between meals", "I eat high fat meats", "I eat high fat dairy products", "I eat butter", "I eat fried foods", "I eat eggs", "I eat refined sugar products", "I eat starchy vegetables", and "my favorite meal would include a thick, juicy steak". On the high scoring side, this cluster of variables reflected the propensity to eat foods high in fat. Lower scores for this factor reflects the propensity to follow a lower fat, more prudent diet.

Factor three was named "Positive Exercise Attitude". The variables that clustered under this heading were: "personal rating of fitness", "exercise frequency", "exercise duration", "exercise history", "work up a good sweat in leisure", "work up a sweat in work", "go to the gym", and "participate in command sponsored exercise". A higher score for this factor reflects a positive attitude toward physical fitness. A lower score reflects a "couch potato" attitude and a propensity to a sedentary life style.

Factor four was named "Eating Locus of Control". The variables which clustered under this factor were: "I just can't seem to change certain bad eating habits", "when it comes to food I just don't have will power", and "I have a really hard time controlling the amount of junk food I eat". Higher scores on this factor reflect an external locus of control. External eating locus of control is defined in the individual as the belief that eating habits are under the control of others or are unpredictable because of the great complexity of the forces surrounding him. A lower score on this factor reflected an internal eating locus of control. The individual with an internal locus of control believes that he is responsible for his own eating habits and that he has the ability to control and change his eating habits. Consequences of an internal locus of control reported by Rotter [58] and others have included "greater attempts at self-mastery of the environment and greater striving toward achievement behavior".

Factor five was labeled "willingness to seek help attitude" and clustered the following variables: "I watch for possible signs of major health problems", "I am willing to change my eating habits to improve my health", "I

like to try new and different kinds of foods", and a "willingness to participate in Navy sponsored health promotion programs" (i.e. go to the gym, smoking clinics, weight reduction clinics, etc.).

Factor six, labeled tobacco use, clustered variables on the use of tobacco products and will be developed at a later date.

General Dietary Habits

Eating patterns for the participants are presented in Table 2. Fifty percent of participants reported frequently skipping breakfast (eating breakfast two days or less per week), while only 16% missed lunch and only 5% missed dinner. Although a large percentage of men skip breakfast, only 21% reported snacking on a regular basis (five to seven times per week).

Table 2

Eating Patterns Reported for a One-week Period
(Percent of Sample in Each of Five Frequency Categories > 120)

Variable*	Number of Days per Week				
	0	1-2	3-4	5-6	7
Eat Breakfast	17.4	32.8	17.6	11.4	20.8
Eat Lunch	3.7	12.1	19.4	20.6	44.3
Eat Dinner	.8	3.8	11.2	17.8	66.4
Eat Snacks	13.1	39.2	27.1	9.1	11.5

* N-count ranges from 1878 to 1883.

The analysis of self-reported habitual eating habits over a weekly time frame is summarized in Table 3. The survey participants prefer foods high in saturated fat. Approximately one third more men consume high fat meats almost every day as those that consume lean meats almost daily (21% and 16% respectively). Nearly three times as many men report never drinking skim milk as those that never drink whole milk. On a daily basis, 79% of respondents reported not eating vegetables, 86% reported not consuming starchy vegetables, and 84% reported not eating whole grain breads and cereals. The typical Navy man skips breakfast, favors high fat, high protein meals and avoids fruit, vegetables, and complex carbohydrates.

The 1987 Navy men self-report lifestyle questionnaire indicated improvement in eating habits. However, dietary habits still fall short of the American Heart Association Dietary Guidelines for healthy Americans [16], the Surgeon General's guidelines [17], and nutrition principles outlined to enhance athletic performance [22,23,46]. Self-report consumption of eggs, fried foods, and high fat meats were less frequent than reported in the 1985 survey by Conway, but intake of complex carbohydrates, fruits and vegetables were still far below recommendations (see Table 2).

Table 3

Comparison of Food Choices Reported for a One-week Period for
Shore/Shipboard Versus Shipboard Only

(Percent of Sample in Each of Seven Frequency Categories)

Variable*	Number of Times per Week Eaten							
	0	1-2	3-4	5-6	7 ¹	14 ²	21 ³	
High-Fat Meats	a	6.1	35.6	32.7	11.2	9.5	2.4	2.5
	b	5	21	33	18	14	4	5
Lean Meats	a	16.9	37.0	29.1	10.7	4.1	0.9	1.2
	b	7	32	35	13	8	2	3
High-Fat Dairy	a	11.5	30.6	26.2	12.5	11.4	3.7	4.2
	b	6	19	21	17	16	9	12
Low-Fat Dairy	a	49.3	21.3	12.5	6.1	6.9	1.8	2.0
	b	50	23	12	5	5	2	3
Saturated Fats/ Butter	a	30.7	28.7	21.3	8.6	6.8	1.8	2.1
	b	20	21	26	12	13	4	4
Polyunsat. Fats/ margarine	a	25.7	31.0	25.0	8.5	7.0	1.3	1.5
	b	20	28	25	12	9	3	2
Fried Foods	a	10.0	36.5	32.1	12.7	6.1	1.2	1.4
	b							
Eggs	a	26.0	41.5	18.6	5.8	6.0	0.5	1.5
	b	24	34	20	9	9	1	3
Sugar (refined)	a	18.4	37.9	24.6	9.1	6.4	1.7	1.9
	b	14	29	26	12	12	4	3
Leafy Vegetables	a	12.4	20.1	28.7	18.0	13.7	3.9	3.1
	b	2	7	18	24	24	15	10
Starchy Vegetables	a	6.8	28.4	36.5	14.8	9.4	1.8	2.2
	b							
Fruit	a	12.6	25.4	24.5	16.8	12.2	4.6	3.8
	b	8	16	23	22	17	8	6
High-fiber Bread/ Grain	a	27.4	26.1	20.3	10.8	10.2	1.8	3.5
	b	17	26	22	15	12	6	2

* a. Slaughter Ship/Shore Data, n-count ranges from 1871 to 1879.
b. Conway Shore Based Data, n-count ranges from 607 to 624.

¹ Once every day.

² Twice every day.

³ Three times every day.

The nutrition attitude component of the questionnaire suggested that most Navy men (71%) were not willing to change eating habits to improve health. The response to this question may imply that respondents assumed that nutritional foods are not as tasty. This question may also tap values and commitment to eating habit change. Selection of foods is one of the few aspects of his life over which the sailor has control (see Appendix A, "A Day in the Life of a Sailor"). His reluctance to change his eating habits is understandable.

Sixty-one percent of respondents revealed that when they learn new things about good nutrition, they try to change their habits accordingly. This positive response does not necessarily imply commitment to change but appears to be a "socially" acceptable response. These responses imply a contradiction in willingness to change eating habits, which should be clarified in future research.

Further, the respondents appeared to be flexible in their food choices. Seventy-nine percent of respondents liked to try new and different foods, while 91% like a lot of variety in the foods they eat.

The results of the "high fat lover" questions suggested the preference for high fat foods in the sample population. Fifty two percent of respondents' favorite meal included a thick juicy steak while 36% like extra fat left on meat for added flavor.

In response to the "helpless poor-nutrition eater" questions, the following results were found. Thirty five percent responded that "everything they really enjoy eating is bad for them." Nineteen percent reported "that when it

comes to food they have no will power." Seventeen percent of the respondents reported "they really have a hard time controlling the amount of junk food they eat." The results suggested a small but significant percentage of the population can be classified as "helpless poor-nutrition eaters" and further investigation is warranted.

The results of the intercorrelations of summary variables, personal variables, and physical variables are presented in Table 4. There were significant negative correlations between the fat attitude factor and age ($p < .0001$, $r = -.26$), body fat ($p < .0001$, $r = -.19$), belly (abdomen/height) ($p < .0001$, $r = -.19$) and time to complete a 1.5 mile run ($p < .0001$, $r = -.16$). There were significant positive correlations between number of sit-ups and number of pushups in a two minute period ($p < 0.0001$, $r = .17$ and $r = .15$ respectively). Performance standards are documented to be affected by many variables: Age, body composition, genetic endowment and training. The results of the intercorrelations implied a significant relationship: Young men prefer high fat foods, have a lower percent body fat, a lower belly measurement (waist circumference/height), and are able to perform better on the physical readiness tests (improved score on run time and number of pushups and sit-ups in two minutes).

Table 4

Intercorrelations of Summary Variables
Physical and Personal Variables

Variable*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Locus	----														
2. General Nutrition Attitude		----													
3. Fat Attitude			----												
4. Exercise Attitude				----											
5. Willingness to Seek Help					----		-.18								
6. Age			-.26			----									
7. Caucasian							----								
8. Ed. Level		.21						----							
9. Body Fat	.27		-.19	-.06		.29			----	.92					.20
10. Belly	.28		-.19			.27				----					.20
11. Wt/Ht	.25		-.15								----				
12. Sit-ups		.17		.26	.15	-.28				-.24	-.20	----			
13. Pushups		.15		.26	.13	-.31				-.27	-.20	-.16	----		
14. 1.5 Mile Run		-.16		-.24	-.15	.37				.35	.34	.25		----	
15. Self reported High Blood Pressure															----

* N-count for correlation coefficients involving variables 1-8 ranges from 1740 to 1887.

N-count for correlation coefficients involving variables 9-15 ranges from 915 to 1082.

For all cases $p < 0.001$.

Factor 3 or a Positive Exercise Attitude correlated positively to better performance on the physical readiness test of pushups and sit-ups and faster run time ($p < .0001$, $r = .26, .26, -.24$ respectively). Body Fat and Exercise Attitude correlated negatively ($p < 0.04$, $r = -.06$) (Table 4).

Factor 4, having an external Locus of Control or the generalized expectation that events are controlled by factors over which the individual has little control, correlated with a higher percent body fat ($p < .0001$, $r = .27$) and a higher belly measurement (abdomen/height ratio) ($p < .0001$, $r = .28$) (Table 4).

Factor 5, willingness to seek help attitude, was negatively correlated with being Caucasian ($p < .0001$, $r = -.18$); the other ethnic groups were more willing to seek help with health concerns (Table 5). Factor 5 was positively correlated with pushups and sit-up scores and a faster run time ($p < .0001$, $r = .15, .13, .15$ respectively). There was no significant correlation between body fat percentage and willingness to seek help (see Table 4).

Table 5

The Relationship between Willingness to Seek Help Factor and Ethnic Group

<u>Seek Help Category</u>	<u>Ethnic Group</u>	<u>Standard Deviation</u>
1.9	0 (Other races)	19.5
1.7	1 (Caucasian)	19.5
N Range (426-1461)	DF = 1	Alpha = 0.03 $p < 0.0001$

As expected, age correlated positively ($p < 0.0001$, $r = .29$, $r = .27$, $r = .38$ respectively) with a higher percent body fat, belly and run time (slower time to complete 1.5 miles), and negatively with performance on sit-ups and pushups ($p < .0001$, $r = -.28$, $-.31$) (Table 4).

A noteworthy result was the correlation between belly (abdomen/ height) and percent body fat ($p < .0001$, $r = .92$). The current male body fat measurement requires two measurements-- abdomen and neck. The neck measurement is subtracted from the abdomen and the value is compared against the height measurement. Using the belly measure (abdomen/height) would simplify this procedure and warrants further investigation. The belly measurement was also correlated with self-reported high blood pressure ($p < .0001$, $r = .21$).

