5-1-2012

Exercise and Nutrition Survey of Nevada Air National Guard Members

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EXERCISE AND NUTRITION SURVEY OF

NEVADA AIR NATIONAL GUARD MEMBERS

by

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Bachelor of Arts
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1999

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University of Nevada, Reno
2003

A thesis submitted in partial fulfillment
of the requirements for the

Master of Science in Exercise Physiology

Department of Kinesiology and Nutrition Sciences
College of Allied Health Sciences
The Graduate College

University of Nevada, Las Vegas
May 2012

UNLV
UNIVERSITY OF NEVADA LAS VEGAS

THE GRADUATE COLLEGE

We recommend the thesis prepared under our supervision by

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entitled

Exercise and Nutrition Survey of Nevada Air National Guard Members

be accepted in partial fulfillment of the requirements for the degree of

Master of Science in Exercise Physiology
Department of Kinesiology and Nutrition Sciences

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May 2012

ABSTRACT

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One hundred seventy-three Nevada Air National Guard members voluntarily participated in this exercise science and nutrition survey-based study. The survey consisted of ten closed-ended questions; the intent of the study was to determine whether the participants were willing to attend exercise science or nutrition related classes, or if the participants were willing to instruct exercise science or nutrition classes if they possessed a degree in either field. Forty-six females, and one hundred twenty-seven males participated in this study; one hundred thirty-six of the respondents were enlisted, and thirty-seven of the respondents were officers. Participants were demographically separated by age groups (< 30, 30 - 39, 40 - 49, 50 - 59, or > 60), based on the age categories set forth in Air Force Instruction (AFI) 36-2905 – Fitness Program. One hundred forty-two participants passed their most recent fitness tests, and thirty-one participants failed their most recent fitness tests.

The most important information gathered from the study was that one hundred thirty-five respondents (78.0% of the sample) were willing to attend nutrition education, and one hundred thirty-six respondents (78.6% of the sample) were willing to attend exercise science education. Only one respondent possessed a degree (Master's) in exercise science, and she or he was willing to instruct classes to her or his fellow

members; no respondents possessed a degree in nutrition. It is hoped that the survey will bring more awareness to the need for exercise science and nutrition education within the Nevada Air National Guard. The results of this survey will be forwarded to senior leadership for their analysis, in order to allow them to make informed decisions regarding the best manner to assist the members of the Nevada Air National Guard with meeting the objectives and criteria of the Air Force fitness program.

TABLE OF CONTENTS

ABSTRACT iii

ACKNOWLEDGEMENTS vi

LIST OF TABLES vii

CHAPTER 1 INTRODUCTION 1
- Purpose of the Study 3
- Research Questions 3
- Significance of the Study 4
- Definition of Terms 4

CHAPTER 2 REVIEW OF RELATED LITERATURE 5
- Overview of the Air Force Fitness Test 5
- Use of Surveys 10
- Relationship of Education to Improved Fitness 17
- Developing Assistance for Members 22
- Final Thoughts 33

CHAPTER 3 METHODOLOGY 36
- Subject Characteristics 41
- Instrumentation 41
- Collection of the Data 41
- Data Analysis Methods 42

CHAPTER 4 RESULTS 43
- Sample Responses 43

CHAPTER 5 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS 48
- Discussion of Results 48
- Limitations 50
- Conclusions and Recommendations for Further Study 51

APPENDIX I 56

APPENDIX II 57

APPENDIX III 58

APPENDIX IV 61

REFERENCES 71

VITA 80

ACKNOWLEDGEMENTS

I would like to thank my family for their moral support and encouragement throughout my entire master's program, especially my mom, Joanne DeMattei, my aunt, Dorothy Augenstein, and my brother, Mike DeMattei. In addition, I wish to thank my friends, my classmates, and my fellow members of the Nevada Air National Guard, without whom the completion of this thesis, as well as this master's program, would not have been possible. Finally, I wish to thank my professors from the University of Nevada, Las Vegas, and my thesis committee, Dr. Richard Tandy, Dr. John Mercer, Dr. Laura Kruskall, and Dr. Sue Schuerman for their guidance, assistance, patience, and support. This thesis is dedicated to my late father, Louis DeMattei, who always stressed the importance of education and hard work.

LIST OF TABLES

Table 1 Sample and population demographics 44
Table 2 Percentage of population 45
Table 3 Rank and fitness test result 45
Table 4 Gender and fitness test result 45
Table 5 Age group and willingness to attend exercise science education 46
Table 6 Gender and willingness to attend exercise science education 46
Table 7 Rank and willingness to attend exercise science education 46
Table 8 Fitness test result and willingness to attend exercise science education 46
Table 9 Age group and willingness to attend nutrition education 47
Table 10 Gender and willingness to attend nutrition education 47
Table 11 Rank and willingness to attend nutrition education 47
Table 12 Fitness test result and willingness to attend nutrition education 47
Table 13 Exercise science education responses 48
Table 14 Nutrition education responses 48

CHAPTER 1

INTRODUCTION

Due to the standards of the Air Force fitness test, some members of the Air Force, to include the Nevada Air National Guard, are experiencing difficulty passing the fitness test. Currently, for the Nevada Air National Guard, approximately 25% of the total force tested has received an "Unsatisfactory" or failing score, which is below a 75% on the fitness assessment. The fitness test consists of four components, which are based on the guidance presented in Air Force Instruction (AFI) 36-2905, dated 1 July 2010.

In order to pass the fitness test, members must pass each of the four components of the test, which include push-ups, sit-ups, a 1-1/2 mile run, and a waist measurement. The push-ups and sit-ups are each timed for one minute, and members can receive a maximum of ten points on each of the two assessments. The 1-1/2 mile run is also timed, and members are instructed to run it as fast as possible; a maximum of sixty points can be earned on the run. The final of the four assessments is the waist measurement, which is worth a maximum of twenty points; the smaller a member's waist is, the higher that he or she scores on the assessment. For each of the four components, a specific point scale has been developed depending on the number of push-ups or sit-ups performed, depending on the time that it took the member to complete the 1-1/2 mile run, and depending on the girth of the member's waist in inches.

The point scales are documented in AFI 36-2905, Attachment 14. These point scales are initially separated by gender; rank is not used as a descriptive dividing factor related to the scoring of the assessments. Following the separation by gender, the point

scales are split into age categories by decades in the following manner: less than 30 years old, 30 to 39 years old, 40 to 49 years old, 50 to 59 years old, and 60 years old or greater. The scores for each of the four components are added together in order to determine the member's score out of the possible one hundred points.

This project is primarily a descriptive study, with the ultimate intent of assisting the members of the Nevada Air National Guard. A survey will be utilized to ascertain whether members possess degrees in the fields of exercise science or nutrition; in addition, it will be used to determine if the members who possess degrees would be willing to instruct courses to the members who do not possess degrees, and if they in turn are willing to attend the courses. The objective for teaching the courses to the members is to assist them in making sound decisions, or lifestyle changes, related to fitness and nutrition; as a result, it is expected that members' scores on the Air Force fitness test will improve over time.

The statistical data based on the responses from the surveys will be included as part of this thesis and it will be presented to the Commander of the Nevada Air National Guard (CC NVANG). Based on the analysis of the data, decisions can be made by senior leadership regarding how best to serve the members of the organization through education. It is hoped that if members receive exercise and nutrition education, they will in the very least, be empowered to change their lifestyles, attitudes, and mindsets toward exercise and nutrition, which will lead to better overall health.

Purpose of the Study

The purpose for this survey-based study is to determine if members of the Nevada Air National Guard possess exercise science and nutrition related degrees, and to determine whether members are willing to attend or to instruct exercise science and nutrition courses for the benefit of all members of the organization. Since, at the present time, the National Guard as a whole lacks sufficient funding from Congress, it is hoped that this survey will allow the senior leaders of the Nevada Air National Guard to implement assistance for members utilizing the personnel resources currently at its disposal. The ultimate intent is that all members will achieve continued improvements and success on the Air Force fitness test by receiving education.

Based on the responses to the survey questions, and the analysis of the responses received, it is hoped that the Nevada Air National Guard can implement educational programs to assist the organization's members. The completed thesis product will be presented to the Commander of the Nevada Air National Guard, which may then be forwarded up the chain-of-command to The Adjutant General (TAG) of the Nevada Military Department (NVMD), along with a more detailed description of the results of the analysis completed on the survey responses. It is hoped that the organization's members will, over time, benefit from the education with improved fitness scores and better overall health as a result of the information gathered from this survey-based study.

Research Questions

The proposed hypothesis for this study is that, based on the results of the survey, members of the Nevada Air National Guard will be willing to attend exercise science and

nutrition classes, and members who possess degrees will express their willingness to instruct exercise science and nutrition classes.

Significance of the Study

The intent of the study is to assist the members of the Nevada Air National Guard by gathering information to determine if members who possess exercise science and nutrition degrees would be willing to instruct classes, and to determine if members who do not possess exercise science and nutrition degrees would be willing to attend classes. It is hoped that the information collected from the survey responses will allow members to receive education, and, therefore, to improve their health, which, it is hoped, will lead to an improvement of their scores on the Air Force fitness test.

Definition of Terms

The following definitions are given for the purpose of clarification:

Exercise science refers to exercise physiology, kinesiology, biomechanics, athletic training, sports medicine, strength and conditioning, physical education, or a related field.

Organization refers to the Nevada Air National Guard; it is comprised of nineteen units and approximately 1,100 members.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Overview of the Air Force Fitness Test

In 2010, the United States Air Force released new guidance and standards for its fitness program. The previous regulation, Air Force Instruction (AFI) 10-248 from the year 2005 was rescinded, and was replaced with AFI 36-2905; Weiglein, Herrick, Kirk, and Kirk (2011) explain that, "the Air Force Fitness Program is used to determine mission readiness and has greatly evolved over the past 6 decades with the most recent update effective July 2010" (p. 669). Despite the fact that the same physical assessments must be accomplished in order to pass, the scoring of the exercises has been significantly altered from the publication of the previous fitness regulation, AFI 10-248, to the current regulation, AFI 36-2905.

Each Wing, which is typically equivalent to the collective group of units located on an Air Force installation, designates an individual, who is an Exercise Physiologist or a trained Air Force Fitness Program Manager, to monitor the Wing's physical fitness program. The command structure of the Air Force breaks each Wing into several Groups, which are comprised of several Squadrons. In order to meet the fitness needs of the many personnel assigned to a Wing, the Exercise Physiologist or Fitness Program Manager educate and train a team of members, who are referred to as the Unit Fitness Program Managers, to monitor the fitness program within each Group and Squadron. These managers, in turn, assist in educating and training the Physical Training Leaders who conduct and participate in physical fitness training with the Squadron members

(Newton, 2010, p. 16). It is essential that the individuals who perform these duties operate with the best interests of the members, as well as the Air Force, in mind because, "the purpose of the Air Force Fitness Program is to ensure mission readiness; therefore, accurate fitness assessments are essential to meet this objective" (Weiglein, Herrick, Kirk, & Kirk, 2011, p. 669).

The Air Force physical fitness test consists of a timed run, timed push-ups, timed sit-ups, and a waist measurement. Vanderburgh (2008) notes that, "an interesting characteristic of these military PFT events is that the primary resistance is body weight and little else" (p. 1541). Aerobic power and muscle endurance are the two forms of fitness assessed in each of the three exercises; in addition, "each event of these tests measures some form of relative fitness or the ability to move one's body mass" (Vanderburgh, 2007, p. 738). The push-ups and sit-ups are generally accomplished before the run, with a short break between each exercise in order to provide the individual with sufficient time to recuperate. As Vanderburgh (2007) asserts, "muscle endurance is assessed via timed maximal repetition tests such as push-ups, sit-ups, abdominal crunches, or curl-ups, because they . . . are conducive to mass testing" (p. 738). An inability to meet the lowest passing standard for any portion of the Air Force fitness test, or a failure to physically complete any portion of the test, leads to a failure of the entire test.

The timed 1-1/2 mile run must be accomplished as quickly as possible, with a maximum score of sixty points that can be earned. Vanderburgh (2007) states that, "timed distance runs are the primary index of aerobic power in military testing" (p. 738). An individual's score reflects how fast the member completes the run; the faster the

individual is able to run the 1-1/2 miles, the higher the score the person receives. The run is typically tested on Air Force or Air National Guard installations with the distance of the running course measured and mapped by the Civil Engineer Squadron; however, on some occasions, a high school track or paved road is used. Some members experience difficulty completing the run, which leads to a failure of the Air Force fitness test.

Each member is given one minute to complete the push-up portion of the assessment. During the test, the individual's body must remain rigid, and the member's elbows must bend to at least a ninety degree angle, which brings the upper arm parallel to the floor, in order for the push-up to be counted (Newton, 2010, p. 58). Air Force members may only rest in the "up" position with elbows locked, arms fully extended, and backs straight; failure to do so results in the member's test ending at the number he or she accomplished prior to resting, or in his or her disqualification, regardless of whether or not one minute has expired (Newton, 2010, p. 59). Individuals can earn a maximum of ten points on the push-up portion of the test; the scoring range scales have increased with the new fitness standards, so members must complete more push-ups in order to earn the maximum points.