Results of the Multiple Step Regression, a statistical procedure for predicting values of a dependent variable based on the values of one or more independent variables, are outlined in Table 6.

Table 6

Stepwise Multiple Regression of Summary Variables,
and Personal Variables to Predict Physical
Readiness Variables

Measure	P value	Predictor	R ²	B
<u>Situps</u>	.0001	Tobacco use	.09	-2.50
	.0001	Exercise Attitude	.13	1.65
	.0001	Age	.17	-.50
	.0001	Rank	.18	.75
	.0001	General Nutrition Attitude	.19	2.27
<u>Pushups</u>	.0001	Age	.10	-.66
	.0001	Exercise Attitude	.15	1.44
	.0001	Tobacco use	.18	-1.27
	.0029	General Nutrition Attitude	.184	2.25
	.0168	Education Level	.19	.83
	.0001	Willingness to Seek Help Attitude	.19	2.52
<u>Run Time</u>	.0001	Tobacco use	.15	30.51
	.0001	Age	.22	6.86
	.0001	Exercise Attitude	.25	-10.57
	.0001	Rank	.26	-6.83
	.0095	General Nutrition Attitude	.27	-20.89
<u>Belly Measurement</u>	.0001	Locus	.07	.10
	.0001	Age	.14	.017
	.0001	Fat Attitude	.18	-.12
	.0001	Rank	.19	-.02
	.0114	General Nutrition Attitude	.194	.052
<u>Body Fat</u>	.0001	Age	.07	.19
	.0001	Locus	.14	1.12
	.0001	Fat Attitude	.175	-1.30
	.0100	Rank	.18	-.12
	.0034	Caucasian	.198	1.20
.0433	General Nutrition Attitude	.19	.50	

The stepwise multiple regression revealed that individuals who use less tobacco, have a better general nutrition attitude, exercise more, are of higher rank and are younger, can perform more sit-ups (Table 6). The regression for pushups was similar (Table 6). Individuals who use less tobacco, have a good general nutrition attitude, exercise more, are more willing to seek help, are younger and have a higher education level, are able to do more pushups.

The regression for 1.5 mile run time is also similar (Table 6). Individuals who used tobacco less, had a good general nutrition attitude, exercised more, were of higher rank, and younger, completed the 1.5 mile run in less time.

Several factors were found to correlate significantly with belly size (abdomen/height) (Table 6). Individuals with a higher external locus of control, are older, of lower rank and have a larger belly measurement. Good general nutrition attitude entered into the correlation but it appeared to be a small artifact of intercorrelation.

The multiple regression equation with body fat as the dependent variable revealed that individuals with a higher external locus of control, a good general nutrition attitude, a negative attitude to high fat intake, are of lower rank, older and Caucasian and have a higher body fat (Table 6). The coefficient (.48, $p < .04$) value for general nutrition attitude is indicative that this is not a strong factor in determining body fat percentage, but maybe an artifact of the intercorrelations.

Dividing individuals into categories according to differences in attitudes revealed the following results. Individuals with higher scores or a stronger affinity for high fat foods had lower percentage body fat (Table 7), lower belly measurements (Table 8) and lower weight to height measurements (Table 9), and were younger (Table 10). Individuals divided into body fat categories and compared to locus of control scores revealed that an external (high score on locus of control) locus of control was related to having a higher body fat (Table 11). Dividing individuals into three body fat categories revealed lower scores for pushups and sit-ups, and slower run times, the higher the locus of control score achieved.

Furthermore, results revealed belly measurement and body fat percentage ($P < 0.0001$) were negatively correlated ($p < 0.0001$) with performance measures on the Physical Readiness Test (Tables 12, 13).

Table 7

The Relationship between Fat Attitude and Percent Body Fat

<u>Fat Attitude Category</u>	<u>Body Fat</u>	<u>Standard Deviation</u>
1	17.8	4.85
2	16.0	5.61
3	15.0	5.52

N Range (344-378) DF = 1077 Alpha = 0.05 p < 0.0001

Table 8

The Relationship between Fat Attitude and Belly Size

<u>Fat Attitude Category</u>	<u>Mean Belly¹ Measurement</u>	<u>Standard Deviation</u>
1	5.01 (bigger)	.51
2	4.89	.46
3	4.79 (smaller)	.49
N Range (349-385)	¹ Belly = Abdomen/Height	
DF = 1089	1 = Fat Attitude < 1.7	
Alpha = 0.05	2 = 1.7 <= Fat Attitude < 2.26	
p < 0.0001	3 = Fat Attitude >= 2.26	

Table 9

The Relationship between Fat Attitude and Mean Weight/Height Ratio

<u>Fat Preference Attitude</u>	<u>Mean Weight/Height Measurement</u>	<u>Standard Deviation</u>
1	2.57	.116
2	2.50	.32
3	2.44	.32
N Range (309-338)	DF = 958	Alpha = 0.05
		p < 0.0001

Table 10

The Relationship between Age Category and Mean Fat Attitudes

<u>Age Category</u>	<u>Mean Fat Attitude</u>	<u>Standard Deviation</u>
1	2.3	.95
2	2.03	.84
3	1.82	.74

N Range (567-645) DF = 1779 Alpha = 0.05 p < 0.0001

Age Categories:

- 1 = Age <= 25
- 2 = 25 < Age <= 33
- 3 = Age > 33

Table 11

The Relationship between Body Fat Categories and Locus of Control

<u>Body Fat Category</u>	<u>Locus of Control</u>	<u>Standard Deviation</u>
1	14.8 (internal)	5.8
2	16.7	5.2
3	18.01 (external)	4.8

N Range (329-394) DF = 1077 Alpha = 0.05 p < 0.0001

Body fat Categories:

- 1 = Percent Body Fat < 13
- 2 = 13 <= Percent Body Fat < 19
- 3 = Percent Body Fat >= 19

Locus of Control:

- 1 = Locus of Control < 2.6
- 2 = 2.6 <= Locus of Control < 3.8
- 3 = Locus of Control >= 3.8

Table 12

· The Relationship between Belly Measurement and PFT Performance

<u>Belly # Category</u>	<u>Mean Number of Sit-ups</u>	<u>Standard Deviation</u>
1	61	19
2	58	21
3	51	16
N Range (286-324)	DF = 921	Alpha = 0.05 p < 0.0001

<u>Belly # Category</u>	<u>Mean Number of Pushups</u>	<u>Standard Deviation</u>
1	45	16
2	42	17
3	36	13
N Range (285-322)	DF = 914	Alpha = 0.05 p < 0.0001

<u>Belly # Category</u>	<u>Mean Run Time</u>	<u>Standard Deviation</u>
1	13.02	1.68
2	12.06	1.66
3	11.49	1.65
N Range (276-314)	DF = 887	Alpha = 0.05 p < 0.0001

Belly Ratio (Abdomen/Height) Categories:

1 = Belly Ratio < 4.65

2 = 4.56 <= Belly Ratio < 5.073

3 = Belly Ratio >= 5.073

Table 13

The Relationship between Percent Body Fat and PFT Performance

<u>Body Fat Category</u>	<u>Mean Number of Sit-ups</u>	<u>Standard Deviation</u>
1 (lower %)	62.2	19.5
2	56	19.5
3 (higher %)	51	16.1
N Range (244-381)	DF = 910	Alpha = 0.05 p < 0.0001

<u>Body Fat Category</u>	<u>Mean Number of Pushups</u>	<u>Standard Deviation</u>
1 (lower)	46.31	17.4
2	40	14.6
3 (higher)	35	12.9
N Range (244-376)	DF = 905	Alpha = 0.05 p < 0.0001

<u>Body Fat Category</u>	<u>Mean Run Time</u>	<u>Standard Deviation</u>
1 (lower)	13.10	11.20
2	12.25	8.80
3 (higher)	11.29	9.58
N Range (279-370)	DF = 878	Alpha = 0.05 p < 0.0001

CHAPTER V

Discussion

Results of the eating questionnaire on changes in habitual eating practices suggested that Navy men have made improvements in reduction of fat intake from the previous survey of shipboard personnel. This improvement may be the result of including shore based personnel and the increased randomness of the survey. Shore based personnel tend to have more food choices than shipboard personnel who rely primarily on the Navy mess for sustenance. Responses on the food frequency questionnaire may have been influenced by other factors as well. Meichenbaum [13] noted that self-report had the tendency to lead to over-reporting of positive adherence to health behaviors. Furthermore, due to constant bombardment by the media on appropriate food choices, it may be difficult for an individual to remember the foods he actually consumed, especially if they differ from recommended food choices. Dwyer [90] reported on the problem of memory in nutritional epidemiology research: "Lack of attention may account for frequent omissions that are not major parts of meals", and "Memories of old food habits" may interfere with retrieval of more recent intake. Also, most individuals eat unaware, without giving their undivided attention to what they are eating. In weight reduction and cardiovascular risk reduction classes for Navy men, this author found that individuals had a difficult time completing an eating questionnaire on foods eaten the previous day.

The typical week's food intake reported in the lifestyle questionnaire does not meet the Surgeon General's recommendations [17] or the American Heart

Association daily guidelines: Two to three servings each from the vegetable, fruit, and low-fat dairy groups, four servings of whole grain breads and cereals, and five to seven ounces of lean meat, fish or poultry [16]. The emphasis on high protein, low fiber, low complex carbohydrate foods brings up cause for alarm. This eating regime has been linked with certain types of cancer [17].

In general, most Navy men do not meet nutritional requirements to enhance athletic performance. Most Navy men skip breakfast and consume the majority of calories later in the day. This delayed consumption of calories tends to promote lipogenesis and increased percent body fat [91]. The nutritional requirements to enhance athletic performance are similar to the nutritional guidelines previously mentioned, and include a higher percentage of total caloric intake from complex carbohydrates.

The Effect of Attitudes on Health Practices

Attitudes play an important role in not only the adoption and maintenance of a prudent diet but also in a variety of health promotion behaviors. The attitudes from the lifestyles questionnaire which clustered in factor analysis -- general nutrition attitude, high fat food preference attitude, positive exercise attitude, willingness to seek help, and the eating locus of control -- attitude have been found to have strong mediating relationships to performance on selected physical readiness measures in this investigation. Individuals who scored high on general nutrition orientation performed better

on all physical readiness measures except body composition. Similar results were found by Conway in her shipboard analysis.

Individuals who preferred high fat foods tended to be younger and leaner. As was discussed in the text, body composition changes with age due to a slow down in metabolic rate and in the natural aging process. The lower the fat preference score, the higher the body fat percentage and the older the individual was (Table 7, Table 10). The author speculates that this attitude difference may be due to the increase in body fat with age and the need to watch fat intake to meet Navy body composition standards. Obesity status attained in later life has been associated with increased risk of cardiovascular heart disease [37]. The opportunities for preventive maintenance in nutrition education appear to be important in this area.

Navy Food Service Systems has modified recipes to meet American Heart Association guidelines and Department of Health and Human Services and United States Department of Agriculture guidelines. In the review of literature, research indicated that older, educated men with dependents who regularly utilize health services are more likely to choose lower fat foods than the younger, single sailor. The Food Management Team, a branch of NAVFSSO that conducts food service assist visits also supported this conclusion. When dealing with menu revisions to enhance the crew's nutritional well-being, the assist teams found that it was the younger sailors who lobbied for the inclusion of more high fat foods.