Individuals must also complete as many sit-ups as possible in one minute. During this test, a fellow military member may stabilize the member's feet and ankles, but the member must perform the "down and up" sit-up action with arms crossed in front of him or her, and with elbows touching the thighs in the "up" position. Like the push-up test, an individual may only rest in the "up" position; the member's test will end prior to the one minute mark if he or she rests in the "down" position, and the number of sit-ups he or she completed to that point will reflect his or her score (Newton, 2010, p. 61). The sit-up

portion of the assessment is also worth a maximum of ten points based on the scoring range scales of the new standards, so members must complete more sit-ups in order to receive a higher score.

The scoring for the waist measurement has significantly changed with the publication of the new fitness standards. The measurement is worth a maximum of twenty points, and the scoring has become more lenient with the publication of AFI 36-2905 in comparison to the standards set forth in AFI 10-248. The measurement is taken directly over the hip bones at the iliac crest, and around the abdomen (Newton, 2010, p. 20). The smaller the individual's waist, measured in inches, the more points the individual receives.

Even though Body Mass Index (BMI) is calculated utilizing each member's height and weight, it does not alter the point value that an individual earns from the four main assessments of the Air Force fitness test. Must et al. (1999) assert that, "using BMI as a weight measure provides an indirect measure of fatness and does not reflect fat distribution," and, "BMI does not distinguish between fat mass and lean tissue mass" (p. 1528). Kenchaiah et al. (2002) note that a high BMI is associated with an, "increased risk of heart failure" (p. 311). A high BMI is indicated by Donnelly et al. (2009) to be 25 to 29.9 kilograms per meter squared, which is termed overweight, and 30 kilograms per meter squared or greater, which is termed obese (p. 460). In addition, individuals with BMIs of 25 kilograms per meter squared or greater are, "more likely than persons of normal weight to have high blood cholesterol levels" (Must et al., 1999, p. 1526).

The physical assessments are "widely considered to be measures of health-related fitness;" in addition, "the events of these tests also are conducive to mass testing and

require little to no equipment, a key feature for a military PFT that often involves the testing of hundreds of participants at one time." (Vanderburgh, 2008, p. 1538). As Aandstad, Holme, Berntsen, and Anderssen (2011) suggest, an, "adequate level of physical fitness is considered to be one of the basic features of military personnel because of the possible high physical occupational demands" (p. 513). From a general health standpoint, McGraw, Turner, Stotts, and Dracup (2011) have indicated that even though members' medical records do not contain exercise programs, "it is likely that most deployed service members engaged in sufficient physical activity levels during operational requirements" (p. 431).

The new scoring system for the exercises has made it more difficult for some individuals to pass the fitness test, and, as a result, more Air Force members are being placed on physical profiles, or are receiving letters of counseling, with the probable threat of being forced out of the military. Members who are placed on physical profiles may be experiencing significant health issues as well, due to their lack of good overall health and well-being; Talbot et al. (2011) note that, even though, "National Guard members can perform their military tasks without problems, the risk of a coronary heart disease (CHD) event is higher for members not physically fit" (p. 592). Furthermore, McGraw, Turner, Stotts, and Dracup (2011) assert that, "the impact of cardiovascular (CV) events in deployed military personnel pose a significant health threat" (p. 427). However, it is important for individuals to determine a fitness balance that is right for them, because when members exercise too often, or push themselves too much, their risk of injury increases progressively with the increases in their physical activities (Knapik, Hauret, Canada, Marin, & Jones, 2011, p. 499).

These instances and incidents of injury typically have an early onset in a member's military career, and often members of the National Guard remain in the military longer than members on active duty. In some instances, "physical fitness has a substantial impact on recruits entering Basic Combat Training, and low premilitary service fitness levels are associated with training-related injuries and attrition." (Gubata, Cowan, Bedno, Urban, & Niebuhr, 2011, p. 924). Knapik, Hauret, Canada, Marin, and Jones (2011) determined that, "as the total ambulatory physical activity increased, injury risk also increased in BCT" (p. 500). As Talbot et al. (2011) assert, "with heavy war-time use, deployability is a concern since Reserve and National Guard forces who deploy are generally older and less fit than active duty forces" (p. 592). It is due to these circumstances that the Air Force has developed more stringent practices regarding fitness, and has implemented guidance allowing commanders to allocate time during each duty day for members to exercise.

Use of Surveys

Surveys have been commonly used as research tools. Survey questionnaires have been administered primarily in-person, by telephone, by postal mail, and electronically via the internet. They have been utilized to fulfill various intents, but, as Beniger (1998) suggests, "the survey research business is not necessarily the questionnaire or the interviewing business, but rather a business of data collection and analysis" (p. 446).

Organizations, to include United States governmental agencies, utilize surveys to collect information that they feel is important and relevant. The World Health Organization (http://www.who.int/healthinfo/survey/en/) and the Centers for Disease Control and Prevention (http://cdc.gov/nchs) collect data regarding health related topics,

issues, or concerns. In addition, companies such as QualityMetric (http://www.qualitymetric.com) create and develop health surveys, such as the SF-36v2, the SF-12v2, and the SF-8 for public use. Cho and LaRose (1999) explain that, "surveys that garner high response rates tend to be done in organizational settings" (p. 422).

According to Ford, Giles, and Dietz (2002), the Third National Health and Nutrition Examination Survey included approximately 8,000 respondents, which were used as a sample to represent the non-institutionalized civilian population of the United States (p. 356). Serdula et al. (1999) also performed studies utilizing nationwide surveys in order to support their findings that most people attempt to lose weight by eating less and exercising more (p. 1357). In addition, Kant (2000) utilized a survey that consisted of two phases, which involved a health questionnaire and a medical examination (p. 929). Finally, New et al. (2000) used questionnaires to ascertain individual's usual dietary intakes, as well as their current activity levels (p. 143).

Williams (2010) asserts that, "surveys are used to obtain information about people's knowledge, opinions, and behavior" (p. 1). When applied to this descriptive study of Nevada Air National Guard members, the intent is to determine what knowledge they possess regarding their educational backgrounds in exercise science or nutrition, what opinions they have regarding the desire to instruct or attend exercise science or nutrition classes, and what possible behaviors they have regarding fitness indicated by whether they have passed the Air Force Fitness test. The information obtained from this study is intended to benefit the organization, so its ramifications may extend beyond mere information gathering and data collection.

Although it is ideal to receive responses from an entire population being studied, a sample is expected to provide a fairly accurate representation of the whole. Beniger (1998) suggests that, "a survey is a set of data collected on a relatively small number of individuals or cases . . . from which the equivalent data for that population might be systematically and accurately inferred" (p. 445).

Due to the Air Force survey regulation, AFI 38-501, members cannot be forced or coerced into responding to a survey; they may be encouraged, but their responses must be strictly voluntary. As de Heer (1999) states, "whether or not a survey is mandatory together with other factors related to the survey organization, play an important role in survey participation" (p. 139). Since AFI 38-501 provides guidance on the administration of a survey to Air Force members, it is important to note that an individual collecting data on Air Force members, "cannot directly influence factors related to the survey organization and the survey climate" (de Heer, 1999, p. 139).

The intent of this study is to gather information regarding exercise science and nutrition-related information, so, depending on their opinion of fitness in general, it is possible that some members of the organization may choose not to take the survey. It has been suggested by de Heer (1999) that, "from previous research it is known that the topic of a survey may influence response" (p. 135). Some members of the organization may feel that the topic of fitness is of a sensitive nature, particularly if they struggle with the Air Force fitness test. In addition, it is possible that members who choose to take the survey may not answer honestly due to the nature, order, or intent of the questions presented in the survey. Williams (2010) asserts that the, "questionnaire layout and the wording of questions are essential for helping respondents to process all of the

components parts of questions and comprehend them as intended, and ensuring that they give answers that are accurate and precise" (p. 5).

Since surveys addressed to members of the Nevada Air National Guard are voluntary in nature, it is probable that the majority of the organization's members will choose not to take this survey, or they may begin the survey but not complete it. Nonparticipation is a common problem faced by researchers who utilize surveys as their method of data collection; de Heer (1999) believes that, "nonparticipation in surveys is feared to be increasing by survey researchers" (p. 139). Some individuals begin taking a survey, but become disinterested, or skip certain questions that they do not want to provide an answer to based on personal reasons (Schmidt, 1997, p. 3). In addition, when individuals provide inaccurate or imprecise answers to survey questions, measurement error occurs (Willliams, 2010, p. 5). It is hoped that the use of Survey Monkey (http://www.surveymonkey.com) as an internet based survey tool will provide easy access and use for potential respondents, and, as a result, will lead to more members of the Nevada Air National Guard responding to and completing the survey.

Beniger (1998) states that, "the Web is the ideal environment in which to conduct survey research" (p. 446). Cho and LaRose (1999) suggest that, "the rapid growth of the Internet has sparked interest in using it as a means of data collection in social research" (p. 421). In addition, Malhotra (2008) believes that, "the use of the World Wide Web to conduct surveys has grown rapidly over the past decade, with researchers in government, academia, and the private sector increasingly making use of the Internet to collect data" (p. 914). Finally, "the World-Wide Web . . . presents survey researchers with an

unprecedented opportunity to examine groups of people with questionnaires tailored to the investigation of both broad and narrow topic domains" (Schmidt, 1997, p. 1).

Using the internet for survey research has many advantages. Cook, Heath, and Thompson (2000) feel that, "for methodological and economic reasons, electronic surveys are attracting considerable interest" (p. 824). Kwak and Radler (2002) assert that the, "internet-based surveys via email or the web have brought many important advantages, including reduction in research costs and efficient survey administration" (p. 257). In 2008, Malhotra suggested that, "web surveys will become an integral part of the future of survey research, and have already presented researchers with unique opportunities to collect data that were unavailable in the pre-Internet world" (p. 930). Furthermore, Couper and Miller (2008) believe that, "despite their relatively short history, Web surveys have already had a profound effect on survey research" (p. 831).

The cost effectiveness of internet surveys is the greatest advantage provided by utilizing this method of information gathering and data collection. Couper and Miller (2008) believe that, "the relative cost of Web surveys makes them a more accessible method of data collection than telephone or face-to-face surveys" (p. 831). Similarly, Kaplowitz, Hadlock, and Levine (2004) assert that, "possible advantages of using the Internet include cost savings associated with eliminating the printing and mailing of survey instruments as well as time and cost savings of having returned survey data already in an electronic format" (p. 94). Compared with the more conventional surveying methods, a researcher will save money, "associated with survey and feedback publishing costs, their associated distribution costs, and survey collection costs" (Schmidt, 1997, p. 2). In comparison to other forms of survey collection, "the Web offers the potential of

fast and cheap investigation of issues," that would have otherwise been determined to be too costly (Couper & Miller, 2008, p. 832). Williams (2010) believes that when using internet-based surveys, "no survey personnel are needed to administer the survey or record the results," which reduces costs; in addition, he feels that, "the low costs involved allow large-scale data collection efforts to be undertaken by virtually anyone with Internet access, and there are many aids readily available, e.g., survey monkey.com, to assist in questionnaire construction" (p. 2).

Electronic surveys have been effectively utilized in many areas of research (Cook, Heath, & Thompson, 2000, p. 825). Schmidt (1997) suggests that, "web surveying disposes of the need to physically publish and distribute questionnaires, as well as the need to transcribe received surveys and solve data entry errors" (p. 5). Along these lines, Couper and Miller (2008) feel that, "the computerized nature of Web surveys facilitates conducting experiments and speeds the process of collecting data" (p. 831). Since, "web-based surveys can implement various interactive features that allow complex skip patterns to appear seamless to respondents," researchers are able to validate responses by using an instant feedback function, even while the individuals taking the survey are still online (Kwak & Radler, 2002, p. 260). In addition, Schmidt (1997) asserts that, "time consuming data entry errors can be eliminated through automated data checking at the time of data collection, and administrators have immediate access to data as it is received" (p. 2).

Several additional benefits exist for using the internet as the data collection medium for survey responses. Williams (2010) notes that, "in web surveys, participants log onto an Internet website and enter their responses to the survey" (p. 1). Since

individuals can log on using passwords, the data they enter is protected, and access is restricted, so that only the researcher can access the submitted data (Schmidt, 1997, p. 2). Due to the ability to password protect the data and information, and, "because Web surveys are self-administered, an interviewer is almost never present to pace the respondent" (Malhotra, 2008, p. 915). Kwak and Radler (2002) believe that, "because of their convenient format and interactivity, both of which are assumed to increase respondents' attention to survey questions, electronic surveys have been expected and found to have a lower rate of item nonresponse" as well (p. 260). On the other hand, Williams (2010) maintains that, "non-response appears to be a particular problem in web surveys" (p. 4).