The next attitude, eating locus of control, was the strongest attitudinal factor. Individuals with a high external locus of control were fatter. In

his nutrition attitude survey, Hollis's, et. al.'s [63] findings support the results of this study. Individuals who scored higher on his "helpless and unhealthy factor" were associated with increased meat consumption, weight, emotional distress, reported medical and psychological symptoms, total cholesterol and low-density lipoprotein cholesterol. The importance of assessing and evaluating participants in dietary intervention cannot be underestimated or overemphasized.

The external/internal locus of control concept has been investigated in several studies. Analysis suggests that locus of control is a complex, multidimensional construct. Self-control, locus of control, and irrational beliefs are related concepts. Individuals scoring high on self-control tendencies were found to have an internal locus of control and to hold fewer irrational beliefs. Further research is needed to validate the external and internal locus of control concept and its importance in Navy nutrition intervention studies. Investigation into Naval members' personal priorities and value systems must occur to influence commitment to change, which hopefully will result in positive behavior change.

The next attitude, positive exercise attitude, was associated with better performance in the physical readiness measures (situps, pushups, run time, $p < 0.0001$, $r = .26, .26, -.24$ respectively), but was not as strongly related to body fat percentage (< 0.04). Wilmore's [23] study supported this slight positive association: Body fat percentages vary only slightly in exercising adults. Genetic potential seems to be a more important factor to a lower percent body fat.

Further, the health consciousness attitude was associated with not being Caucasian, having a higher education level, and performing better on sit-ups, pushups and running the 1.5 mile test in a shorter time. Marital status did not correlate with willingness to seek help. The Caucasian result should be investigated more thoroughly to extract a possible underlying meaning.

Performance standards in the physical readiness measures were strongly associated with body fat as was shown by Parrish [30]. This result supported Wilmore's findings that there is a strong negative correlation with increased body fat and performance activities where body mass must be moved.

Furthermore, the finding of the "hidden treasure", the belly measurement (abdomen/height) must be investigated in depth. The strong correlation between traditional body composition techniques and a more simplified approach requiring only two measurements (height and abdomen) versus three (height, abdomen and neck circumference) may revolutionize this arena. Gone would be the likelihood of the "large necked" individual slipping through the cracks of the current standards and the "small necked" individuals suffering the consequences.

The results of this investigation supported the premise prevalent in the literature that it is not necessarily knowledge that results in behavior, but that attitudes mediate actual behavioral practices. More research must delve into the evaluation of attitude change in worksite intervention for health promotion.

CHAPTER VII

Recommendations

Navy weight control and nutrition intervention should take on a two-pronged approach. First, current programs to rehabilitate overfat and obese naval personnel must be evaluated. Obesity is a multi-faceted syndrome affecting large numbers of naval personnel. Current programs should be evaluated on their comprehensiveness and effectiveness. Storlie's [53] theoretical model offers areas to begin this evaluation. Brownell et. al. [86] challenges researchers and clinicians to determine factors in the family, worksite and community to facilitate weight loss. The Navy offers such a "community" and opportunities for long term follow-up.

A multi-disciplinary approach to help the sailor develop an internal locus of control would be an effective starting point. This training could be incorporated into the CNO's personal excellence program under the topic "Personal Effectiveness Training" (PET). Awareness of the concept of locus of control could be developed through workshops open to the entire crew. Screening individuals by locus of control would establish a baseline for further instruction. Individuals who scored higher on internal locus of control could be offered self-directed programs with video and self-paced instruction manuals on weight reduction, smoking cessation or other topics as appropriate. Those with an external locus of control could be directed to more structured support groups with an emphasis on modeling and self efficacy skills to encourage the development of effective self control techniques for weight reduction or other general "life-coping" skills [93].

At shore commands or shipboard commands in port, more emphasis must be placed on harnessing social and family support systems especially for married personnel [94]. Programs similar to those proposed for the active duty sailor could be offered at the Navy Family Services Centers. Research on improvement in weight reduction and behavior change supports this premise [94].

The second prong of the program should be a Preventive Maintenance System (PMS), a well-known term in Navy jargon. Navy equipment and machinery have preventive maintenance schedules. A civilian example is the required maintenance schedule for an automobile to keep the parts running smoothly and the car operational. The Navy needs a nutrition PMS program. This nutrition PMS program would incorporate aspects of nutrition education into the food service function and emphasize the importance of physical readiness to optimal job performance.

In this investigation, the attitudes prevalent in the younger men are harbingers of future nutrition and health problems. One of the Surgeon General's strongest public health recommendations is to cut down drastically on fat intake. The positive approach of marketing nutrition education in the form of the "Athletic Training Table" and not focusing directly on the health issues (i.e. clogged arteries or the "fat boy" program) may be a better strategy to reach this young, high fat food loving population.

To promote the Training Table concept, a team effort must be organized. First, the commanding officer must give the project his blessing for it to come to fruition. The Food Service officer and the mess specialists involved with the cycle menu in ship and shore facilities must not only receive

nutrition education in "Heart Healthy" menu principles, but they must be given reasons to "buy" into the program.

One method of putting some "teeth" into this program would be to put more emphasis on nutrition education and the Heart Healthy cuisine component in the NEY Award [92]. This award is given to mess facilities that best exemplify Navy food service excellence. Currently "Heart Healthy" cuisine only scores ten points out of a total of 1000. The NEY Award is the "feather in the cap" for a food service operation. Increasing the point value of the "Heart Healthy" cuisine component would serve as an incentive for top management to "buy" into the program.

In addition, a registered Navy dietitian should be a visible, active member of each Food Management Team assist visit. Many Armed Forces recipes are within recommended guidelines, but not only internal factors must be changed. The external intrinsic factors (i.e. food appearance, taste perceptions) must be made appealing to motivate the sailors to eat these lower fat foods [69,71]. To promote healthier eating practices, setting up tastings on board ship and shore commands would help demonstrate taste and palatability of more appropriate recipes. This would be a good start for those in charge of food preparation and also beneficial to the crew.

Glamorizing "Healthy Cuisine" to enhance athletic performance rather than stress health issues may be a possible answer to the nutrition puzzle. More research and a pilot program in this area is most appropriate. The Navy needs

to incorporate the "Training Table" and promote it through attitude change programs and a reward system.

The principles of sports nutrition, increased complex carbohydrates, moderate protein intake and low fat intake combined with increased exercise frequency to enhance performance are right in line with the Surgeon General's major recommendation: "Early prevention of obesity through exercise and diet, rather than correction of obesity once it is present, may be the most effective method to curb the 'overfat' condition common in adults" [17].

Another recommendation for the Navy's nutrition PMS program is to include the waist to hip ratio in the screening and physical readiness assessment approach. The extra fat distributed around the abdomen of men with increased waist to hip ratio is associated with increased cardiovascular risk factors, hyperinsulinemia, diabetes, and hypertriglyceridemia. This measure would be an excellent marker to be used in command nutrition intervention programs.

The bottom line is to ensure a physically ready naval force. More research must be done to determine the best approaches to improve nutrition education intervention and health promotion in Naval personnel. Assessing the effectiveness and evaluating current Navy worksite weight reduction programs is the first area to begin this process.

CHAPTER VIII

Summary and Conclusions

In summary, self-reported habitual eating practices for Navy personnel appear to be improving. The study's increased randomness due to inclusion of shipboard and shore based personnel may account for this apparent improvement. There is a definite need for further improvement, especially in increased complex carbohydrate intake. Five attitudinal factors were developed through factor analysis: The preference for high fat foods, the eating locus of control factor, the positive exercise attitude, the general nutrition orientation, and the willingness to seek help attitude. These male attitudes were associated with significant relationships to physical readiness measures. Further evaluation is necessary to determine the significance of these attitudes in nutrition intervention and health promotion in Naval personnel.

The best cure for obesity and chronic diseases associated with dietary and exercise indiscretion is prevention. The old adage "an ounce of prevention is worth a pound of cure" clearly applies to weight control and nutrition intervention for Navy personnel. The loss of highly trained manpower solely for reasons of obesity needs to be eliminated.

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Appendix A

A Day in the Life of a Sailor

Life on a Navy vessel is unique. A ship at sea is a small community with its own rules, regulations and culture. A good way to understand and appreciate this mini-society is to vicariously experience a day in the life of a sailor.

At sea, the workday begins early. Reveille is at 6 A.M. or sooner. The enlisted sailor crawls out of his bunk (referred to as a "rack"), grabs his washing gear and heads for the showers. He will probably have to wait for a stall. Due to limited supplies of fresh water, when his turn comes he will take a quick "Navy" shower: Wet down, turn the water off, soap up and then turn the water on to rinse. "Hollywood" showers are a luxury reserved to sailors on shore duty, or when the ship is in port.

After his shower, the sailor heads back to his berthing compartment to dress. Due to extremely limited space, he will be dressing in the aisle between the racks which are stacked three high (similar to narrow bunkbeds or sleepers on trains). His personal storage space is minimal. He may have a small compartment under his rack or a stand-up locker, similar to those found in high schools.

Next comes breakfast on the "mess decks". Again he will have to wait in line. Breakfast does offer some choices. He may be able to get eggs or an omelet "to order", or make a selection from a variety of other typical breakfast fare such as cereal, pancakes or waffles, etc. Once served, he will

take his tray to a table in a cafeteria type setting where he will eat quickly. He has lost time waiting in line and the mess decks seating capacity cannot accommodate the entire crew at one time.

Upon completing his meal, he will take his tray to the scullery where he will wait in line again to sort the trash and garbage into separate bins. Since plastics cannot, by international treaty, be dumped at sea, they must be separated from other trash.

After breakfast, the sailor goes to quarters. In fair weather quarters is held outside, in foul weather it is held in divisional work spaces. At quarters, attendance is taken and "the word" is passed. Information "passed down" includes any special activities or events (evolutions) and work assignments. Quarters is also an opportunity to make award presentations and inspect the crew.

Upon completion of quarters, the sailors are dismissed to carry out the "Plan of the Day" (the day's activities). These will include the sailors' normal work related to their current divisional assignment. For example, Machinist Mates' duties include operation, maintenance and repair of machinery, including the propulsion plant, Electronics Technicians maintain and repair electronic equipment, and Mess Management Specialists (the cooks) prepare the meals. When at sea watchstanding is added to the list of a sailor's normal duties. Many of the ship's company stand from six to 12 hours of watch in a 24 hour period. While the cooks do not stand watches, they must prepare four meals per day. In addition to the three basic meals, midnight rations ("Mid Rats") are available from 2300 to 2330 for the midnight to 0400 watchstanders.

On top of the work and the watches, training takes place continuously. Frequently the entire crew gets involved in the training. During General Quarters (GQ) the entire crew mans its "Battle Stations". Other drills may include propulsion plant exercises, fire and flooding drills, weapons accidents and security training. Another important "all hands" evolution is underway replenishment ("UNREP"). During a UNREP two ships travel in parallel no more than 100 feet apart and transfer fuel and provisions. All hands become involved not only to stow the provisions but also for supplemental manning of the propulsion and ship control stations. These evolutions can last for several hours on the receiving ship and 10 or more hours on the supply ship, with no breaks and frequently "under the cover of darkness."