It is important to note the issues that may arise when using the internet as the method of survey development. Zhang (2000) acknowledges that, "biased samples and biased returns are a major problem with Internet-based survey research," which allows participants to, "easily submit their replies many times" (p. 59). In addition, he asserts that, "web surveys usually lack the readiness for respondents to mark up or make comments," so the survey developer receives little or no feedback regarding the organization or presentation of his or her survey from the respondents (Zhang, 2000, p. 67).

In conclusion, Couper and Miller (2008) feel that, "web surveys, like other methods of survey data collection, have strengths and weaknesses" (p. 834). It appears that all forms of survey development, distribution, and administration retain both positive and negative aspects. Zhang (2000) believes that, "internet-based surveys are still evolving; their full potential appears not yet to be realized" (p. 66). However, Schmidt

(1997) feels that, “actions such as scoring responses, selectively presenting information based upon a set of responses, or selectively presenting survey questions, are all tasks that are perfectly suited to the WWW medium” (p. 2). Furthermore, “email has been one of the most frequently used Internet tools for survey research because of its convenience” (Zhang, 2000. p. 57). As a result, the survey distributed to the members of the Nevada Air National Guard will be sent to all of the members of the organization using the Air Force / Air National Guard e-mail system with a cover letter attached, and a link to the Survey Monkey survey address embedded within the email.

Relationship of Education to Improved Fitness

As with all forms of human development and learning, an understanding of physical fitness and how it affects the human body through proper nutrition and exercise, must be learned, internalized, and cultivated. In recent decades, the fields of nutrition and exercise science have continually adapted as researchers gain more insight into the human body and its responses to diet and exercise stimulus. It is important for anyone whose livelihood or job performance involves the maintenance of a high level of physical fitness, and good overall health, to actively seek current information based on recent research.

Based on the understandings gained from recent educational research, each individual possesses a unique style of learning. According to Pashler, McDaniel, Rohrer, and Bjork (2009), “the term learning styles refers to the view that different people learn information in different ways” (p. 106). A learning style is, “influenced by heredity, upbringing, and current environmental demands,” that affect how an individual acquires, perceives, and processes information, based on the subject or lesson (Gilbert & Swanier,

2008, p. 29). Pallapu (2007) feels that, "it is the nature of learners to learn in a specific way depending on the learning style" (p. 37). In addition, Busato, Prins, Elshout, and Hamaker (1999) believe that students possess either an undirected, a reproduction directed, an application directed, or a meaning directed learning style, based on the student's personal aims, intentions, expectations, and doubts (p. 130). Furthermore, Cassidy (2004) asserts that, "field-independent learners are characterised as operating with an internal frame of reference, intrinsically motivated with self-directed goals," while, "field-dependent learners . . . are characterised as relying more on an external frame of reference," and, "are extrinsically motivated" (p. 425). Instructors and teachers must understand that a student's instructional preference, "refers to the individual's preferred choice of learning environment" (Cassidy, 2004, p. 423).

Pashler, McDaniel, Rohrer, and Bjork (2009) believe that it is, "natural and appealing to think that all people have the potential to learn effectively and easily if only instruction is tailored to their individual learning styles" (p. 107). As a result, "regardless of learners' background of education, teachers or instructors have the enormous task of meeting individual learners' learning styles in the educational setting" (Pallapu, 2007, p. 37). Cox (2008) suggests that, "teachers must adjust teaching strategies to accommodate different styles" of their students' learning (p. 1). In addition, Pallapu (2007) asserts that, "knowing the learning styles of the learners aids the designer or instructor to develop a curriculum to address various needs of the learners in a group" (p. 34).

Teachers and instructors have at their disposal, "several models of learning styles that are currently being used to assess how students learn" (Gilbert & Swanier, 2008, p. 31). Based on how an individual processes information through reflection or

experimentation, he or she may be categorized as a linguistic learner, a logical / mathematical learner, a visual / spatial learner, a musical / rhythmic learner, a bodily / kinesthetic learner, an interpersonal learner, an intrapersonal learner, or a naturalistic learner (Cox, 2008, p. 4). Pashler, McDaniel, Rohrer, and Bjork (2009) feel that instructors must also recognize differences in their students' educational backgrounds, which are, "a critical consideration in the optimization of instruction" (p.108). As a result, when designing educational presentations and programs it is necessary to create learning environments that effectively engage the audience while effectively explaining the information.

Kirkbusch (1997) believes that, "education is one of the strongest predictors for health," and that, "health learning becomes a necessary component throughout the lifespan" (p. 268). Green (1999) asserts that it is important to develop, "educational strategies . . . to help the public become more self-sufficient in health, prevent diseases and injuries, promote health, and become better informed" (p. 75). It is crucial to utilize individuals who are educated, and, therefore, possess degrees in health-related fields as instructors or as program leaders, because, "health programmes led by clinicians with little or no public health training are plagued by poor management and ineffective resource allocation" (Sadana, Chowdhury, & Petrakova, 2007, p. 163). In addition, Green (1999) suggests that, "the acceptance of health education and health promotion . . . appears to depend on its presentation of concrete, specific, achievable, evidence-based objectives" (p. 70). These health education programs are intended to, "provide educational and behavior change programs," to "motivate and teach skills that help

people begin and maintain physical activity," and to, "encourage people to use supportive environments" (Sallis, Bauman, & Pratt, 1998, p. 389).

Behavior modification is an integral component of a health education program. Marcus et al. (2006) assert that education which targets, "multiple health behaviors is a high priority because a large proportion of people have more than 1 behavioral risk factor for cardiovascular and other chronic diseases" (p. 2745). According to Ashenden, Silagy, and Weller (1997), the intent of targeting behavior modification, "is to achieve small modification in the majority of the population," while focusing on, "those patients at greatest risk . . . to achieve a substantial reduction in their risk profile" (p. 173).

Marcus et al. (2006) feel that, "it is crucial to continue to develop . . . physical activity promotion," by using interventions that, "typically have multiple components and involve some combination of educational, behavioral, and cognitive-behavioral strategies," to include, "self-monitoring and goal setting" (p. 2740). Liusuwan, Widman, Abresch, Johnson, and McDonald (2007) determined that a behavioral approach to exercise and nutrition education in order to improve fitness should include, "nutrition and exercise education and aerobic and strengthening exercises along with behavior modification," involving, "basic anatomical and physiological benefits, exercise components, (aerobic vs resistive), exercise myths, precautions, and injury prevention" (p. 2).

Shephard (1999) asserts that, "work-site exercise and health programs are seen as a way to help keep employees healthy and thereby increase productivity" (p. 1). Ashenden, Silagy, and Weller (1997) believe that, "preventive activity has been focused on a number of areas," but dietary behavior and exercise have been particularly targeted

(p. 160). According to Liusuwan, Widman, Abresch, Johnson, and McDonald (2007), these work-site programs should include lessons, "designed to be interactive and involve the subjects in discussions about their knowledge and attitudes regarding exercise," and, "intended to increase the knowledge of general nutrition on healthful eating, provide skills necessary to change eating behaviors, and help set realistic measurable and attainable dietary goals" (p. 3).

The most effective, as well as the most cost effective, program that a work-site can provide is a well-equipped facility combined with an active outreach program for its members, to include education, one-to-one counseling, and an environment that encourages a healthy lifestyle (Shephard, 1999, p. 15). Based on research by Sallis, Bauman, and Pratt (1998), when programs and interventions are, "conducted in settings in which appropriate physical activity is encouraged," such as on military bases, "the influence of particular behavior settings on physical activity can help to optimize interventions" (p. 381). Shephard (1999) acknowledges that communication is a key component for any work-site education program, in order to, "recruit volunteer exercise leaders through personnel departments, and peer support for those considering wellness programs" (p. 2). Communication must extend to leadership levels, where, "groups are needed to plan the intervention, coordinate the implementation of the plans, and serve as advocates for the desired changes" within the educational programs (Sallis, Bauman, & Pratt, 1998, p. 389).

The keys to developing successful programs are following up with organizational members or employees, and encouraging and assisting them with their adherence to the educational and physical fitness programs. Hillsdon and Thorogood (1996) suggest that,

"regular follow up, which need not be time consuming and expensive, improves the proportion of people able to maintain" their initial positive developments or gains (p. 88). Furthermore, Eaton and Menard (1998) believe that highly motivated organizational members or employees, "can increase their physical activity and adhere to exercise programmes that improve exercise tolerance, cardiac risk factors, and body composition" (p. 16). Health education programs, involving nutrition and exercise education, that encourage and assist individuals can create positive work-site environments through which organizational members can achieve life altering results.

Developing Assistance for Members

Although it is hoped that funding can be obtained and allocated to pay for additional educational or equipment resources, it is possible that, due to the strict distribution and use of funding, the organization may not be able to properly or adequately assist members, and may be forced to seek alternative avenues. As a result, if members who currently possess higher education degrees related to exercise science and nutrition can be utilized as an organizational educational resource, they can be effectively used to assist the Nevada Air National Guard by being called upon to instruct and educate their fellow members. Even though the physical fitness program is being more closely monitored and developed, the Air National Guard, although a component of the Air Force, does not receive the same funding assistance for its bases as the active duty Air Force receives. Funds are allocated in various manners based on the size of the base and its mission, with the majority of the funding being provided to the active duty Air Force installations; unfortunately, this applies to the funding received for physical fitness

facilities and equipment, which manifests itself in the form of gyms, gym equipment, and running tracks.

Nevada is considered one of the smaller states within the Air National Guard, since it is only allocated one Wing; therefore, the organization does not receive significant funding, particularly for its fitness program. As a result, the Nevada Air National Guard lacks sufficient funds to construct a new fitness facility, or to purchase new equipment, such as free weights, benches, and racks. The lack of funding also negatively affects the exercise and nutrition education that members receive, since the organization is not allocated an Exercise Physiologist or a Dietician position on its Unit Personnel Management Roster.

Commanders are provided certain power and authority based upon Air Force regulations. The Air Force Manpower Agency (AFMA) controls the Air Force's survey program, which publishes its directives in the Air Force Instruction (AFI) 38-501, dated May of 2010; the AFMA has the authority to delegate various survey related activities to commanders. The Commander of the Nevada Air National Guard is, as is any installation commander, granted the authority to approve the use of a survey, if it involves only the members under his or her command, such as the members of the Nevada Air National Guard, and if it involves an issue that the commander has the authority to change (Booth, 2010, p. 4). In addition, according to Newton (2010) in AFI 36-2905, the commander has the authority, "to provide individual/group fitness education when these services are not otherwise available" (p. 9).

Based on the delegation of authority provided by both the AFI 38-501 and the AFI 36-2905, a survey can be used to assess whether members can instruct or will be

willing to attend educational courses related to exercise and nutrition. Surveys and questionnaires have been used to assess health, exercise, and nutrition practices; however, the completion of a survey by members of the Nevada Air National Guard is strictly voluntarily, and, as Booth (2010) states in AFI 38-501, "all personnel shall maintain strict confidentiality concerning the identity of individual survey respondents" (p. 3). The use of surveys, even when adhering to measures that retain respondent confidentiality, allows researchers to gather important information, which may lead to the development of positive intervention strategies.

McGraw, Turner, Stotts, and Dracup (2011) suggest that fitness intervention is critical in order to, "maintain a healthy, combat-ready military force" (p. 432). In addition, it is important for members to establish relevant and significant personalized exercise programs that will have a positive impact and meet their goals, since, "the common push-up, sit-ups, abdominal crunches, and curl-up tests not only impose an unfair body mass bias, but they may have limited occupational relevance as well." (Vanderburgh, 2007, p. 739) In order for the organization's members to benefit from physical fitness training, aside from the preparation for the annual Air Force fitness test, the Nevada Air National Guard will need to develop, promote, and institute exercise and nutrition educational programs.

Since the majority of the members of the Nevada Air National Guard perform duty during Unit Training Assemblies on a one weekend per month basis, it is important to provide and offer exercise and nutrition education to them during this time. The active duty members of the Air Force are provided with more opportunities to receive education, as they have more fitness-related services available to them during each duty

day (Newton, 2010, p. 30). Donnelly et al. (2009) believe that lifestyle alterations which lead to increasing levels of physical activity (PA), "refers to interventions that incorporate behavioral theories and constructs to assist and facilitate increasing PA within one's lifestyle" (p. 463). Golay et al. (1996) suggest that individuals should participate in, "a structured, multidisciplinary program that included physical activity, nutritional education, and standard behavioral techniques" (p. 174). As a result, programs focusing on diet and exercise are of primary importance for any organization that is attempting to assist its members with health and lifestyle adjustments.

Members must be properly instructed on how to make wise decisions regarding a balanced and healthy diet that will sufficiently meet their needs. An individual who engages in a regular exercise program does not require a diet that is significantly different from the diet recommended in Dietary Guidelines for Americans (American College of Sports Medicine, 2009, p. 714). Agus, Swain, Larson, Eckert, and Ludwig (2000) note that, "excessive body weight is among the most important medical conditions in the United States" (p. 901). In addition, Allison, Fontaine, Manson, Stevens, and VanItallie (1999) assert that, "obesity is a serious medical problem, increasing in prevalence, affecting millions, and of great interest to the public" (p. 1530). On the other hand, the American College of Sports Medicine (2009) has indicated that, "low energy intakes can result in loss of muscle mass; . . . loss of or failure to gain bone density; and increased risk of fatigue, injury, and illness; and a prolonged recovery process" (p. 710). Donnelly et al. (2009) believe that, "it is generally accepted that most individuals can lose weight but cannot maintain weight loss" (p. 462). Based on this information, it is of utmost importance to educate the members of the Nevada Air National Guard regarding the

primary components of a nutritious diet to include macronutrients, energy balance, and hydration, as well as to educate them regarding resistance and endurance training.

The consumption of the macronutrients, which include carbohydrate, fat, and protein, are the basis of a balanced diet, and are important building blocks for any fitness regimen. Lima-Silva et al. (2009) note that, "fat and carbohydrate (CHO) are the main substrates for energy production during exercise" (p. 31). Carbohydrates are key dietary components for individuals who engage in an exercise program, because carbohydrates, "maintain blood glucose levels during exercise and replace muscle glycogen" (American College of Sports Medicine, 2009, p. 710). In addition, Rose and Richter (2005) state that, "during dynamic exercise, the turnover of ATP in skeletal muscle increases greatly, and is fuelled by the catabolism of carbohydrates . . . and fatty acids" (p. 260). Furthermore, Johnston, Tjonn, and Swan (2004) assert that, "diets rich in carbohydrates . . . and moderate in low-fat dairy and meats continue to be promoted for health and weight management by the U.S. government" (p. 586). Finally, Bray and Popkin (1998) believe that if fat is reduced in a diet, it is imperative that this reduction, "be accompanied by an increase in fiber and carbohydrates to be effective" (p. 1158).

An individual's intake of carbohydrates, and their availability in the body, also affect protein metabolism during and after exercise, along with additional factors such as the individual's gender, age, energy intake, and the type, intensity, and duration of the exercise that the individual engages in (American College of Sports Medicine, 2009, p. 714). A positive protein balance must exist; in this scenario, muscle protein synthesis exceeds muscle protein breakdown. Volek (2004) states that, "an anabolic nutritional and hormonal milieu favorably affects the balance of protein synthesis/degradation, which

sets the stage for greater protein accretion and muscle fiber hypertrophy with chronic resistance training" (p. 690). Phillips (2004) adds that, "hypertrophy is the result of the accumulation of successive periods of positive protein balance after exercise when protein is consumed" (p. 690).

A negative or positive energy balance, based upon physical activity and dietary intake, is directly linked to an individual's weight loss or weight gain. Dolezal and Potteiger (1998) believe that when energy expenditure is greater than the energy that an individual takes in through diet, then, "a negative energy balance exists and body mass is reduced" (p. 695). Bray and Popkin (1998) acknowledge that, "to prevent or reduce obesity one must focus on both sides of the energy balance equation and consider total energy intake and its food components along with physical activity" (p. 1158). From a medical prospective, Serdula et al. (1999) suggest that, "there is a need for health care professionals to develop expertise in counseling patients to prevent weight gain or to lose weight through lower total caloric consumption and increased physical activity" (p. 1358).

It is critical that, "energy expenditure must equal energy intake to achieve energy balance" (American College of Sports Medicine, 2009, p. 711). Donnelly et al. (2009) suggest that negative energy balance, generated by physical activity, "will result in weight loss, and the larger the negative energy balance, the greater the weight loss" (p. 461). In addition, the American College of Sports Medicine (2009) asserts that, "inadequate energy intake relative to energy expenditure compromises performance and negates the benefits of training" (p. 712). Furthermore, in relation to the typical high level of intensity of many military activities, it is crucial, "to consume adequate energy

during periods of high-intensity and/or long-duration training to maintain body weight and health and maximize training effects" (American College of Sports Medicine, 2009, p. 710).

In all military activities and environments, personnel are expected to maintain adequate levels of hydration. The military directs and attempts to enforce generalized hydration levels for all individuals; however, Sawka et al. (2007) believe that, "considerable variability exists between individuals, different physical activities and environmental conditions regarding water electrolyte losses so that each person will need to customize these recommendations" (p. 377). In relation to the military's consistent pressure for members to maintain high levels of physical activity, the American College of Sports Medicine (2009) indicates that, "dehydration . . . decreases exercise performance; thus, adequate fluid intake before, during, and after exercise is important for health and optimal performance" (p. 710).

Water is the primary constituent of the body, "and it plays an essential role in circulatory function, chemical reactions involved in energy metabolism, elimination of waste products, and maintenance of the body temperature" (Aoi, Naito, & Yoshikawa, 2006, p. 1). Popkin et al. (2006) feel that even though a healthy diet should not rely on fluid intake to meet energy or nutrient needs, "potable water could be used to fulfill almost all the fluid needs of healthy individuals" (p. 529). Since, as Shirreffs (2005) believes, "the balance between the loss and gain of fluids maintains the body water within relatively narrow limits," it is important to consume a balanced diet, because, "the primary avenues for restoration of water balance are fluid and food ingestion" (p. S14). As a result, it is crucially important to consume meals daily in order to ensure hydration

(Sawka et al., 2007, p. 383). Unfortunately, the, "overall beverage pattern of American adults," consists primarily of a great deal of energy intake from calorically sweetened beverages including soft drinks, fruit drinks, alcohol, and high-fat milk" (Duffey & Popkin, 2006, p. 2904).

Ideally, individuals should consume fluids that contain sodium, which stimulates thirst and fluid retention, and potassium in order to replace the electrolyte losses in sweat, along with carbohydrates, which provide energy (American College of Sports Medicine, 2009, p. 718). Aoi, Naito, and Yoshikawa (2006) assert that, "to maintain homeostasis and athletic performance, replenishment of water and electrolytes is essential before and during or after exercise" (p. 1). In addition, it is important to maintain the balance between fluid loss and fluid gain, since the human body retains its balance of water within fairly narrow limits (Shirreffs, 2005, p. S14). The American College of Sports Medicine (2009) notes that, "during exercise, primary goals for nutrient consumption are to replace fluid losses and provide carbohydrates . . . for maintenance of blood glucose levels" (p. 710).

The two modes of exercise that promote and are integral to good overall health are resistance training and endurance training. Dolezal and Potteiger (1998) state that, "after concurrent resistance and endurance training, investigators have noted positive changes in body composition" including decreases in body fat and fat mass percentage, and increases in fat free mass (p. 695). According to the American College of Sports Medicine (2009), "the energy systems used during exercise for muscular work include the phosphagen and glycolytic (both anaerobic) and the oxidative (aerobic) pathways" (p. 711).

Resistance training and endurance training are equally important for the maintenance and development of the body, and for the sustainment of the body's systems. Many physiological factors are involved and differ among individuals regarding performance or fatigue resistance; these physiological factors include variations in skeletal muscle, the cardiovascular system, and the nervous system (Coyle, 2004, p. 46). The benefits of combining strength and endurance training is an increase in lean body mass, which leads to an increase in basal metabolic rate and an increase in total energy expenditure (Dolezal & Potteiger, 1998, p. 695). In addition, Kohrt, Bloomfield, Little, Nelson, and Yingling (2004) assert that, "maintaining a vigorous level of physical activity across the lifespan should be viewed as an essential component of the prescription for achieving and maintaining good bone health," and "during adulthood, the primary goal of physical activity should be to maintain bone mass" (p. 1985). Aside from being a cornerstone in the maintenance of a strong skeleton, "exercise also results in increased blood flow to the active skeletal muscles, which has the potential to enhance hormone interactions and the delivery of nutrients" throughout the body (Volek, 2004, p. 690).

Regarding exercise, Ratamess et al. (2009) explain that, "trainable characteristics include muscular strength, power, hypertrophy, and local muscular endurance" (p. 688). Kraemer et al. (1995) suggest that, "high intensity strength training results in a potent stimulus for muscle cell hypertrophy" (p. 976). Aoi, Naito, and Yoshikawa (2006) also note that, "the strength of a muscle is generally proportional to its cross-sectional area, and it is necessary to increase muscle bulk in order to enhance strength" (p. 3). In addition, Kraemer and Ratamess (2005) suggest that strength training programs should

focus on exercises that engage the body's larger muscles, as the, "recruitment of a greater number of muscle fibers enables greater hormone-tissue interaction within the realm of a larger percentage of the total muscle mass" (p. 340). Similar to the manner in which muscle cell hypertrophy occurs, Kohrt, Bloomfield, Little, Nelson, and Yingling (2004) believe that, "overloading forces must be applied to bone to stimulate an adaptive response, and continued adaptation requires a progressively increasing overload" (p. 1986).

Resistance training has been shown to benefit both genders; it has been demonstrated that men and women have increased levels of human growth hormone thirty minutes following resistance exercise (Kraemer & Ratamess, 2005, p. 347). Pedersen and Hoffman-Goetz (2000) assert that, "acute, intense muscular exercise increases the concentrations of a number of stress hormones in the blood including epinephrine, norepinephrine, growth hormone, . . . testosterone, estrogen, and cortisol" (p. 1060). Ratamess et al. (2009) suggest that, "the process of hypertrophy involves a proportionate increase in the net accretion of the contractile proteins actin and myosin" (p. 694). Since resistance exercise does not cause an acute increase in protein turnover during exercise, Phillips (2004) notes that, "it is the postexercise period when changes in muscle protein turnover, more specifically an increase in muscle protein synthesis, occur;" as a result, "for an increase in fiber diameter to occur, there has to be synthesis of new muscle proteins" (p. 689).

The majority of athletic training regimens have incorporated resistance training (Volek, 2004, P. 689). Ratamess et al. (2009) explain that, "the foremost principles of RT progression are progressive overload, specificity, and variation," where, "progressive

overload is the gradual increase of stress placed upon the body during exercise training" (p. 688). Furthermore, Phillips (2004) believes that, "resistance exercise, even though it can induce changes in muscle fiber type and increase fiber diameter, requires a repeated exercise stimulus and a relatively prolonged period (6 to 8 wk) before . . . a change in fiber type and hypertrophy, is observed" (p. 689). When developing a proper resistance training program, "both single- and multiple-joint exercises have been shown to be effective for increasing muscular strength in the targeted muscle groups" (Ratamess et al., 2009, p. 691).

Nutrition and exercise are important for maintaining good health, and they are crucial in the development and maintenance of physical fitness. Nieman (1997) notes that, "nutritional interventions have been recommended for athletes to negate potential negative changes in immunity during periods of heavy training" (p. 1391). Pedersen and Hoffman-Goetz (2000) also believe that, "natural immunity is enhanced during moderate exercise" (p. 1070). When the human body experiences stress, it requires proper nutrition and adequate exercise, along with adequate sleep, to maintain its proper functioning.

Weiglein, Herrick, Kirk, and Kirk (2011) state that, "the purpose of the Air Force Fitness Program is to assess mission readiness" (p. 672). However, Vanderburgh (2008) suggests that even though an individual's ability to move his or her body weight in either a muscular endurance or an aerobic power assessment, such as the Air Force fitness test, adds to a certain amount of success in some physically challenging military tasks, "the ability to exhibit absolute amounts of muscular strength and endurance and aerobic power is even a stronger determinant of military occupational fitness" (p. 1542). Ratamess et al. (2009) assert that, since the body adapts quickly to training programs, changes in

programs must occur in order for an individual to continually progress; they also believe that, "the ability to generate force is necessary for all types of movement" (p. 689). As a result, members of the Nevada Air National Guard must begin to incorporate more balanced endurance and resistance exercise regimens, and they must incorporate the proper nutritional requirements in order to sufficiently fuel their bodies. Members can meet these nutritional requirements by following the Dietary Reference Intakes (DRIs); Drewnowski (2005) explains that, "the DRIs are quantitative estimates of nutrient intakes that can be used for planning and assessing diets of healthy persons" (p. 726).

Final Thoughts

The results of this study will hopefully benefit the members of the Nevada Air National Guard. Due to the organization's current percentage of members failing the Air Force fitness test, nutrition and exercise guidance and education are vital in order to improve members' fitness and overall well-being. By utilizing the Nevada Air National Guard's resources, which are readily available in the form of its members who possess degrees in the fields of nutrition and exercise science, the organization can receive the education and information that it needs, which will, it is anticipated based on the current research available, ensure the success of all members. As a result, the members can begin the process of altering their lifestyles, not just for the benefit of the organization, but for themselves and their families.

Surveys are commonly used to gather information about the characteristics, opinions, and behaviors of a particular population of interest. As a data collection tool, the surveys used in this study are intended to determine whether members possess nutrition and exercise science degrees, and whether these members would be willing to

instruct classes for their fellow Nevada Air National Guard members. However, in order for the instruction to be effective and useful for the organization, it is important to determine if members who do not possess degrees are willing to attend the classes. By using the knowledge and abilities of its members, the Nevada Air National Guard will be able to save money, to utilize its available resources, and to provide assistance to those who need or want it.