At sea, a ship operates seven days a week, 24 hours a day. The sailor often puts in an 18 hour day, and usually works six days a week. On Sundays, the schedule is lighter, with only the essential evolutions taking place. However, watches must be stood. Into this busy schedule the sailor must find time for completion of self-paced courses required for advancement as well as physical readiness training (PRT). Opportunities for exercise are extremely limited, especially on the smaller ships. Although some of the larger ships have exercise equipment, it is insufficient to handle the crew's needs. Recreational activities on a ship are also limited. The most popular pastimes are sedentary: watching movies, playing cards, reading and sleeping.

In the midst of this arduous work schedule, meals take on an exaggerated importance. "Chow" is one of the rare evolutions that is not primarily work.

Meal time is also one of the few opportunities for the sailor to socialize with other crew members outside his division. Chow also serves as a reward to the sailor for working a long, hard day. While the mess fare is not gourmet-style food, the cycle-menu ensures variety and the sailor is permitted virtually unlimited portions. What the sailor eats is one of the few aspects of shipboard life he can control. Food is also available outside the mess in the form of "geedunk", i.e. soda, candy, cookies and chips. Given the importance and abundance of food combined with limited opportunities for exercise, it is not surprising that a significant number of shipboard personnel have weight problems.

Appendix B

Lifestyle Questionnaire Data Elements

VARIABLE NAME	USAGE	INFORMATION/CODES
BOOKLET2		BOOKLET NUMBER
RATE2		RATING (SEE APPENDIX)
RANK2		RANK (SEE APPENDIX)
YRSSERV2		YEARS IN SERVICE
MONSERV2		MONTHS IN SERVICE
AGE2		AGE
SEX2		SEX 1 = MALE, 2 = FEMALE
RACE2		RACE 1 = CAUCASIAN 2 = BLACK 3 = HISPANIC 4 = AMERICAN INDIAN, ALASKAN NATIVE 5 = ASIAN 6 = PACIFIC ISLANDER 7 = FILIPINO 0 = OTHER
HIGHED2		HIGHEST GRADE OF SCHOOL COMPLETED 1 = 11 YRS OR LESS 2 = GED OR ABE
HIBPOK2	#	IF YES, IS IT CONTROLLED 0 = NO, 1 = YES, 2 = DON'T KNOW
IF HIGH BP IS CONTROLLED, IS IT DONE WITH:		
0 = BLANK 1 = METHOD OF CONTROL		
BPMEDS2	#	MEDICATION
BPWGHT2	#	WEIGHT CONTROL
BPEXER2	#	EXERCISE
BPDLET2	#	DIET

BPOTHER2 # OTHER

EATING HABITS DURING THE LAST 7 DAYS, HOW OFTEN DID YOU:

0 = NEVER THIS WEEK 3 = 5 OR 6 TIMES THIS WEEK

1 = 1 OR 2 TIMES THIS WEEK 4 = EVERY DAY THIS WEEK

2 = 3 OR 4 TIMES THIS WEEK

ETBREAK2		EAT BREAKFAST
EATLUNC2	#	EAT LUNCH
EATDINR2	#	EAT DINNER
EATSNAC2		EAT SNACKS BETWEEN MEALS

DURING THE LAST 7 DAYS, HOW OFTEN DID YOU:

0 = NEVER

1 = 1 OR 2 TIMES THIS WEEK

2 = 3 OR 4 TIMES THIS WEEK

3 = 5 OR 6 TIMES THIS WEEK

4 = ONCE EVERY DAY THIS WEEK

5 = TWICE EVERY DAY THIS WEEK

6 = 3 OR MORE TIMES EVERY DAY

THIS WEEK

ETHIFAT2		EAT HIGH FAT MEAT
ETLNMET2		EAT LEAN MEATS
EATFISH2		EAT FISH
EATCREM2		EAT HIGH-FAT DIARY PRODUCTS
ETDAIRY2		EAT LOW-FAT DAIRY PRODUCTS
ETBUTER2		EAT BUTTER
EATMARG2		EAT POLYUNSATURATED FATS
EATFRID2		EAT FRIED FOODS
EATEGGS2		EAT EGGS
EATSUGR2		EAT SUGAR PRODUCTS
ETLEAFY2		EAT LEAFY VEGETABLES
ETSTRCH2		EAT STARCHY VEGETABLES
ETFRUIT2		EAT FRUITS
ETFIBER2		EAT HIGH-FIBER GRAINS

NUTRITION ATTITUDES

1 = DISAGREE STRONGLY 5 = AGREE SLIGHTLY
 2 = DISAGREE MODERATELY 6 = GENERALLY AGREE
 3 = DISAGREE SLIGHTLY 7 = STRONGLY AGREE
 4 = NEITHER AGREE OR DISAGREE

WILLING2		WILLING TO CHANGE EATING HABITS
TRYTO2		TRY TO CHANGE HABITS ACCORDINGLY
NEWDIFF2		LIKE TO TRY NEW FOODS
VARIETY2		LIKE A LOT OF VARIETY
STEAK2		FAVORITE MEAL INCLUDES THICK STEAK
TASTIFT2		LITTLE FAT IMPROVES TASTINESS
ENJOYBD2		EVERYTHING I ENJOY IS BAD FOR ME
NOWILL2		I HAVE NO WILLPOWER WITH FOOD
CANTCNG2		CAN'T CHANGE BAD EATING HABITS
JUNK2		HARD TIME CONTROLLING JUNK FOOD
FATHLTH2	*	BEING OVERWEIGHT IS BAD FOR HEALTH

HEALTH PROMOTION PROGRAMS

0 = NO, 1 = WOULD LIKE TO, 2 = YES

GYM2		REGULAR PARTICIPATION IN FITNESS CENTER
SMKCLIN2		REGULAR PARTICIPATION IN SMOKING CLINIC
WIREDUC2		REGULAR PARTICIPATION IN WEIGHT REDUCTION CLINIC
ALCCLIN2	#	REGULAR PARTICIPATION IN ALCOHOL REHAB

DRUGCLI2	#	REGULAR PARTICIPATION IN DRUG REHAB CLINIC
STRESSMG2		REGULAR PARTICIPATION IN STRESS MANAGEMENT
CMSPORT2		REGULAR PARTICIPATION IN COMMAND SPORTS
CMDEXER2		REGULAR PARTICIPATION IN COMMAND EXERCISE PROGRAM
BPSCREN2		REGULAR PARTICIPATION IN BLOOD PRESSURE SCREENING
CHLTEST2		REGULAR PARTICIPATION IN CHOLESTEROL TESTING
OTHRCLI2		REGULAR PARTICIPATION IN OTHER ACTIVITY
HEIGHT2		HEIGHT (INCHES AND DECIMAL)
WEIGHT2		WEIGHT (POUNDS)
NECK2		NECK CIRCUMFERENCE (INCHES AND DECIMAL) (MEN AND WOMEN)
ABDOMEN2		ABDOMEN CIRCUMFERENCE (INCHES AND DECIMAL) (MEN ONLY)
PERBF2		PERCENT BODY FAT (THEIRS)
PIMONTH2		MONTH OF FITNESS TEST
PTDAY2		DAY OF FITNESS TEST
PTYEAR2		YEAR OF FITNESS TEST
SRCLASS		SIT-REACH CLASSIFICATION 0 = FAIL 1 = PASS 9 = MEDICAL

CLASSIFICATION CODES

0 = FAIL	3 = GOOD	9 = MEDICAL
1 = --NA	4 = EXCELLENT	
2 = SATISFACTORY	5 = OUTSTANDING	

SITUPS2	NUMBER OF SITUPS IN TWO MINUTES
SUCLASS2	SITUPS CLASSIFICATION
PUSHUP2	NUMBER OF PUSHUPS IN TWO MINUTES
FUCLASS2	PUSHUP CLASSIFICATION
RUNSEC	1.5 MILE RUN TIME (IN MINUTES AND SECONDS)
RUNCLAS2	RUN CLASSIFICATION
SWIMSEC2	500 YARD SWIM TIME (IN MINUTES AND SECONDS)
SWMCLAS2	SWIM CLASSIFICATION
OVCLASS2	OVERALL CLASSIFICATION

CONWAY CLASSIFICATION CODES

0 = FAIL	5 = OUTSTANDING
1 = ---NA	6 = ---NA
2 = SATISFACTORY	7 = ---NA
3 = GOOD	8 = MISSING
4 = EXCELLENT	9 = MEDICAL

OURSRC2	OUR SIT REACH CLASSIFICATION 0 = FAIL 8 = MISSING 1 = PASS 9 = MEDICAL
OURPUC2	OUR PUSHUP CLASSIFICATION
OURSUC2	OUR SITUPS CLASSIFICATION
OURRUNC2	OUR RUN CLASSIFICATION
OURSWMC2	OUR SWIM CLASSIFICATION
OUROVC2	OUR OVERALL CLASSIFICATION
PERBF22	PERCENT BODY FAT (COMPUTED FROM GIRTHS AND JIM HODGDON'S REVISED FORMULA)

EXBFCOD2

EXCESS BODY FAT CODE

1 = MALES < 23.0
 FEMALES < 31.0
 2 = MALES \geq 23.0 AND < 26.0
 FEMALES \geq 31.0 AND < 36.0
 3 = MALES \geq 26.0
 FEMALES \geq 36.0

RANK CODES

<u>NAVY</u>		<u>CODED</u>	<u>PAYGRADE</u>
R	E-1		01
A	E-2		02
N	E-3		03
3	E-4		04
2	E-5		05
1	E-6		06
C (CHIEF)	E-7		07
SC (SENIOR)	E-8		08
CM	E-9		09
W1	W-1		10
W2	W-2		11
W3	W-3		12
W4 (CWO)	W-4		13
ENSIGN	O-1		14
LHJG	O-2		15
LT	O-3		16
LCDR	O-4		17
CDR	O-5		18
CAPT	O-4		19
ADMIRAL	O-7		20

Appendix C
Questionnaire

Navy-wide LONGITUDINAL STUDY -- 1987 data Collection

DEPARTMENT OF THE NAVY
NAVAL HEALTH RESEARCH CENTER
SAN DIEGO, CALIFORNIA 92138-9174

HEALTH AND PHYSICAL READINESS PROGRAM EVALUATION

Dear Navy Member:

You have been randomly selected to represent Navy personnel in a project evaluating the Health and Physical Readiness Program. Please read the "Information to Participants" describing the nature of the study, the "Consent Statements," and the "Privacy Act Statement" which follow on the next two pages. If you consent to participate, please sign the Consent and Privacy Act forms, then fill out the questionnaires as **honestly** and **completely** as you possibly can. Your responses will be kept strictly **confidential**.

Remember that there are no right or wrong answers to the questions in this survey—your honest opinions, feelings, and self-reports are the "right" answers. Furthermore, your responses are very important because they will be considered representative of many other Navy personnel.

Thank you very much for your cooperation in this project.

Sincerely,

Project Director

PRIVACY ACT STATEMENT

- Authority.** 5 USC 301
- Purpose.** Medical research information will be collected to enhance basic medical knowledge, or to develop tests, procedures, and equipment to improve the diagnosis, treatment, or prevention of illness, injury, or performance impairment.
- Use.** Medical research information will be used for statistical analysis and reports by the Departments of the Navy, Defense, and other U.S. Government agencies, provided this use is compatible with the purpose for which the information was collected. Use of the information may be granted to non-Government agencies or individuals by the Commander, Naval Medical Command, in accordance with the provisions of the Freedom of Information Act.
- Disclosure.** I understand that all information contained in the Consent Statement or derived from the study described therein will be retained at the **Naval Health Research Center, San Diego**, and that my anonymity will be maintained. I voluntarily agree to its disclosure to agencies or individuals identified in the preceding paragraph, and I have been informed that failure to agree to such disclosure may negate the purposes for which the study is being conducted.