Education provides individuals with the knowledge to make informed decisions. By providing instruction to the members of the Nevada Air National Guard as a Wing or within the individual Squadrons or units, the members can receive the information at no charge, and in a convenient manner. The organization's members will gain an understanding of nutrition and exercise science; as a result, and, as the current research suggests, an individual will make lifestyle changes and adjustments toward better health and fitness. By designing classes that are easily accessible and offered on Unit Training Assembly weekends, members will be provided with opportunities to gain knowledge without the stress that some individuals tend to associate with attending college courses.

Despite the fact that the learning environment provided through the Nevada Air National Guard will be less stressful than typical college courses, several topics must be addressed through the nutrition and exercise science classes. The crucial information that must be thoroughly covered in these classes is the primary components of a nutritious diet, energy balance, hydration, and resistance and endurance training guidelines. Instructional tools, to include presentations, handouts, and information gathered from peer reviewed journal articles, will be the primary means of disseminating the information in classroom-type settings.

Since the Air National Guard, and, as a result, the Nevada Air National Guard, lacks sufficient funding from Congress, it is hoped that this survey will bring additional awareness of the current fitness situation of the organization's members to the senior leaders. The senior leaders have the authority to implement changes within the current fitness program based on the guidance of AFI 36-2905, or to determine ways to generate additional funding for the further development of the program. Talbot et al. (2011) believe that, "monthly physical training (PT) conducted during reserve duty is insufficient to ensure fitness, and the part-time nature of the ANG service makes it difficult to adhere to an exercise program and sustain improvements once the program has ended;" however, if members receive the necessary exercise and nutrition education, they will, in the very least, be empowered to change their lives, attitudes, and mindsets (p. 592). Furthermore, if members in the organization possess degrees in the fields of exercise science or nutrition, these members can be utilized or tasked to assist with training and educating their fellow service men and women, which will provide immeasurable and innumerable benefits to the organization.

CHAPTER 3

METHODOLOGY

A survey (see Appendix III) was used as the method of data collection for this exempt research study (see Appendix I). The survey was sent via e-mail to all members of the Nevada Air National Guard using the Air National Guard mass distribution list (firstname.lastname@ang.af.mil) for Nevada. A link to the survey, which was developed using Survey Monkey (http://www.surveymonkey.com), along with a cover letter in Air Force personal letter format (see Appendix II) based on the Air Force Tongue and Quill standards, was included within the e-mail. The e-mail was created and forwarded to the Director of Staff – Air (DS-A), for review; the Director of Staff – Air possesses access to the mass distribution list, and was asked, upon his approval, to forward the e-mail on to all of the members of the organization.

Members of the organization were not required to take the survey based on the directives provided in Air Force Instruction (AFI) 38-501. However, even though the completion of this survey was strictly voluntary, the Commander of the Nevada Air National Guard (CC NVANG) approved its use as a tool to benefit the members of the organization by gathering information. The ultimate goal of the study was to provide exercise science and nutrition education to the members of the Nevada Air National Guard.

The survey consisted of closed-ended questions. It was created using Survey Monkey, so that members' responses would remain completely anonymous. If the organization's members chose to complete the survey, they selected a radio button to

indicate their answer for each closed-ended question. The survey consisted of ten questions and was designed to take participants a minimum amount of time, approximately five minutes, to answer.

For the presentation of the information, the demographic categories were split initially by rank, which was expressed as either officer or enlisted, by gender, which was expressed as either male or female, and by age decades, which were expressed as less than 30 years old, 30 to 39 years old, 40 to 49 years old, 50 to 59 years old, and 60 years old or greater, based on the age categories set forth in AFI 36-2905. In order for the survey to flow properly and in a sensible manner, these three categorical variables were used as the first three statements of the survey. They were presented as follows:

1. Please select your rank classification.

____ Enlisted

____ Officer

2. Please select your gender.

____ Female

____ Male

3. Please select the category representing your age.

____ less than 30 years old

____ 30 to 39 years old

____ 40 to 49 years old

____ 50 to 59 years old

____ 60 years old or greater

Although participants could potentially be ordered to attend exercise science or nutrition classes, it was important to determine if participants were willing to attend the classes. If the participants were willing, it seems that they would be more likely to internalize the information presented to them, and, therefore, be more willing to make positive health related changes in their lives. In addition, if participants were ordered to attend, it is possible that they may have resented being forced to attend; as a result, they may not have put forth the effort to learn from the information presented to them. These two questions were presented as follows:

4. Would you attend nutrition education presented by an individual possessing a degree in nutrition / dietetics?

____ Yes

____ No

5. Would you attend exercise education presented by an individual possessing a degree in exercise science?

____ Yes

____ No

In addition, it was of crucial importance for this study to determine whether participants had earned a doctoral, a master's, a bachelor's, or an associate's degree in exercise science and / or nutrition. The participants who possess these degrees could have been asked, instructed, or ordered, to educate, through formal training classes, their fellow members of the Nevada Air National Guard; however, it was hoped that participants would have willingly asserted themselves to provide the necessary education. The questions were presented as follows:

6. Have you completed a degree in nutrition / dietetics?

____ Doctoral degree

____ Master's degree

____ Bachelor's degree

____ Associate's degree

____ No degree

7. If you possess a degree in nutrition / dietetics, would you be willing to instruct a class regarding nutrition / dietetics?

____ Yes

____ No

____ I do not possess a degree in nutrition / dietetics

8. Have you completed a degree in exercise science?

____ Doctoral degree

____ Master's degree

____ Bachelor's degree

____ Associate's degree

____ No degree

9. If you possess a degree in exercise science, would you be willing to instruct a class regarding exercise science?

____ Yes

____ No

____ I do not possess a degree in exercise science

Since the primary factor underlying this study was to provide exercise science and nutrition education to members, it was necessary to determine whether the participants had passed their most recent fitness test. It was expected that if a participant had earned a degree in exercise science or nutrition, that he or she would have passed his or her fitness test. The question was presented as follows:

10. Did you receive a passing score on your most recent Air Force fitness test?

____ Yes

____ No

Upon collection of the surveys, the responses for each question were tallied, and percentages were calculated. The survey was strictly anonymous; however, basic demographic information was requested to include rank, gender, and age decade, along with whether or not the participant passed his or her most recent fitness test. The demographic information was used to differentiate participants based on these categories, since they reflect the categorical standards used within the Air Force fitness test's scoring procedures. The survey site, created within Survey Monkey, was checked on a weekly basis to determine if surveys had been completed and returned. In addition, encouraging reminders to voluntarily participate in the study were forwarded via email by the Director of Staff – Air to the members of the Nevada Air National Guard on the Thursday prior to the Unit Training Assemblies in January and February; the reminders were sent with the Survey Monkey link attached. Based on the participants' responses to the questions, and the analysis of the responses, it was expected that the Nevada Air National Guard could implement educational programs to assist the organization's members.

Subject Characteristics

The participants for this study were members of the Air Force's Nevada Air National Guard; a convenient sample was utilized. There are 1,081 members in the organization, from the State Headquarters, the 232nd Operations Squadron, the 152nd Intelligence Squadron, the 152nd Airlift Wing, the 192nd Airlift Squadron, the 152nd Operations Group, the 152nd Operations Support Flight, the 152nd Maintenance Group, the 152nd Aircraft Maintenance Squadron, the 152nd Maintenance Squadron, the 152nd Maintenance Operations Flight, the 152nd Medical Group, the 152nd Mission Support Group, the 152nd Logistics Readiness Squadron, the 152nd Security Forces Squadron, the 152nd Force Support Squadron, the 152nd Civil Engineer Squadron, the 152nd Communications Flight, and the 152nd Comptroller Flight. This information was retrieved from the Nevada Air National Guard's Military Personnel Data System (MilPDS) account. Due to the use of a survey to collect data, specific participant characteristics, other than rank, gender, or age decade were not available, or applicable.

Instrumentation

A cover letter (Appendix II), in Air Force personal letter format based on the Air Force Tongue and Quill standards, was distributed along with the web link to the survey (Appendix III) created in Survey Monkey.

Collection of the Data

When participants responded to the survey questions, their responses were saved within Survey Monkey. Upon completion and submission of the survey, the site collected data automatically; in addition, the site was password protected to retain the privacy of anyone who responded to the survey. It was necessary to check the Survey

Monkey website on a weekly basis to determine whether members responded to the survey.

Data Analysis Methods

Descriptive statistics, using tallies and percentages, were calculated for each of the categorical variables. The relevant combinations were expressed in table formats using tallies and percentages as follows:

1. Rank with Willingness to Attend Nutrition Education
2. Rank with Willingness to Attend Exercise Science Education
3. Gender with Willingness to Attend Nutrition Education
4. Gender with Willingness to Attend Exercise Science Education
5. Age Group with Willingness to Attend Nutrition Education
6. Age Group with Willingness to Attend Exercise Science Education
7. Fitness with Willingness to Attend Nutrition Education
8. Fitness with Willingness to Attend Exercise Science Education
9. Rank with Fitness Test Result (Pass / Fail)
10. Gender with Fitness Test Result (Pass / Fail)

Chi-squared tests of independence were then calculated to determine associations between the pairs of variables. Fisher's exact test p-values were also calculated on the 2 by 2 tables. Alpha = .05 for all tests. The analyses were conducted with SPSS version 18.

CHAPTER 4

RESULTS

Sample Responses

Sixteen percent of the members of the Nevada Air National Guard chose to respond to the survey, which provided a useful and relevant sample. Nearly four times as many enlisted members (78.6%) responded as officers (21.4%), and nearly three times more males (73.4%) responded as females (26.6%); these samples closely reflect the population (enlisted: 84.0%; officers: 16.0%; males: 80.3%; females: 19.7%) of the Nevada Air National Guard. In addition, the age group which was most represented by participants was the 40 to 49 years old (41.6%) age group, which was also the largest age group (25.6%) within the population. The only age group that was slightly underrepresented was the less than 30 year old age group [n = 35 (20.2%); N = 400 (37.0%)].

The most important result determined from the analysis of the survey responses was that the vast majority (78.0%) of the responding participants were willing to receive education regarding exercise science and nutrition. In addition, 82.1% of the respondents indicated that they had passed their fitness tests, while 84.6% of the population has passed their fitness tests. None of the respondents indicated that they possessed degrees in nutrition, while only one respondent claimed to possess a degree in exercise science (Master's); the individual who claimed to possess a degree in exercise science was willing to instruct classes.

Due to the fact that only one respondent claimed to possess a degree in exercise science, some of the initial data analysis ideas could not be performed on the data as the concepts became irrelevant and insignificant. As a result, these data combinations were ignored due to their irrelevance, and the demographic data, in conjunction with participants' potential willingness to attend education, became the focal point of the analysis. Based on the data analysis performed, relevant information was observed utilizing the demographic variables in conjunction with the participants' potential willingness to attend education. The following tables express the tallies and percentages gleaned from the respondents' answers to the survey questions:

Table 1 Sample and population demographics

	Sample		*Population*	
Group	*n*	*%*	*N*	*%*
Total	173	100	1081	100
Males	127	73.4	868	80.3
Females	46	26.6	213	19.7
Officers	37	21.4	172	16.0
Enlisted	136	78.6	909	84.0
< 30 years old	35	20.2	400	37.0
30–39 years old	46	26.6	315	29.1
40–49 years old	72	41.6	281	26.0
50–59 years old	20	11.6	85	7.9
$\geq$ 60 years old	0	0.0	0	0.0
Fitness - yes	142	82.1	915	84.6
Fitness - no	31	17.9	166	15.4

Table 2 Percentage of population

	Sample	*Population*	
Group	*n*	*N*	*% N*
Total	173	1081	16.0
Males	127	868	14.6
Females	46	213	21.6
Officers	37	172	21.5
Enlisted	136	909	15.0
< 30 years old	35	400	8.8
30–39 years old	46	315	14.6
40–49 years old	72	281	25.6
50–59 years old	20	85	23.5
≥ 60 years old	0	0	0.0
Fitness - yes	142	915	84.6
Fitness - no	31	166	15.4

Table 3 Rank and fitness test result

	Fitness - yes		*Fitness - no*	
Group	*n*	*%*	*n*	*%*
Total	142	82.1	31	17.9
Enlisted	107	78.7	29	21.3
Officers	35	94.6	2	5.4

Significantly fewer officers did not pass the fitness test than expected.
($X^2 = 5.01$, p = .025; Fisher's p = .028)

Table 4 Gender and fitness test result

	Fitness - yes		*Fitness - no*	
Group	*n*	*%*	*n*	*%*
Total	142	82.1	31	17.9
Female	37	80.4	9	19.6
Male	105	82.7	22	17.3

There is no significant association between gender and passing the fitness test.
($X^2 = 0.12$, p = .734; Fisher's p = .823)

Table 5 Age group and willingness to attend exercise science education

	Attend exercise - yes		*Attend exercise - no*	
Group	*n*	*%*	*n*	*%*
Total	136	78.6	37	21.4
< 30	30	85.7	5	14.3
30 - 39	34	73.9	12	26.1
40 - 49	55	76.4	17	23.6
50 - 59	17	85.0	3	15.0
$\geq$ 60	0	0.0	0	0.0

There is no significant association between age group and willingness to attend exercise science education. (X^2= 2.35, p = .503)

Table 6 Gender and willingness to attend exercise science education

	Attend exercise - yes		*Attend exercise - no*	
Group	*n*	*%*	*n*	*%*
Total	136	78.6	37	21.4
Females	39	84.8	7	15.2
Males	97	76.4	30	23.6

There is no significant association between gender and willingness to attend exercise science education. (X^2 = 1.42, p = .234; Fisher's p = .296)

Table 7 Rank and willingness to attend exercise science education

	Attend exercise - yes		*Attend exercise - no*	
Group	*n*	*%*	*n*	*%*
Total	136	78.6	37	21.4
Enlisted	113	83.1	23	16.9
Officers	23	62.2	14	37.8

Significantly fewer officers are willing to attend exercise science education than expected. (X^2 = 7.58, p = .006; Fisher's p = .011)

Table 8 Fitness test result and willingness to attend exercise science education

	Attend exercise - yes		*Attend exercise - no*	
Group	*n*	*%*	*n*	*%*
Total	136	78.6	37	21.4
Fitness - yes	110	77.5	32	22.5
Fitness - no	26	83.9	5	16.1

There is no significant association between passing the fitness test and willingness to attend exercise science education. (X^2 = 0.621, p = .431; Fisher's p = .629)

Table 9 Age group and willingness to attend nutrition education

	Attend nutrition - yes		*Attend nutrition - no*	
Group	*n*	*%*	*n*	*%*
Total	135	78.0	38	22.0
< 30	31	88.6	4	11.4
30 - 39	34	73.9	12	26.1
40 - 49	51	70.8	21	29.2
50 - 59	19	95.0	1	5.0
$\geq$ 60	0	0.0	0	0.0

Significantly fewer respondents in the < 30 and 50 – 59 age groups responded "No." ($X^2 = 8.26$, $p = .041$)

Table 10 Gender and willingness to attend nutrition education

	Attend nutrition - yes		*Attend nutrition - no*	
Group	*n*	*%*	*n*	*%*
Total	135	78.0	38	22.0
Females	38	82.6	8	17.4
Males	97	76.4	30	23.6

There is no significant association between gender and willingness to attend nutrition education. ($X^2 = 0.76$, $p = .382$; Fisher's $p = .416$)

Table 11 Rank and willingness to attend nutrition education

	Attend nutrition - yes		*Attend nutrition - no*	
Group	*n*	*%*	*n*	*%*
Total	135	78.0	38	22.0
Enlisted	113	83.1	23	16.9
Officers	22	59.5	15	40.5

Significantly fewer officers are willing to attend nutrition education than expected. ($X^2 = 12.43$, $p < .001$; Fisher's $p = .004$)

Table 12 Fitness test result and willingness to attend nutrition education

	Attend nutrition - yes		*Attend nutrition – no*	
Group	*n*	*%*	*n*	*%*
Total	135	78.0	38	22.0
Fitness - yes	110	77.5	32	22.5
Fitness - no	25	80.6	6	19.4

There is no significant association between passing the fitness test and willingness to attend nutrition education. ($X^2 = 0.150$, $p = .698$; Fisher's $p = .814$)

CHAPTER 5

SUMMARY, CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

Discussion of Results

The majority of the respondents were willing to attend exercise science (78.6%) and nutrition (78.0%) education, if the classes were instructed by an individual possessing a degree in the respective field of instruction. The following tables express the responses provided by the participants from the Nevada Air National Guard:

Table 13 Exercise science education responses

	Sample	
Group	*n*	*% n*
Attend - yes	136	78.6
Attend - no	37	21.4
Degree - yes	1	0.6
Degree - no	172	99.4
Instruct	1	0.6

Table 14 Nutrition education responses

	Sample	
Group	*n*	*% n*
Attend - yes	135	78.0
Attend - no	38	22.0
Degree - yes	0	0.0
Degree - no	173	100.0
Instruct	0	0.0

It is worth noting some of the more interesting results gathered from the responses. Fifteen participants were willing to attend either exercise science or nutrition education, but not both exercise science and nutrition education. Two officers responded that they failed the fitness test. Of these two officers who participated in the survey, one

responded that he is a male in the 40 to 49 year old age group, while the other responded that she is a female in the 30 to 39 year old age group. The male officer indicated that he would be willing to attend exercise science education, but not nutrition education; the female officer indicated that she would be willing to attend both exercise science and nutrition education. In addition, twenty-nine enlisted participants responded that they failed the fitness test; of the twenty-nine enlisted participants, twenty-two were male and seven were female. Fifteen of the twenty-two males were over the age of 40 years old, and four of the males who responded that they failed the fitness test indicated that they were not willing to attend either exercise science or nutrition education. All seven of the females who responded that they failed the fitness test indicated that they were willing to attend both exercise science and nutrition education.

Four of the chi-squared analyses performed on the results of the survey rendered significant results. Significantly fewer respondents in the less than 30 and in the 50 to 59 year old age groups responded "No" when indicating whether or not they were willing to attend nutrition education ($X^2 = 8.26$, $p = .041$); however, the analysis performed on the participants' willingness to attend exercise science education based on their age groups provided no significant results ($X^2 = 2.35$, $p = .503$). The officers' responses indicated that a significantly lower proportion of officers are willing to attend both nutrition education ($X^2 = 12.43$, $p < .001$; Fisher's $p = .004$), and exercise science education ($X^2 = 7.58$, $p = .006$; Fisher's $p = .011$). The disinterest in receiving education indicated by the officers' survey responses and the analysis results is interesting considering that officers are viewed, in military terms, as possessing educational backgrounds, since all officers are required to possess bachelor's degrees, and, in some cases, graduate degrees; it seems

that this would foster a desire to learn or to become more educated, but in this instance, the results suggested differently. Finally, significantly fewer officers did not pass the fitness test ($X^2 = 5.01$, $p = .025$; Fisher's $p = .028$) than expected; this result is indicative of the military concept that officers should "lead from the front," meaning that officers should set the example for the enlisted members by passing their fitness assessments. The other six analyses performed did not render significant results indicated by p values of $\leq .05$ or Fisher's p values of $\leq .05$.

Overall, the information collected through the survey responses indicated, for the most part, what was anticipated prior to the distribution of the surveys. It was expected that the majority of the participants would be willing to attend education, and that the majority of the participants had passed their most recent fitness test; however, it was interesting to observe that nearly all respondents did not possess a degree in either exercise science or nutrition. The fairly representative results from the sample appear to allow for conclusions to be applied to the population.

Limitations

Some limitations existed with this survey-based study, mainly due to the guidance provided by the Air Force regarding surveys. The guidance provided in Air Force Instruction (AFI) 38-501 – Survey Program may have reduced the ability to create depth in reference to the number of survey questions by requiring the survey to be concise as to avoid fatigue in potential respondents. In addition, the regulation required that the members of the Nevada Air National Guard could only voluntarily participate with the survey.

Several observations were noted after the survey analysis was completed. Due to the intensely busy and demanding nature of Unit Training Assembly weekends, it may have been difficult for members in the traditional, one-weekend-a-month (Drill Status Guardsmen) status to gain access to a computer in order to participate with the survey. It is possible that some of the participants who took the survey may have been influenced in their responses by the design of the questions and by the order of the responses provided, or they may have simply misread the questions. It is also possible that some participants may not have answered honestly, particularly to the questions about possessing a degree or passing the fitness test, due to the personal nature of these questions.

Conclusions and Recommendations for Further Study

When compared to the population data retrieved from the Nevada Air National Guard's Military Personnel Data System (MilPDS) account, it is evident that a representative sample of Nevada Air National Guard members responded to the survey. The variations in rank, gender, and age group reflected, fairly closely, the population that the survey was directed toward for the study. The members of the organization who chose to respond to the survey also indicated a nearly representative passing rate on the Air Force fitness test, when compared to the data gathered by the organization on all of its members' most recent fitness test scores.

Based on the data from the survey retrieved from the sample, the majority of the members of the organization were willing to attend exercise science and nutrition education if it was taught by an individual possessing a degree in exercise science or nutrition, respectively. Of the participants who responded to the survey, the individual who indicated that she or he possesses a degree in exercise science responded that she or

he would be willing to instruct exercise science. Because of this information, it is recommended that the organization request the respondent who possesses this degree, as indicated by the survey response, notifies her or his commander, as well as the fitness program manager, of her or his possession of a degree in exercise science. This individual may become a valuable resource for the organization in terms of fitness program assistance and education.

Since this survey only extracted a sample of the organization, other members may possess degrees in exercise science or nutrition; these members may have chosen not to respond to the survey. A request for assistance can be issued to all members through their commanders and first sergeants to ask members to identify themselves if they possess an exercise science or nutrition degree. Upon notification that an individual possesses a degree and is willing to instruct, the individual's commander or first sergeant can relay the information up through the chain of command to the Commander of the Nevada Air National Guard.

The Commander of the Nevada Air National Guard may then provide the guidance to determine how to best deliver and provide the instruction to the members of the organization. It is recommended that classes be taught in the auditorium on Unit Training Assembly weekends for no more than one hour increments, in order to allow time for the organization's members to fulfill their other training, duties, and responsibilities. In addition, it is recommended that exercise science and nutrition be taught separately, rather than within the same session.

Members should be asked to sign in on an attendance roster for each class. The classes can be taught as often as necessary, and additional surveys can be created and sent

out to members regarding potential topics of interest within the fields of exercise science or nutrition. If the individuals instructing the classes complete the instruction of basic items and are unsure of what direction they feel they should progress toward in order to benefit the members and to retain the members' interest, then follow-up surveys may prove to be useful tools.

Although it is hoped that the fitness program manager possesses a degree in exercise science, since the AFI 36-2905 indicates that an exercise physiologist should be on staff, if he or she does not possess a degree in exercise physiology, it seems that it would be beneficial for him or her to attend the instructional classes as well. The classes should consist of Microsoft PowerPoint presentations, developed from information gathered from scientific peer-reviewed journal articles; to ensure that members understand the material, a test or quiz containing short, single response, or multiple choice answers should be provided to the attendees at the end of the session, and graded by the instructor at his or her earliest convenience. These tests or quizzes should be designed in Microsoft Word, Excel, or Publisher, and should contain no more than fifteen questions directly related to the material that was covered.

Members should be asked to identify themselves on the tests or quizzes, so that if they do not understand the material, the instructor can provide them with additional information or guidance; if several members do not understand the material, it would be beneficial for the instructor to alter the presentation in some manner. The grading of the tests or quizzes is strictly to assist the members' understanding of the information; the scores from the tests or quizzes should not be presented to an individual's commander, unless specifically requested by a commander for a particular individual, and it should

have no reflection on a member's military standing unless it is being used as a tool to improve a member's fitness performance, in which case the individual's commander or first sergeant must be intimately involved in the process. It must be made clear that the instructional process is intended to assist and benefit members, and not to punish or degrade them.

It is hoped that the Commander of the Nevada Air National Guard will become thoroughly engaged in the process. Through his or her engagement and support, it is expected that the organization will begin to embrace the educational assistance, and it is hoped that the interest will naturally flow down the chain of command. The intent of the development of the program is to cultivate an understanding of how the body reacts and responds to exercise and nutrition, so that members can improve their fitness levels as well as their overall lifestyles and quality of life.

Further studies can be used to determine whether the interventions through instruction are benefitting members. Since members will be asked to sign in on the attendance rosters when they attend the classes, their attendance can, over time, be tracked. The fitness program manager, a commander, or a first sergeant may wish to determine if a correlation exists between receiving the education and a subsequent improvement in members' health, as indicated by their scores on the Air Force fitness test. If an individual wishes to delve deeper into research, with the permission of the Commander of the Nevada Air National Guard, he or she may want to observe if the class attendance by a member has also caused an improvement in that member's lipid panel, which may be on file with the Medical Group due to the routine blood draws from members. Since the Air Force wishes to utilize the Air Force fitness test as a measure of

its members' health, the possibilities of future research and studies become limitless; however, it must be reiterated that the process is intended to assist the members, and it is not to be used as a punishment.