(Signature of Participant)

(Date)

(Print Name Grade or Rate)

(Date of Birth)



DO NOT MARK IN THIS AREA	■	■	■	■	■	■	■	3257
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INFORMATION TO PARTICIPANTS

This study, entitled "Health and Physical Readiness (HAPR) Program Evaluation," was undertaken to help the Navy determine the effectiveness of the program promulgated originally by OPNAVINST 6110.1B and modified by OPNAVINST 6110.1C. Primary objectives are to examine lifestyle factors which relate to health and fitness and to make recommendations about how the HAPR program might more effectively enhance physical fitness and promote good health.

Your participation in this longitudinal study will involve the completion of a series of questionnaires asking about your attitudes, behaviors, and opinions on issues related to health, physical fitness, and various aspects of well-being. Completion of the attached questionnaires should require only about 30-45 minutes. You may also be asked to complete 1 or 2 very short questionnaires (requiring only 5-10 minutes) at some time during the next year. Your physical readiness test scores will also be collected from the Command Fitness Coordinator.

Your participation in this research will not involve any physical risk or discomfort. There may be some social risk if the information gathered were improperly disclosed. To prevent this, the data will be kept at the Naval Health Research Center and used for research purposes only. Our primary use of the data will be in the preparation of reports to describe factors associated with health and physical readiness in the Navy. These reports will communicate our findings to Navy audiences concerned with operational readiness and to other professional audiences interested in health behaviors. If other researchers are interested in using the data to address issues beyond the scope of the present project, copies of the data will be made available to them. When this is done, all identifying information will be removed so that no single respondent can be identified. **In all cases, the data will be reported so that no individual respondent can be identified. The research information gathered will not become part of your service record or medical record.**

There will be no direct benefits to you from your participation in this research. Possible alternative procedures such as using interviews rather than questionnaires would offer no direct benefits either. The information obtained will help describe the current implementation of the HAPR program, and this could help the Navy improve its programs to enhance health and physical readiness in the fleet.

Your participation in this research must be voluntary. You have the right to refuse to participate and, if you consent to participate, you have the right to withdraw that consent at any time during the study. Refusal to participate or withdrawal after volunteering to participate will involve no penalty or loss of any benefits to which you are otherwise entitled.

If you have any questions regarding this research, you can obtain answers by contacting _____, Health Psychology Department, Naval Health Center, _____, San Diego, CA 92138-9174 (Telephone: Autovon _____; Commercial _____).

CONSENT STATEMENTS

From: _____ (NAME PLEASE PRINT) _____ (SIGNATURE AND DATE)

To: Naval Health Research Center, San Diego, California 92138

Subj: Consent to Participate Voluntarily in a Study

1. I hereby volunteer to participate as a subject in a study entitled "Health and Physical Readiness Program Evaluation."
2. I understand that the purpose of the study is to examine how the Navy's Health & Physical Readiness Program is being implemented and to gather information which might be used to improve this program. Details of the study are described in the "Information to Participants" above. The explanation included:
 - a. A description of the procedures to be followed and their purposes, including identification of any procedures which are experimental.
 - b. A description of attendant risks or discomforts.
 - c. A description of expected benefits.
 - d. A disclosure of any alternative procedures which might be of benefit to me.
3. My consent is given as an exercise of free will, without force or duress of any kind. Any inquiries I have concerning the study have been answered. I understand that my consent to participate does not release the United States from any possible future liability attributable to the study. I understand that I will be free to withdraw my consent and to discontinue my participation in the study, or any part thereof, at any time without prejudice to myself or to my military or civilian career. In making my decision to volunteer, I am not relying upon any information or representation not set forth in this statement or in the enclosure thereto.
4. Should questions arise I may contact _____, Code 40, Naval Health Research Center, San Diego, California 92138-9174 (Telephone: Commercial _____ or Autovon _____).
5. [Females Only] If pregnant, I understand that filling out the questionnaires required for participation in this study would pose no risk to my pregnancy.

ENLISTED RATING		
A	A	A
B	B	B
C	C	C
D	D	D
E	E	E
F	F	F
G	G	G
H	H	H
I	I	I
J	J	J
K	K	K
L	L	L
M	M	M
N	N	N
O	O	O
P	P	P
Q	Q	Q
R	R	R
S	S	S
T	T	T
U	U	U
V	V	V
W	W	W
X	X	X
Y	Y	Y
Z	Z	Z

PAY GRADE
E-1
E-2
E-3
E-4
E-5
E-6
E-7
E-8
E-9
W1
W2
W3
W4
O-1
O-2
O-3
O-4
O-5
O-6
O-7
O-8
O-9
O-10



NAME		
Last	First (1st 7 letters)	M
A	A	A
B	B	B
C	C	C
D	D	D
E	E	E
F	F	F
G	G	G
H	H	H
I	I	I
J	J	J
K	K	K
L	L	L
M	M	M
N	N	N
O	O	O
P	P	P
Q	Q	Q
R	R	R
S	S	S
T	T	T
U	U	U
V	V	V
W	W	W
X	X	X
Y	Y	Y
Z	Z	Z

TOTAL TIME IN SERVICE	YEARS MONTHS		
	YEARS	MONTHS	DAYS
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

TODAY'S DATE
MO DAY YEAR
0 0 0 0
1 1 1 1
2 2 2 2
3 3 3 3
4 4 4 4
5 5 5 5
6 6 6 6
7 7 7 7
8 8 8 8
9 9 9 9

SOCIAL SECURITY NUMBER
0 0 0 0 0 0 0 0 0
1 1 1 1 1 1 1 1 1
2 2 2 2 2 2 2 2 2
3 3 3 3 3 3 3 3 3
4 4 4 4 4 4 4 4 4
5 5 5 5 5 5 5 5 5
6 6 6 6 6 6 6 6 6
7 7 7 7 7 7 7 7 7
8 8 8 8 8 8 8 8 8
9 9 9 9 9 9 9 9 9

RACE/ETHNIC GROUP
White — not Hispanic
Black — not Hispanic
Hispanic
American Indian, Alaskan Native
Asian
Pacific Islander
Filipino
Other

MARITAL STATUS
Married
Living as married
Separated and not living as married
Divorced and not living as married
Widowed and not living as married
Single, never married, and not living as married

LENGTH OF TIME AT CURRENT COMMAND	YEARS MONTHS		
	YEARS	MONTHS	DAYS
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

SEX
Male
Female

AGE
0
1
2
3
4
5
6
7
8
9

HIGHEST LEVEL OF EDUCATION
11 years or less
GED or ABE certificate
High school graduate
Trade or technical school graduate
Some college
4-year college degree
Graduate or professional study but no degree
Graduate or professional degree

Is your spouse currently living with you at your present duty location?
NA I currently have no spouse/partner
No
Yes

PLEASE INDICATE HOW YOU PERSONALLY FEEL BY PROVIDING ANSWERS THAT BEST DESCRIBE YOU OR REFLECT YOUR OPINIONS.

(MARK ONE ANSWER PER STATEMENT)

1. How would you rate your current physical fitness?
 Poor Very good
 Fair Excellent
 Good
2. To what extent is your current physical fitness what you want it to be?
 Not at all Quite a bit
 Just a little A great deal
 Some
3. How would you rate your current health?
 Poor Very good
 Fair Excellent
 Good
4. To what extent is your current health what you want it to be?
 Not at all Quite a bit
 Just a little A great deal
 Some
5. Recently, how well have you been sleeping?
 Very poorly Fairly well
 Somewhat poorly Very well
 All right
6. How much difficulty have you had falling asleep or staying asleep at night?
 Not at all Quite a bit
 Just a little A great deal
 Some
7. How many hours of sleep do you usually get per night? (Mark number)
 1 2 3 4 5 6 7 8 9 10 11 12 13+
8. During the last month, how many days were you on sick leave? (Mark number)
 0 1 2 3 4 5 6 7 8 9 10 11 12+
9. During the last month, how many days were you authorized "bed rest" because you did not feel well? (Mark number)
 0 1 2 3 4 5 6 7 8 9 10 11 12+
10. During the last month, how many times did you seek professional health care (e.g., go to a doctor, dispensary, hospital, etc.)?
 0 1 2 3 4 5 6 7 8 9 10 11 12+

- 1.a. Have you ever been overweight?
 No
 Yes
- b. IF YES, at what age did the problem of overweight first begin?

YEARS OLD	
0	<input type="radio"/>
1	<input type="radio"/>
2	<input type="radio"/>
3	<input type="radio"/>
4	<input type="radio"/>
5	<input checked="" type="radio"/>
6	<input type="radio"/>
7	<input type="radio"/>
8	<input type="radio"/>
9	<input type="radio"/>

2. Do you feel that you are currently overweight?
 Not at all Quite a bit
 Somewhat Extremely
 Moderately
3. During most of your childhood, how would you have described yourself with respect to your ideal weight?
 Very underweight Slightly overweight
 Somewhat underweight Moderately overweight
 Ideal weight Extremely overweight
4. During most of your adolescence, how would you have described yourself with respect to your ideal weight?
 Very underweight Slightly overweight
 Somewhat underweight Moderately overweight
 Ideal weight Extremely overweight
5. Considering most of your adulthood, how would you describe yourself with respect to your ideal weight?
 Very underweight Slightly overweight
 Somewhat underweight Moderately overweight
 Ideal weight Extremely overweight
6. How "athletic" were you as a child?
 Not at all Above average
 Less than average Very athletic
 Average Extremely athletic
7. How "athletic" were you as a teenager?
 Not at all Above average
 Less than average Very athletic
 Average Extremely athletic

QUESTIONS

THE FOLLOWING QUESTIONS ARE DESIGNED TO PROVIDE INFORMATION ABOUT EXERCISE HABITS. PLEASE MARK THE APPROPRIATE CIRCLE TO INDICATE YOUR USUAL LEVEL OF PARTICIPATION IN EACH OF THE FOLLOWING TYPES OF EXERCISE.
(MARK ONE RESPONSE PER STATEMENT)

FREQUENCY OF EXERCISE (i.e., how often per week or month do you exercise)	NEVER	1 TO 4 TIMES PER MONTH	2 TIMES PER WEEK	3 TIMES PER WEEK	4 TIMES PER WEEK	5 TIMES PER WEEK	6 TIMES PER WEEK	7 TIMES PER WEEK OR MORE
1. Running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Bicycling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Racket sports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Continuous walking for exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Aerobic dance or aerobic exercise class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Weight lifting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Calisthenics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Basketball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Baseball/softball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. OTHER (Please specify) →	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

DURATION OF WORKOUTS (i.e., time you spend exercising during one workout period)	NOT APPLI- CABLE	LESS THAN 10 MINUTES	11 TO 20 MINUTES	21 TO 30 MINUTES	31 TO 40 MINUTES	41 TO 50 MINUTES	51 TO 60 MINUTES	MORE THAN ONE HOUR
1. Running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Bicycling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Racket sports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Continuous walking for exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Aerobic dance or aerobic exercise class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Weight lifting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Calisthenics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Basketball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Baseball/softball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. OTHER (Please specify same as 11. above) →	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