APPENDIX I

UNLV
UNIVERSITY OF NEVADA LAS VEGAS

EXEMPT RESEARCH STUDY

INFORMATION SHEET

Department of Kinesiology and Nutrition Sciences

TITLE OF STUDY: Exercise and Nutrition Survey of Nevada Air National Guard Members

INVESTIGATOR(S) AND CONTACT PHONE NUMBER: Richard D. Tandy, Ph.D. 702-895-5080

The purpose of this study is to determine current Nevada Air National Guard members' exercise and nutrition education backgrounds, and their willingness to attend or to instruct courses to fellow personnel. You are being asked to participate in the study because you meet the following criteria: Military personnel from the Nevada Air National Guard between the ages of 18 and 60.

If you volunteer to participate in this research study, you will be asked to do the following: Complete the following 10-question survey.

This study includes only minimal risks. The study will take five *minutes* of your time. You *will not* be compensated for your time.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794, or via email at IRB@unlv.edu.

Your participation in this study is voluntary. You may withdraw at any time. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:

By completing the following survey, I am indicating that I have read the above information and agree to participate in this study. I am at least 18 years of age.

Deemed exempt by the ORI-HS and/or the UNLV IRB. Protocol #1110-3951M
Exempt Date: 11-17-11

APPENDIX II

2 December 2011

First Lieutenant Matthew A. DeMattei
Force Support Officer / HQ NVANG
2460 Fairview Drive
Carson City, NV 89701

Nevada Air National Guard Members
State Headquarters, 232d Operations Squadron, 152d Airlift Wing, 152d Intelligence Squadron

Dear members

I wish to thank you in advance for the completion of this ten question survey, which should take only a couple of minutes of your time to complete. The information that you provide is anonymous, and your responses will remain strictly confidential. The survey is intended to provide insight into Nevada Air National Guard members' exercise and nutrition educational backgrounds, and willingness to instruct or to receive education. You are being asked to participate in the study because you meet the following criteria: military personnel from the Nevada Air National Guard between the ages of 18 and 60.

This study includes only minimal risks. Members of the Nevada Air National Guard may voluntarily take this fitness survey; however, members are highly encouraged to complete it, because the more responses that we receive, the better understanding we will have of the interest of the members. The survey is included as a link in the email that was sent with this cover letter; when the survey is completed and submitted, it will be anonymously saved in a database for analysis.

Thank you in advance for your time, assistance, and cooperation.

Sincerely

MATTHEW A. DEMATTEI, 1st Lt, NVANG

Richard D. Tandy, Ph. D.
Principal investigator
University of Nevada, Las Vegas
(702) 895-5080

APPENDIX III

Fly, Fight, *Flex*

Disclaimer

This survey is strictly voluntary for all members of the Nevada Air National Guard based on the guidance set forth in Air Force Instruction (AFI) 38-501, Air Force Survey Program. By clicking the 'Next' button below, you are giving your voluntary consent to provide information for this survey.

Purpose

This survey will be used to gather information regarding the Nevada Air National Guard members' willingness to instruct or to receive exercise science and nutrition education. The information will be passed to senior leadership, so that decisions can be made to ensure the organization's continued success and improvement on the Air Force fitness test, as well as the overall health of its members.

Instructions: (Survey Monkey will be utilized)

Please complete this survey only once.
Please select the radio button next to your chosen answer.

1. Please select your rank classification.

____ Enlisted
____ Officer

2. Please select your gender.

____ Female
____ Male

3. Please select the category representing your age.

____ less than 30 years old
____ 30 to 39 years old
____ 40 to 49 years old
____ 50 to 59 years old
____ 60 years old or greater

4. Would you attend nutrition education presented by an individual possessing a degree in nutrition / dietetics?

____ Yes
____ No

5. Would you attend exercise education presented by an individual possessing a degree in exercise science?

____ Yes
____ No

6. Have you completed a degree in nutrition / dietetics?

____ Doctoral degree
____ Master's degree
____ Bachelor's degree
____ Associate's degree
____ No degree

7. If you possess a degree in nutrition / dietetics, would you be willing to instruct a class regarding nutrition / dietetics?

____ Yes
____ No
____ I do not possess a degree in nutrition / dietetics

For the purpose of this survey, please note the following definition:

Exercise science - refers to exercise physiology, kinesiology, biomechanics, athletic training, sports medicine, strength and conditioning, physical education, or a related field

8. Have you completed a degree in exercise science (based on the definition above)?

____ Doctoral degree
____ Master's degree
____ Bachelor's degree
____ Associate's degree
____ No degree

9. If you possess a degree in exercise science, would you be willing to instruct a class regarding exercise science?

____ Yes
____ No
____ I do not possess a degree in exercise science

10. Did you receive a passing score on your most recent Air Force fitness test?

____ Yes
____ No

Thank you for taking the time to complete this survey.

APPENDIX IV

Excerpt from AFI 36-2905, Attachment 14, page 70

FITNESS ASSESSMENT CHART – MALE: AGE: < 30

Cardiorespiratory Endurance			Body Composition			Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points	AC (inches)	Health Risk Category	Points	Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 9:12	Low-Risk	60.0	≤ 32.5	Low-Risk	20.0	≥ 67	10.0	≥ 58	10.0
9:13 - 9:34	Low-Risk	59.7	33.0	Low-Risk	20.0	62	9.5	55	9.5
9:35 - 9:45	Low-Risk	59.3	33.5	Low-Risk	20.0	61	9.4	54	9.4
9:46 - 9:58	Low-Risk	58.9	34.0	Low-Risk	20.0	60	9.3	53	9.2
9:59 - 10:10	Low-Risk	58.5	34.5	Low-Risk	20.0	59	9.2	52	9.0
10:11 - 10:23	Low-Risk	57.9	35.0	Low-Risk	20.0	58	9.1	51	8.8
10:24 - 10:37	Low-Risk	57.3	35.5	Moderate Risk	17.6	57	9.0	50	8.7
10:38 - 10:51	Low-Risk	56.6	36.0	Moderate Risk	17.0	56	8.9	49	8.5
10:52 - 11:06	Low-Risk	55.7	36.5	Moderate Risk	16.4	55	8.8	48	8.3
11:07 - 11:22	Low-Risk	54.8	37.0	Moderate Risk	15.8	54	8.8	47	8.0
11:23 - 11:38	Low-Risk	53.7	37.5	Moderate Risk	15.1	53	8.7	46	7.5
11:39 11:56	Low Risk	52.4	38.0	Moderate Risk	14.4	52	8.6	45	7.0
11:57 - 12:14	Low-Risk	50.9	38.5	Moderate Risk	13.5	51	8.5	44	6.5
12:15 - 12:33	Low-Risk	49.2	39.0 *	Moderate Risk	12.6	50	8.4	43	6.3
12:34 - 12:53	Moderate Risk	47.2	39.5	High Risk	11.7	49	8.3	42 *	6.0
12:54 - 13:14	Moderate Risk	44.9	40.0	High Risk	10.6	48	8.1	41	5.5
13:15 - 13:36 *	Moderate Risk	42.3	40.5	High Risk	9.4	47	8.0	40	5.0
13:37 - 14:00	High Risk	39.3	41.0	High Risk	8.2	46	7.8	39	4.5
14:01 - 14:25	High Risk	35.8	41.5	High Risk	6.8	45	7.7	38	4.0
14:26 - 14:52	High Risk	31.7	42.0	High Risk	5.3	44	7.5	37	3.5
14:53 - 15:20	High Risk	27.1	42.5	High Risk	3.7	43	7.3	36	3.3
15:21 - 15:50	High Risk	21.7	43.0	High Risk	1.9	42	7.2	35	3.0
15:51 - 16:22	High Risk	15.5	≥ 43.5	High Risk	0.0	41	7.0	34	2.5
16:23 - 16:57	High Risk	8.3				40	6.8	33	2.0
≥ 16:58	High Risk	0.0				39	6.5	32	1.5
						38	6.3	31	1.3
						37	6.0	30	1.0
						36 35	5.8 5.5	≤ 29	0.0
						34	5.3		
						33 *	5.0		
						32	4.8		
						31	4.5		
						30	4.3		
NOTES:						29	4.0		
Health Risk Category = low, moderate or high risk for current and future cardiovascular disease, diabetes, certain cancers, and other health problems						28	3.8		
						27	3.5		
						26	3.0		
Passing Requirements - member *must*: 1) meet minimum value in each of the four components, *and* 2) achieve a composite point total ≥ 75 points						25 24	2.8 2.5		
						23	2.3		
* Minimum Component Values:						22	2.0		
Run time ≤ 13:36 mins:secs / Abd Circ ≤ 39.0 inches						21	1.8		
Push-ups ≥ 33 repetitions/one minute / Sit-ups ≥ 42 repetitions/one minute						20	1.7		
						19	1.5		
Composite Score Categories:						18	1.0		
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0						≤ 17	0.0		

Excerpt from AFI 36-2905, Attachment 14, page 71

FITNESS ASSESSMENT CHART – MALE: AGE: 30 - 39

Cardiorespiratory Endurance			Body Composition			Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points	AC (inches)	Health Risk Category	Points	Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 9:34	Low-Risk	60.0	≤ 32.5	Low-Risk	20.0	≥ 57	10.0	≥ 54	10.0
9:35 - 9:58	Low-Risk	59.3	33.0	Low-Risk	20.0	52	9.5	51	9.5
9:59 - 10:10	Low-Risk	58.6	33.5	Low-Risk	20.0	51	9.4	50	9.4
10:11 - 10:23	Low-Risk	57.9	34.0	Low-Risk	20.0	50	9.3	49	9.2
10:24 - 10:37	Low-Risk	57.3	34.5	Low-Risk	20.0	49	9.2	48	9.0
10:38 - 10:51	Low-Risk	56.6	35.0	Low-Risk	20.0	48	9.2	47	8.8
10:52 - 11:06	Low-Risk	55.7	35.5	Moderate Risk	17.6	47	9.1	46	8.7
11:07 - 11:22	Low-Risk	54.8	36.0	Moderate Risk	17.0	46	9.0	45	8.5
11:23 - 11:38	Low-Risk	53.7	36.5	Moderate Risk	16.4	45	8.9	44	8.3
11:39 - 11:56	Low-Risk	52.4	37.0	Moderate Risk	15.8	44	8.8	43	8.0
11:57 - 12:14	Low-Risk	50.9	37.5	Moderate Risk	15.1	43	8.7	42	7.5
12:15 - 12:33	Low-Risk	49.2	38.0	Moderate Risk	14.4	42	8.6	41	7.0
12:34 - 12:53	Low-Risk	47.2	38.5	Moderate Risk	13.5	41	8.5	40	6.5
12:54 - 13:14	Moderate Risk	44.9	39.0 *	Moderate Risk	12.6	40	8.3	39 *	6.0
13:15 - 13:36	Moderate Risk	42.3	39.5	High Risk	11.7	39	8.0	38	5.8
13:37 - 14:00 *	Moderate Risk	39.3	40.0	High Risk	10.6	38	7.8	37	5.5
14:01 - 14:25	High Risk	35.8	40.5	High Risk	9.4	37	7.7	36	5.0
14:26 - 14:52	High Risk	31.7	41.0	High Risk	8.2	36	7.5	35	4.0
14:53 - 15:20	High Risk	27.1	41.5	High Risk	6.8	35	7.3	34	3.8
15:21 - 15:50	High Risk	21.7	42.0	High Risk	5.3	34	7.0	33	3.5
15:51 - 16:22	High Risk	15.5	42.5	High Risk	3.7	33	6.8	32	3.0
16:23 - 16:57	High Risk	8.3	43.0	High Risk	1.9	32	6.7	31	2.5
≥ 16:58	High Risk	0.0	≥ 43.5	High Risk	0.0	31	6.5	30	2.0
						30	6.0	29	1.8
						29	5.5	28	1.5
						28	5.3	27	1.3
						27 *	5.0	26	1.0
						26	4.8	≤ 25	0.0
						25	4.5		
NOTES:						24	4.0		
Health Risk Category = low, moderate or high risk for current and future cardiovascular disease, diabetes, certain cancers, and other health problems						23	3.8		
						22	3.7		
						21	3.5		
Passing Requirements - member *must*: 1) meet minimum value in each of the four components, *and* 2) achieve a composite point total ≥ 75 points						20	3.0		
						19	2.5		
						18	2.3		
* Minimum Component Values						17	2.0		
Run time ≤ 14:00 mins:secs / Abd Circ ≤ 39.0 inches						16	1.8		
Push-ups ≥ 27 repetitions/one minute / Sit-ups ≥ 39 repetitions/one minute						15	1.5		
						14	1.3		
Composite Score Categories:						13	1.0		
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0						≤ 12	0.0		