EXERCISE HISTORY (i.e., how long you have been on this schedule)	NOT APPLI- CABLE	LESS THAN ONE MONTH	1 TO 3 MONTHS	4 TO 11 MONTHS	1 TO 2 YEARS	3 TO 4 YEARS	5 YEARS OR MORE
1. Running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Bicycling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Racket sports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Continuous walking for exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Aerobic dance or aerobic exercise class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Weight lifting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Calisthenics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Basketball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Baseball/softball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. OTHER (Please specify same as 11. above) →	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. In your exercise or leisure activities, how often do you "work up a good sweat?"
 Never Seldom Occasionally Fairly often Quite a lot Most of the time All the time
13. In your work activities, how often do you "work up a good sweat" from physical activity?
 Never Seldom Occasionally Fairly often Quite a lot Most of the time All the time
14. How often do family/friends encourage or motivate you to exercise?
 Never Seldom Occasionally Fairly often Quite a lot Most of the time All the time
15. Do you have any regular exercise partners?
 None 1 2 3 4 5 6 or more

THE ITEMS IN THE FOLLOWING SECTION DESCRIBE PATTERNS OF CAFFEINE, ALCOHOL, AND TOBACCO USE. PLEASE ANSWER EACH QUESTION BY FILLING THE RESPONSE THAT BEST DESCRIBES YOUR USUAL BEHAVIOR.
(MARK ONE ANSWER PER STATEMENT)

ALCOHOL AND CAFFEINE

1. During the past week, on the average how many cups of caffeinated coffee did you have per day?
 0 1 2 3 4 5 6 7 8 9 10 11 12 13+

2. During the past week, on the average how many cups or glasses of caffeinated tea did you have per day?
 0 1 2 3 4 5 6 7 8 9 10 11 12 13+

3. During the past week, on the average how many caffeinated cola or carbonated drinks did you have per day?
 0 1 2 3 4 5 6 7 8 9 10 11 12 13+

4. During the last 7 days, on how many days did you have any alcoholic beverages?
 0 1 2 3 4 5 6 7

5. On the days you drank any alcoholic beverage this week, how many drinks did you usually have per day? (Consider a single shot, single mixed drink, glass of wine, or can of beer as one drink.)
 0 1 2 3 4 5 6 7 8 9 10 11 12 13+

6. During the past week, what was the largest number of alcoholic drinks you had in one day? (Consider a single shot, single mixed drink, glass of wine, or can of beer as one drink.)
 0 1 2 3 4 5 6 7 8 9 10 11 12 13+

7. Has your use of alcohol during the past week been ... ?
 Less than usual
 About usual
 More than usual

8. How would you describe your parents typical consumption of alcohol using the following scale?

Non-drinker----- No more than 12 drinks in any single year.
 Light drinker----- Up to 3 drinks per week.
 Moderate drinker----- 4-15 drinks per week.
 Heavy drinker----- More than 15 drinks per week.
 Problem drinker----- Drinking led to problems such as marital separation or divorce, being laid off or fired from work, drunk driving arrests, arrests for public drunkenness, doctor saying that alcohol had harmed health, or repeatedly being unable to care for house or family because of alcohol use.

	DON'T KNOW N/A	NON-DRINKER	LIGHT DRINKER	MODERATE DRINKER	HEAVY DRINKER	PROBLEM DRINKER
FATHER	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MOTHER	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
STEPFATHER	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
STEPMOTHER	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

TOBACCO PRODUCTS
1. During the past 12 months, how often on the average have you used chewing tobacco, snuff, or other smokeless tobacco?

- Never in the past 12 months/Don't use smokeless tobacco
 Once or twice in the past 12 months
 3-6 days in the past 12 months
 7-11 days in the past 12 months
 About once a month
 2-3 days a month
 1-2 days a week
 3-4 days a week
 5-6 days a week
 About every day

2. On days you used smokeless tobacco, how many times per day did you dip or chew?

- NA 1 2 3 4 5 6 7 8 9+

3. During the past 12 months, how often on the average have you smoked cigars or a pipe?

- Never in the past 12 months/Don't use cigars or a pipe
 Once or twice in the past 12 months
 3-6 days in the past 12 months
 7-11 days in the past 12 months
 About once a month
 2-3 days a month
 1-2 days a week
 3-4 days a week
 5-6 days a week
 About every day

4. On days you smoked cigars or a pipe, how many cigars or bowlfuls did you smoke?

- NA 1 2 3 4 5 6 7 8 9+

5. Do any members of your household or family smoke? (Mark all that apply.)

- Spouse/partner
 Roommate(s)
 Mother
 Father
 Brother(s)
 Sister(s)
 Other

6. In your usual work environment, how many people smoke around you?

- 0 1 2 3 4 5 6 7 8 9 10-20 21+

7. Have you smoked at least 100 cigarettes in your entire life?

- No Yes

8. Do you smoke cigarettes now?

- No Yes

9. Do you consider yourself a ...?

- Non-smoker
 Light smoker
 Moderate smoker
 Heavy smoker

TOBACCO PRODUCTS continued

10. When was the most recent time you smoked a cigarette?

- Never have smoked cigarettes
- 10 or more years ago
- 6-9 years ago
- 3-5 years ago
- 1-2 years ago
- 7-11 months ago
- 4-6 months ago
- 2-3 months ago
- 5-7 weeks ago
- During the past 30 days
- Today

11. During the last 30 days, how many cigarettes did you usually smoke on a typical day when you smoked cigarettes?

- Did not smoke any cigarettes in the last 30 days
- Fewer than 1 cigarette a day, on the average
- 1-5 cigarettes
- 6-10 cigarettes
- 11-15 cigarettes
- 16-20 cigarettes
- 21-25 cigarettes
- 26-30 cigarettes
- 31-35 cigarettes
- 36-40 cigarettes
- 41-45 cigarettes
- 46-55 cigarettes
- 55 or more cigarettes

12. How many years have you used (or did you use) tobacco on a regular basis; that is, at least some tobacco a day? Do not count any time when you quit using tobacco.

- NA, never have used tobacco
- Less than one year

	10	20	30	40	50	60		
	0	1	2	3	4	5	6	7

YEARS

13. At what age did you first start using tobacco products regularly?

- NA, never have used tobacco
- Under 12 years old
- 12-14
- 15-17
- 18-20
- 21 or older

14. When did you start using tobacco?

- NA, never have used tobacco
- Started before joining the Service
- Started after joining the Service

15. Are you in any way concerned about the possible negative effects of tobacco use on your health?

- No
- Yes
- Don't know

16. Have medical personnel ever talked to you about your tobacco use and urged you to quit?

- NA, never have used tobacco
- No
- Yes

17. Have you ever thought about quitting?

- NA, never have used tobacco
- Have already quit
- Yes, have thought about quitting
- No, have never thought about quitting

18. How many times have you (or did you) seriously try to quit using tobacco?

- NA never have used tobacco
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9+ times



TOBACCO PRODUCTS continued

19. Just thinking of the last time you quit, how long did you (or have you) stayed off tobacco?

- NA, never have used tobacco
- Never have quit
- 2 weeks or less
- 3-4 weeks
- 5-7 weeks
- 2-3 months
- 4-6 months
- 7-11 months
- 1-2 years
- 3-5 years
- 6-9 years
- 10 or more years

20. Just thinking of the last time you tried to quit using tobacco, what method(s) did you use? (Mark all that apply)

- NA, never have used tobacco products
- Never have tried to quit
- Program or course for a fee
- Free program or course (military)
- Psychologist or psychiatrist
- Hypnosis
- Special filters or holders
- Lower tar and nicotine cigarettes
- With friends, relatives, or acquaintances
- Nicorette (nicotine gum)
- Gradually decreased the number
- Substituted candy, gum, or food
- "COLD TURKEY"
- American Lung "Self Quit" Program
- Other methods

21. During the past 12 months, have you attended any class or clinic that provided education about tobacco use?

- No Yes

22. During the past 6 months have you seen information about risks of tobacco use in . . ? (Mark all that apply)

- Magazine
- TV
- Radio
- AFN radio or TV
- Brochure
- Other

23. Would an increase in the price of tobacco products make you change your use of tobacco?

- NA, never use tobacco
- Would make no difference
- Would reduce the amount used
- Would cause me to quit

24. Where do (did) you most often purchase your tobacco products?

- NA, never have used tobacco products
- Exchange, shoppette, etc.
- Commissary
- Ship stores
- Off-base stores

HEALTH ATTITUDES AND BEHAVIORS

PLEASE CONSIDER HOW WELL EACH STATEMENT DESCRIBES THE USUAL BEHAVIOR OF A PERSON LIKE YOU. FILL THE CIRCLE THAT BEST REPRESENTS YOU.

(FILL ONE CIRCLE PER STATEMENT)

1. I eat a balanced diet
2. I get enough sleep.
3. I keep emergency numbers near the phone.
4. I choose my spare time activities to help me relax.
5. I take chances when crossing the street, etc.
6. I have a first aid kit in my home.
7. I destroy old or unused medicines.
8. I see a doctor for regular checkups.
9. I pray or live by principles of religion.
10. I avoid getting chilled.
11. I watch my weight.
12. I carefully obey traffic rules so I won't have accidents.
13. I watch for possible signs of major health problems (e.g., cancer, hypertension, heart disease).
14. I exercise to stay healthy.
15. I cross the street against the stop light.
16. I avoid high crime areas.
17. I smoke or use smokeless tobacco.
18. I don't take chemical substances which might injure my health (e.g., food additives, drugs, stimulants).
19. I check the condition of electrical appliances, the car, etc. to avoid accidents.
20. I stay away from places where I might be exposed to germs.
21. I fix broken things around my home right away.
22. I see a dentist for regular checkups.
23. I limit my intake of foods like coffee, sugar, fats, etc.
24. I avoid over-the-counter medicines.
25. I take vitamins.
26. I drink alcohol.
27. I wear a seat belt when in a car.
28. I cross busy streets in the middle of the block.
29. I avoid areas with high pollution.
30. I discuss health with friends, neighbors, and relatives.
31. I gather information on things that affect my health by watching television and reading books, newspapers, or magazine articles.
32. I use dental floss regularly.
33. I speed while driving.
34. I brush my teeth regularly.
35. I take health food supplements (e.g., protein additives, wheat germ, bran, lecithin)
36. I learn first aid techniques.
37. I get shots to prevent illness.
38. I take more chances doing things than the average person.
39. I drive after drinking
40. I engage in activities or hobbies where accidents are possible (e.g., motorcycle riding, skiing, using power tools, sky or skin diving, hang-gliding, etc.).

NOT AT ALL LIKE ME	MOSTLY NOT LIKE ME	SOMETIMES LIKE ME— OTHER TIMES NOT LIKE ME	MOSTLY LIKE ME	VERY MUCH LIKE ME
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
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○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
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○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
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○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○

BELOW IS A LIST OF PHYSICAL SYMPTOMS. PLEASE INDICATE HOW MUCH YOU HAVE HAD EACH OF THESE SYMPTOMS DURING THE LAST 7 DAYS BY FILLING THE APPROPRIATE CIRCLE.

(MARK ONE CIRCLE PER STATEMENT)

	DID NOT EXPERIENCE	VERY LITTLE	SOME	MODERATE	A LOT	A GREAT DEAL
1. Common cold symptoms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Sneezing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Runny nose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Cough	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Sore throat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Stuffed-up nose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Chills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Fever	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Flu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Sinus trouble/pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Foggy-headedness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Backaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Constant thirst	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Stomach problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Constipation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Indigestion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Dizziness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Trouble concentrating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Muscle aches or stiffness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Skin problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Allergies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Diarrhea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Headaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Shortness of breath	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Pains in chest or heart	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. General tiredness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. Problems thinking clearly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. Muscle pain/cramps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. Aching joints or bones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Tingling or numbness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. Weakness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Nausea/vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. Muscle sprain or strain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. Back problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. Trouble hearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. Hoarseness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. Irritated eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. Blisters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

39. Has a doctor ever told you that you have high blood pressure?

No Yes Don't know

If YES, is it currently controlled to within normal limits?

No Yes Don't know

If controlled, is it done with: (mark all that apply)

Medication

Weight control

Exercise

Diet

Other (please specify) _____

EATING HABITS AND NUTRITION

THE ITEMS IN THE FOLLOWING SECTION DESCRIBE SOME IMPORTANT ASPECTS OF EATING HABITS AND NUTRITION. PLEASE ANSWER EACH QUESTION BY MARKING THE CIRCLE THAT BEST DESCRIBES YOU.

(MARK ONE CIRCLE PER STATEMENT)

EATING HABITS

During the last 7 days, how often did you . . . ?

1. Eat breakfast
2. Eat lunch
3. Eat dinner
4. Eat snacks between meals
5. Overeat
6. Fast (not eat) an entire day

NEVER THIS WEEK	1 OR 2 TIMES THIS WEEK	3 OR 4 TIMES THIS WEEK	5 OR 6 TIMES THIS WEEK	EVERY DAY THIS WEEK
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During the last 7 days, how often did you . . . ?

1. add salt to your food at the table
2. eat high-fat meat (e.g., hamburger, hot dogs, steak, bacon, bologna, sausage)
3. eat lean meats (e.g., chicken or turkey without the skin, veal)
4. eat fish (e.g., fresh ocean or lake fish, canned tuna, salmon)
5. eat high-fat dairy products (e.g., whole milk, cream, cheeses, ice cream)
6. eat low-fat dairy products (e.g., low-fat milk or cottage cheese, yogurt)
7. eat (or cook with) butter, lard, or saturated fats (e.g., fat on meat)
8. eat polyunsaturated fats or oils (e.g., soft margarines, vegetable oils, nuts)
9. eat fried foods (e.g., french fries, fried chicken, fried eggs)
10. eat eggs or egg dishes (e.g., quiche, omelettes, egg salad)
11. eat refined sugar products (e.g., cakes, pies, cookies, candy)
12. eat "leafy" vegetables (e.g., broccoli, cauliflower, cabbage, greens)
13. eat "starchy" vegetables (e.g., beans, peas, corn, potatoes)
14. eat fruits (e.g., apples, oranges, dried fruits, raisins, melons, bananas)
15. eat high-fiber grains (e.g., whole wheat breads, oatmeal, bran cereals)

NEVER THIS WEEK	1 OR 2 TIMES THIS WEEK	3 OR 4 TIMES THIS WEEK	5 OR 6 TIMES THIS WEEK	ONCE EVERY DAY THIS WEEK	TWICE EVERY DAY THIS WEEK	3 OR MORE EVERY DAY THIS WEEK
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

NUTRITION ATTITUDES

	DISAGREE STRONGLY	DISAGREE MODERATELY	DISAGREE SLIGHTLY	NEITHER AGREE NOR DISAGREE	AGREE SLIGHTLY	GENERALLY AGREE	STRONGLY AGREE
1. I am willing to change my eating habits to improve my health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. When I learn new things about good nutrition, I try to change my eating habits accordingly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I like to try new and different kinds of foods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I like a lot of variety in what I eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. My favorite meal would include a thick juicy steak.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I think a little extra fat left on meat really improves its tastiness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. It seems like everything I really enjoy eating is bad for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. When it comes to food, I have no willpower.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I just can't seem to change certain bad eating habits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I have a really hard time controlling the amount of junk food I eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I believe that being overweight is really bad for your health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. In my opinion, overweight people can never look good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I eat more when I feel down or depressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. When I'm under stress, I eat a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

VALUES REGARDING HEALTH AND FITNESS

THE ITEMS IN THE FOLLOWING SECTION ASK HOW IMPORTANT VARIOUS ASPECTS OF HEALTH AND FITNESS ARE TO YOU. PLEASE ANSWER EACH QUESTION BY FILLING IN THE BLANK THAT BEST DESCRIBES YOU.

	NOT AT ALL IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT						
1. How important is it to you to exercise regularly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						
2. How important is it to you to reach and/or maintain your "ideal" weight?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>						
3. How important is it to you to be physically fit?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						
4. How important is it to you to stop smoking (if you smoke) or remain a non-smoker (if you currently do not smoke)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						
5. How important is it to you to score high on the Physical Readiness tests?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						
6. At what level would you like to pass the Physical Readiness tests?	DO NOT CARE	SATISFACTORY	GOOD	EXCELLENT	OUTSTANDING						
7. How important is it to you to have good health?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						
8. How highly do you value your health?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						
9. How important is it to you to be physically attractive to others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						
10. How important is it to you to do your Navy job well?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						
11. <u>For you personally</u> , how would you estimate the likelihood that ... ?	NEVER			HALF THE TIME		ALWAYS					
a. vigorous exercise leads to better physical appearance.	0	10	20	30	40	50	60	70	80	90	100
b. vigorous exercise helps in weight control (i.e., to lose weight and/or maintain ideal weight).	0	10	20	30	40	50	60	70	80	90	100
c. vigorous exercise leads to better overall health.	0	10	20	30	40	50	60	70	80	90	100
d. vigorous exercise helps you do your Navy job better.	0	10	20	30	40	50	60	70	80	90	100
e. vigorous exercise leads to better physical fitness.	0	10	20	30	40	50	60	70	80	90	100
f. vigorous exercise leads to better Health & Physical Readiness scores	0	10	20	30	40	50	60	70	80	90	100

HEALTH-PROMOTION PROGRAMS AND ACTIVITIES

THE ITEMS IN THE FOLLOWING SECTION ASK ABOUT YOUR PARTICIPATION IN AND YOUR ATTITUDES TOWARD VARIOUS HEALTH-RELATED BEHAVIORS. PLEASE ANSWER EACH QUESTION BY MARKING THE CIRCLE OR FILLING IN THE BLANK TO BEST DESCRIBE YOURSELF OR REFLECT YOUR OPINIONS. (MARK ONE ANSWER FOR EACH STATEMENT)

PARTICIPATION IN HEALTH-PROMOTION PROGRAMS AND ACTIVITIES

1. Do you regularly participate in any of the following programs, activities, or clubs; or would you like to participate if they were more readily accessible?

- Gym or fitness center
- Smoking clinic/support group
- Weight reduction club or clinic
- Alcohol rehabilitation clinic or club (e.g., AA)
- Drug rehabilitation clinic/support group
- Stress management counseling
- Command-organized sports
- Command exercise programs
- Blood pressure screening
- Cholesterol/blood fats testing
- Other (please specify)

DONT PARTICIPATE DONT WANT TO	WOULD LIKE TO PARTICIPATE	PARTICIPATE REGULARLY
()		

ATTITUDES TOWARD VARIOUS HEALTH BEHAVIORS

OVER THE NEXT YEAR . . .

- | | DECLINE SLIGHTLY | STAY THE SAME | IMPROVE SLIGHTLY | IMPROVE MODERATELY | IMPROVE A GREAT DEAL |
|---|-------------------------------|---------------------------|----------------------------|-----------------------|----------------------------|
| 1. Do you honestly <u>expect</u> your physical fitness to . . . ? | | | | | |
| 2. Do you <u>want</u> your physical fitness level to . . . ? | | | | | |
| 3. How much effort are you willing to put out to increase your fitness? | NONE | A LITTLE EFFORT | MODERATE EFFORT | QUITE A LOT | EXTREME EFFORT |
| 4. How hard are you willing to work to improve your physical condition? | NOT AT ALL | SOMEWHAT HARD | MODERATELY HARD | QUITE HARD | EXTREMELY HARD |
| 5. How likely is it you will reach and/or maintain your ideal weight? | NO CHANCE AT ALL | SLIGHT CHANCE | SOMEWHAT LIKELY | QUITE LIKELY | EXTREMELY LIKELY |
| 6. How likely is it that you will stop smoking/remain a non-smoker? | NO CHANCE AT ALL | SLIGHT CHANCE | SOMEWHAT LIKELY | QUITE LIKELY | EXTREMELY LIKELY |
| 7. How likely is it that you will exercise regularly? | NO CHANCE AT ALL | SLIGHT CHANCE | SOMEWHAT LIKELY | QUITE LIKELY | EXTREMELY LIKELY |
| 8. How certain are you that you will reach and/or maintain your ideal weight? | ABSOLUTELY CERTAIN I WILL NOT | PRETTY CERTAIN I WILL NOT | MAYBE I WILL AND MAYBE NOT | PRETTY CERTAIN I WILL | ABSOLUTELY POSITIVE I WILL |
| 9. How certain are you that you will stop smoking/remain a non-smoker? | ABSOLUTELY CERTAIN I WILL NOT | PRETTY CERTAIN I WILL NOT | MAYBE I WILL AND MAYBE NOT | PRETTY CERTAIN I WILL | ABSOLUTELY POSITIVE I WILL |
| 10. How certain are you that you will exercise regularly? | ABSOLUTELY CERTAIN I WILL NOT | PRETTY CERTAIN I WILL NOT | MAYBE I WILL AND MAYBE NOT | PRETTY CERTAIN I WILL | ABSOLUTELY POSITIVE I WILL |

THE FOLLOWING SECTION ASKS FOR YOUR OPINIONS ON VARIOUS ISSUES RELATED TO PHYSICAL FITNESS AT YOUR COMMAND. PLEASE ANSWER EACH QUESTION SO AS BEST TO REFLECT YOUR PERSONAL OPINIONS.

(MARK ONE ANSWER PER STATEMENT)

1. Do you think top levels of the command have positive or negative feelings about the Health & Physical Readiness program?

EXTREMELY NEGATIVE	MODERATELY NEGATIVE	SLIGHTLY NEGATIVE	NEITHER POSITIVE NOR NEGATIVE	SLIGHTLY POSITIVE	MODERATELY POSITIVE	EXTREMELY POSITIVE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. What kinds of attitudes toward physical fitness and weight control do top levels of the command have?

EXTREMELY ANTI- FITNESS	MODERATELY ANTI- FITNESS	SLIGHTLY ANTI- FITNESS	NEITHER PRO- NOR ANTI-FITNESS	SLIGHTLY PRO- FITNESS	MODERATELY PRO- FITNESS	EXTREMELY PRO- FITNESS
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Do top levels of the command set good examples of physically fit and weight-conscious leaders?

EXTREMELY POOR EXAMPLE	QUITE POOR EXAMPLE	SOMEWHAT POOR EXAMPLE	NEITHER A GOOD NOR POOR EXAMPLE	SOMEWHAT GOOD EXAMPLE	QUITE GOOD EXAMPLE	EXTREMELY GOOD EXAMPLE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Do top levels of the command seem truly concerned about the physical fitness and appropriate weight of their people?

EXTREMELY LACKING IN CONCERN	GENERALLY LACKING IN CONCERN	SOMEWHAT LACKING IN CONCERN	NEITHER CONCERNED NOR LACKING	SOMEWHAT CONCERNED	GENERALLY CONCERNED	EXTREMELY CONCERNED
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Do you feel that you have sufficient time and opportunity to exercise in addition to performing your work duties?

ABSOLUTELY NEVER ENOUGH	GENERALLY NEVER ENOUGH	OFTEN NOT ENOUGH	MIXED ABOUT 50/50	OFTEN ENOUGH	GENERALLY ENOUGH	ALWAYS ENOUGH
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Is there enough space and equipment available at your command/ship for you to exercise if you want to?

ABSOLUTELY NEVER ENOUGH	GENERALLY NEVER ENOUGH	OFTEN NOT ENOUGH	MIXED ABOUT 50/50	OFTEN ENOUGH	GENERALLY ENOUGH	ALWAYS ENOUGH
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Does the command's mess provide enough low-calorie foods for someone who is diet-conscious?

ABSOLUTELY NEVER ENOUGH	GENERALLY NEVER ENOUGH	OFTEN NOT ENOUGH	MIXED ABOUT 50/50	OFTEN ENOUGH	GENERALLY ENOUGH	ALWAYS ENOUGH
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Do you think that the physical fitness and weight standards are applied equally across the ranks?

ABSOLUTELY NOT	GENERALLY NOT	OFTEN NOT	MIXED ABOUT 50/50	SOMETIMES ARE	GENERALLY ARE	ALWAYS ARE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Do you think that your command has enough physical fitness programs and activities?

ABSOLUTELY NOT ENOUGH	GENERALLY NOT ENOUGH	OFTEN NOT ENOUGH	MIXED ABOUT 50/50	SOMETIMES ENOUGH	GENERALLY ENOUGH	ALWAYS ENOUGH
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Do you think that your command has effective weight control programs?

ABSOLUTELY NOT EFFECTIVE	GENERALLY NOT EFFECTIVE	OFTEN NOT EFFECTIVE	MIXED ABOUT 50/50	SOMETIMES ARE EFFECTIVE	GENERALLY ARE EFFECTIVE	ALWAYS EXTREMELY EFFECTIVE
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Does command policy provide time during the work day to exercise?

No
 Yes

12. Does your command provide incentives/benefits to those who score outstanding on the physical fitness test?

No
 Yes (specify)

PERCEPTIONS OF SELF AND WORK

SELF THE ITEMS IN THE FOLLOWING SECTION ASK ABOUT HOW YOU GENERALLY THINK AND FEEL ABOUT YOURSELF. PLEASE READ EACH STATEMENT AND THINK ABOUT HOW TRUE OR UNTRUE THE STATEMENT IS ABOUT YOU. FILL THE CIRCLE WHICH INDICATES HOW STRONGLY YOU AGREE OR DISAGREE WITH THE STATEMENT AS A DESCRIPTION OF HOW YOU SEE YOURSELF.

(MARK ONE ANSWER PER STATEMENT)

1. I feel that I have a number of good qualities
2. I wish I could have more respect for myself.
3. I feel that I'm a person of worth, at least on an equal plane with others.
4. I feel I do not have much to be proud of.
5. I take a positive attitude toward myself.
6. I certainly feel useless at times.
7. All in all, I'm inclined to feel that I am a failure.
8. I am able to do things as well as most other people.
9. At times I think I am no good at all.
10. On the whole, I am satisfied with myself.

	DISAGREE STRONGLY	DISAGREE MODERATELY	DISAGREE SLIGHTLY	NEITHER AGREE NOR DISAGREE	AGREE SLIGHTLY	GENERALLY AGREE	STRONGLY AGREE
1.							
2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.							
6.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.							
8.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.							

WORK THE ITEMS IN THE FOLLOWING SECTION ASK ABOUT HOW THINGS HAVE BEEN GOING ON THE JOB RECENTLY. PLEASE ANSWER EACH QUESTION BY FILLING THE RESPONSE WHICH BEST DESCRIBES YOU.

1. During the last week, how well were you doing at ...
 - a. handling responsibilities and the daily demands of your work?
 - b. making the right decisions?
 - c. performing without mistakes?
 - d. getting things done on time?
 - e. getting along with others at work?
 - f. avoiding arguments with others?
 - g. handling disagreements by compromising and meeting other people half-way?

	VERY POORLY	NOT VERY WELL	ALL RIGHT	PRETTY WELL	VERY WELL	EXTREMELY WELL
1. a.						
1. b.						
1. c.						
1. d.						
1. e.						
1. f.						
1. g.						

2. How rapidly do you think that you have advanced in your Navy career?	MUCH SLOWER THAN AVERAGE	SOMEWHAT SLOWER	ABOUT AVERAGE	SOMEWHAT FASTER	MUCH FASTER THAN AVERAGE
3. Have you received the promotion you deserved for your job performance?	NEVER	RARELY	SOMETIMES	USUALLY	ALWAYS
4. How much stress do you feel in your job?	NOT AT ALL	VERY LITTLE	SOME	OVER A BIT	A GREAT DEAL
5. Relative to others in the Navy, do you feel that your job is more or less stressful?	VERY MUCH LESS	SOMEWHAT LESS	ABOUT THE SAME	SOMEWHAT MORE	A GREAT DEAL MORE

PERCEPTIONS OF LIFE

THE ITEMS IN THE FOLLOWING SECTION ASK ABOUT YOUR SATISFACTION WITH AND FEELINGS ABOUT VARIOUS ASPECTS OF YOUR LIFE PLEASE ANSWER EACH QUESTION BY MARKING THE ANSWER WHICH BEST DESCRIBES HOW YOU FEEL.

(MARK ONE ANSWER PER STATEMENT)

	TERRIBLE	UNHAPPY	MOSTLY DIS-SATISFIED	MIXED	MOSTLY SATISFIED	PLEASED	DELIGHTED
1. How do you feel about your own personal life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. How do you feel about your wife/husband (or girlfriend/boyfriend)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. How do you feel about your romantic life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. How do you feel about your job?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. How do you feel about the people you work with—your coworkers?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. How do you feel about the work you do on the job—the work itself?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. How do you feel about the way you handle problems that come up in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. How do you feel about what you are accomplishing in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. How do you feel about your physical appearance—the way you look to others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. How do you feel about yourself?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. How do you feel about your ability to adjust to changes in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. How do you feel about your life as a whole?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	NOT AT ALL	VERY LITTLE	SOMEWHAT	FAIR AMOUNT	QUITE A BIT	A GREAT DEAL	ALMOST 100
13. Considering all things together, how content are you with your life as a whole?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. To what extent has your life as a whole been what you wanted it to be?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. How much can you count on someone to:							
a. give you useful information and advice when you want it?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. be a source of encouragement and reassurance?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. listen if you want to confide about things important to you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. act in ways that show he/she appreciates you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. treat you with respect?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. show that he/she cares about you as a person?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. How much do other people:							
a. misunderstand the way you think and feel about things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. get on your nerves?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. act in an unpleasant or angry manner towards you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. show that they dislike you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

GENERAL CHARACTERISTICS

PLEASE INDICATE HOW TRUE EACH OF THE FOLLOWING CHARACTERISTICS IS OF YOU. GIVE YOUR OWN OPINION OF YOURSELF. IF YOU ARE NOT SURE, FILL THE CIRCLE THAT COMES CLOSEST TO WHAT YOU THINK BEST DESCRIBES YOU.

1. Energetic
2. Idealistic
3. Quiet
4. Outspoken
5. Self-Confident
6. Cooperative
7. Peaceable
8. Aggressive
9. Quick
10. Helpful
11. Calm
12. Forceful
13. Enterprising
14. Unrealistic
15. Relaxed
16. Headstrong
17. Tense
18. Unstable
19. Enthusiastic
20. Irritable
21. Informal
22. Ambitious
23. Dominant
24. Assertive
25. Sly
26. Argumentative
27. Excitable
28. Snobbish
29. Mild
30. Loud
31. Individualistic
32. Stingy
33. Easy-going
34. Talkative
35. Outgoing
36. Original
37. Cautious
38. Strong
39. Angry
40. Depressed
41. Happy
42. Resentful
43. Sad
44. Pleased
45. Disgusted
46. Downcast
47. Good
48. Annoyed
49. Low
50. Satisfied

NEVER OR ALMOST NEVER TRUE	USUALLY NOT TRUE	SOMETIMES BUT INFREQUENTLY TRUE	OCCASIONALLY TRUE	OFTEN TRUE	USUALLY TRUE	ALWAYS OR ALMOST ALWAYS TRUE
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51. When you are angry with someone, do you let them know about it?
52. When someone annoys you, do you try to ignore it to avoid causing any trouble?
53. When you are really mad, do you try to hold it in so no one knows?

NEVER OR ALMOST NEVER TRUE	USUALLY NOT TRUE	SOMETIMES BUT INFREQUENTLY TRUE	OCCASIONALLY TRUE	OFTEN TRUE	USUALLY TRUE	ALWAYS OR ALMOST ALWAYS TRUE
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BELIEFS ABOUT HEALTH

THE ITEMS IN THE FOLLOWING SECTION ASK ABOUT YOUR BELIEFS ABOUT VARIOUS HEALTH CONCERNS. PLEASE CONSIDER EACH STATEMENT. THEN FILL THE CIRCLE TO INDICATE HOW STRONGLY YOU PERSONALLY EITHER AGREE OR DISAGREE WITH THE STATEMENT.

(MARK ONE CIRCLE PER STATEMENT)

1. If I become sick, I have the power to make myself well again.
2. Often I feel that no matter what I do, if I am going to get sick, I will get sick.
3. If I see an excellent doctor regularly, I am less likely to have health problems.
4. It seems that my health is greatly influenced by accidental happenings.
5. I can only maintain my health by consulting health professionals.
6. I am directly responsible for my health.
7. Other people play a big part in whether I stay healthy or become sick.
8. Whatever goes wrong with my health is my own fault.
9. When I am sick, I just have to let nature run its course.
10. Health professionals keep me healthy.
11. When I stay healthy, I'm just plain lucky.
12. My physical well-being depends on how well I take care of myself.
13. When I feel ill, I know it is because I have not been taking care of myself properly.
14. The type of care I receive from other people is what is responsible for how well I recover from an illness.
15. Even when I take care of myself, it's easy to get sick.
16. When I become ill, it's a matter of fate.
17. I can pretty much stay healthy by taking good care of myself.
18. Following doctor's orders to the letter is the best way for me to stay healthy.

	DISAGREE STRONGLY	DISAGREE MODERATELY	DISAGREE SLIGHTLY	NEITHER AGREE NOR DISAGREE	AGREE SLIGHTLY	GENERALLY AGREE	STRONGLY AGREE
1.							
2.				<input type="radio"/>	<input type="radio"/>		
3.				<input type="radio"/>	<input type="radio"/>		
4.				<input type="radio"/>			
5.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
6.			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
7.	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
8.				<input type="radio"/>	<input type="radio"/>		
9.			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
10.			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
11.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
12.			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
13.			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
14.			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
15.				<input type="radio"/>	<input type="radio"/>		
16.				<input type="radio"/>	<input type="radio"/>		
17.				<input type="radio"/>	<input type="radio"/>		
18.				<input type="radio"/>	<input type="radio"/>		

DO NOT MARK IN THIS AREA

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