Excerpt from AFI 36-2905, Attachment 14, page 72

FITNESS ASSESSMENT CHART – MALE: AGE: 40 - 49

Cardiorespiratory Endurance			Body Composition			Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points	AC (inches)	Health Risk Category	Points	Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 9:45	Low-Risk	60.0	≤ 32.5	Low-Risk	20.0	≥ 44	10.0	≥ 50	10.0
9:46 - 10:10	Low-Risk	59.8	33.0	Low-Risk	20.0	40	9.5	47	9.5
10:11 - 10:23	Low-Risk	59.5	33.5	Low-Risk	20.0	39	9.4	46	9.4
10:24 - 10:37	Low-Risk	59.1	34.0	Low-Risk	20.0	38	9.2	45	9.2
10:38 - 10:51	Low-Risk	58.7	34.5	Low-Risk	20.0	37	9.1	44	9.1
10:52 - 11:06	Low-Risk	58.3	35.0	Low-Risk	20.0	36	9.0	43	9.0
11:07 - 11:22	Low-Risk	57.7	35.5	Moderate Risk	17.6	35	8.8	42	8.8
11:23 - 11:38	Low-Risk	57.1	36.0	Moderate Risk	17.0	34	8.5	41	8.7
11:39 - 11:56	Low-Risk	56.3	36.5	Moderate Risk	16.4	33	8.4	40	8.5
11:57 - 12:14	Low-Risk	55.4	37.0	Moderate Risk	15.8	32	8.3	39	8.0
12:15 - 12:33	Low-Risk	54.3	37.5	Moderate Risk	15.1	31	8.1	38	7.8
12:34 - 12:53	Low-Risk	53.1	38.0	Moderate Risk	14.4	30	8.0	37	7.5
12:54 - 13:14	Low-Risk	51.5	38.5	Moderate Risk	13.5	29	7.5	36	7.0
13:15 - 13:36	Low-Risk	49.8	39.0 *	Moderate Risk	12.6	28	7.3	35	6.5
13:37 - 14:00	Moderate Risk	47.7	39.5	High Risk	11.7	27	7.2	34 *	6.0
14:01 - 14:25	Moderate Risk	45.2	40.0	High Risk	10.6	26	7.0	33	5.8
14:26 - 14:52 *	Moderate Risk	42.3	40.5	High Risk	9.4	25	6.5	32	5.5
14:53 - 15:20	High Risk	38.8	41.0	High Risk	8.2	24	6.0	31	5.0
15:21 - 15:50	High Risk	34.7	41.5	High Risk	6.8	23	5.8	30	4.5
15:51 - 16:22	High Risk	29.9	42.0	High Risk	5.3	22	5.5	29	4.0
16:23 - 16:57	High Risk	24.2	42.5	High Risk	3.7	21 *	5.0	28	3.5
16:58 - 17:34	High Risk	17.4	43.0	High Risk	1.9	20	4.8	27	3.0
17:35 - 18:14	High Risk	9.4	≥ 43.5	High Risk	0.0	19	4.5	26	2.5
≥ 18:15	High Risk	0.0				18	4.0	25	2.3
						17	3.8	24	2.0
NOTES:						16	3.5	23	1.5
Health Risk Category = low, moderate or high risk for current and future						15	3.0	22	1.0
cardiovascular disease, diabetes, certain cancers, and other health problems						14	2.8	≤ 21	0.0
						13	2.5		
Passing Requirements - member must: 1) meet minimum value in each of						12	2.3		
the four components, *and* 2) achieve a composite point total ≥ 75 points						11	2.0		
						10	1.5		
* Minimum Component Values						9	1.0		
Run time ≤ 14:52 mins:secs / Abd Circ ≤ 39.0 inches						≤ 8	0.0		
Push-ups ≥ 21 repetitions/one minute / Sit-ups ≥ 34 repetitions/one minute									
Composite Score Categories:									
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0									

Excerpt from AFI 36-2905, Attachment 14, page 73

FITNESS ASSESSMENT CHART – MALE: AGE: 50 – 59

Cardiorespiratory Endurance			Body Composition			Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points	AC (inches)	Health Risk Category	Points	Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 10:37	Low-Risk	60.0	≤ 32.5	Low-Risk	20.0	≥ 44	10.0	≥ 46	10.0
10:38 - 11:06	Low-Risk	59.7	33.0	Low-Risk	20.0	39	9.5	43	9.5
11:07 - 11:22	Low-Risk	59.4	33.5	Low-Risk	20.0	38	9.4	42	9.4
11:23 - 11:38	Low-Risk	59.0	34.0	Low-Risk	20.0	37	9.4	41	9.2
11:39 - 11:56	Low-Risk	58.5	34.5	Low-Risk	20.0	36	9.3	40	9.1
11:57 - 12:14	Low-Risk	58.0	35.0	Low-Risk	20.0	35	9.3	39	9.0
12:15 - 12:33	Low-Risk	57.3	35.5	Moderate Risk	17.6	34	9.2	38	8.8
12:34 - 12:53	Low-Risk	56.5	36.0	Moderate Risk	17.0	33	9.2	37	8.7
12:54 - 13:14	Low-Risk	55.6	36.5	Moderate Risk	16.4	32	9.1	36	8.5
13:15 - 13:36	Low-Risk	54.5	37.0	Moderate Risk	15.8	31	9.1	35	8.0
13:37 - 14:00	Low-Risk	53.3	37.5	Moderate Risk	15.1	30	9.0	34	7.8
14:01 - 14:25	Low-Risk	51.8	38.0	Moderate Risk	14.4	29	8.8	33	7.5
14:26 - 14:52	Low-Risk	50.0	38.5	Moderate Risk	13.5	28	8.5	32	7.3
14:53 - 15:20	Moderate Risk	47.9	39.0 *	Moderate Risk	12.6	27	8.3	31	7.0
15:21 - 15:50	Moderate Risk	45.4	39.5	High Risk	11.7	26	8.2	30	6.5
15:51 - 16:22 *	Moderate Risk	42.4	40.0	High Risk	10.6	25	8.0	29	6.3
16:23 - 16:57	High Risk	39.0	40.5	High Risk	9.4	24	7.5	28 *	6.0
16:58 - 17:34	High Risk	34.9	41.0	High Risk	8.2	23	7.3	27	5.5
17:35 - 18:14	High Risk	30.0	41.5	High Risk	6.8	22	7.2	26	5.0
18:15 - 18:56	High Risk	24.3	42.0	High Risk	5.3	21	7.0	25	4.5
18:57 - 19:43	High Risk	17.5	42.5	High Risk	3.7	20	6.5	24	4.0
19:44 - 20:33	High Risk	9.5	43.0	High Risk	1.9	19	6.0	23	3.8
≥ 20:34	High Risk	0.0	≥ 43.5	High Risk	0.0	18	5.8	22	3.5
						17	5.5	21	3.0
NOTES:						16	5.3	20	2.5
Health Risk Category = low, moderate or high risk for current and future						15 *	5.0	19	2.0
cardiovascular disease, diabetes, certain cancers, and other health problems						14	4.5	18	1.8
						13	4.0	17	1.5
Passing Requirements - member *must*: 1) meet minimum value in each of						12	3.8	16	1.3
the four components, *and* 2) achieve a composite point total ≥ 75 points						11	3.5	15	1.0
						10	3.0	≤ 14	0.0
* Minimum Component Values						9	2.0		
Run time ≤ 16:22 mins:secs / Abd Circ ≤ 39.0 inches						8	1.8		
Push-ups ≥ 15 repetitions/one minute / Sit-ups ≥ 28 repetitions/one minute						7	1.5		
						6	1.0		
Composite Score Categories:						≤ 5	0.0		
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0									

Excerpt from AFI 36-2905, Attachment 14, page 74

FITNESS ASSESSMENT CHART – MALE: AGE: 60+

Cardiorespiratory Endurance				Body Composition				Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points		AC (inches)	Health Risk Category	Points		Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 11:22	Low-Risk	60.0		≤ 32.5	Low-Risk	20.0		≥ 30	10.0	≥42	10.0
11:23 - 11:56	Low-Risk	59.7		33.0	Low-Risk	20.0		28	9.5	39	9.5
11:57 - 12:14	Low-Risk	59.4		33.5	Low-Risk	20.0		27	9.3	38	9.4
12:15 - 12:33	Low-Risk	59.0		34.0	Low-Risk	20.0		26	9.0	37	9.2
12:34 - 12:53	Low-Risk	58.5		34.5	Low-Risk	20.0		25	8.8	36	9.1
12:54 - 13:14	Low-Risk	58.0		35.0	Low-Risk	20.0		24	8.5	35	9.0
13:15 - 13:36	Low-Risk	57.3		35.5	Moderate Risk	17.6		23	8.0	34	8.9
13:37 - 14:00	Low-Risk	56.5		36.0	Moderate Risk	17.0		22	7.5	33	8.8
14:01 - 14:25	Low-Risk	55.6		36.5	Moderate Risk	16.4		21	7.0	32	8.6
14:26 - 14:52	Low-Risk	54.5		37.0	Moderate Risk	15.8		20	6.5	31	8.5
14:53 - 15:20	Low-Risk	53.5		37.5	Moderate Risk	15.1		19	6.5	30	8.0
15:21 - 15:50	Low-Risk	51.8		38.0	Moderate Risk	14.4		18	6.0	29	7.8
15:51 - 16:22	Low-Risk	50.0		38.5	Moderate Risk	13.5		17	5.8	28	7.5
16:23 - 16:57	Moderate Risk	47.9		39.0 *	Moderate Risk	12.6		16	5.5	27	7.3
16:58 - 17:34	Moderate Risk	45.4		39.5	High Risk	11.7		15	5.3	26	7.0
17:35 - 18:14 *	Moderate Risk	42.4		40.0	High Risk	10.6		14 *	5.0	25	6.8
18:15 - 18:56	High Risk	39.0		40.5	High Risk	9.4		13	4.8	24	6.5
18:57 - 19:43	High Risk	34.9		41.0	High Risk	8.2		12	4.5	23	6.3
19:44 - 20:33	High Risk	30.0		41.5	High Risk	6.8		11	4.3	22 *	6.0
20:34 - 21:28	High Risk	24.3		42.0	High Risk	5.3		10	4.0	21	5.5
21:29 - 22:28	High Risk	17.5		42.5	High Risk	3.7		9	3.5	20	5.0
22:29 - 23:34	High Risk	9.5		43.0	High Risk	1.9		8	3.0	19	4.0
≥ 23:35	High Risk	0.0		≥ 43.5	High Risk	0.0		7	2.5	18	3.5
								6	2.0	17	3.0
								5	1.5	16	2.5
NOTES:								4	1.0	15	2.0
Health Risk Category = low, moderate or high risk for current and future								≤ 3	0.0	14	1.8
cardiovascular disease, diabetes, certain cancers, and other health problems										13	1.5
										12	1.3
Passing Requirements - member *must* : 1) meet minimum value in each of										11	1.2
the four components, *and* 2) achieve a composite point total ≥ 75 points										10	1.0
										≤ 9	0.0
* Minimum Component Values											
Run time ≤ 18:14 mins:secs / Abd Circ ≤ 39.0 inches											
Push-ups ≥ 14 repetitions/one minute / Sit-ups ≥ 22 repetitions/one minute											
Composite Score Categories:											
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0											

Excerpt from AFI 36-2905, Attachment 14, page 75

FITNESS ASSESSMENT CHART – FEMALE: AGE: < 30

Cardiorespiratory Endurance				Body Composition				Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points		AC (inches)	Health Risk Category	Points		Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 10:23	Low-Risk	60.0		≤ 29.0	Low Risk	20.0		≥ 47	10.0	≥ 54	10.0
10:24 - 10:51	Low-Risk	59.9		29.5	Low Risk	20.0		42	9.5	51	9.5
10:52 - 11:06	Low-Risk	59.5		30.0	Low Risk	20.0		41	9.4	50	9.4
11:07 - 11:22	Low-Risk	59.2		30.5	Low Risk	20.0		40	9.3	49	9.0
11:23 - 11:38	Low-Risk	58.9		31.0	Low Risk	20.0		39	9.2	48	8.9
11:39 - 11:56	Low-Risk	58.6		31.5	Low Risk	20.0		38	9.1	47	8.8
11:57 - 12:14	Low-Risk	58.1		32.0	Moderate Risk	17.6		37	9.0	46	8.6
12:15 - 12:33	Low-Risk	57.6		32.5	Moderate Risk	17.1		36	8.9	45	8.5
12:34 - 12:53	Low-Risk	57.0		33.0	Moderate Risk	16.5		35	8.8	44	8.0
12:54 - 13:14	Low-Risk	56.2		33.5	Moderate Risk	15.9		34	8.6	43	7.8
13:15 - 13:36	Low-Risk	55.3		34.0	Moderate Risk	15.2		33	8.5	42	7.5
13:37 - 14:00	Low-Risk	54.2		34.5	Moderate Risk	14.5		32	8.4	41	7.0
14:01 - 14:25	Low-Risk	52.8		35.0	Moderate Risk	13.7		31	8.3	40	6.8
14:26 - 14:52	Low-Risk	51.2		35.5 *	Moderate Risk	12.8		30	8.2	39	6.5
14:53 - 15:20	Moderate Risk	49.3		36.0	High Risk	11.8		29	8.1	38 *	6.0
15:21 - 15:50	Moderate Risk	46.9		36.5	High Risk	10.7		28	8.0	37	5.5
15:51 - 16:22 *	Moderate Risk	44.1		37.0	High Risk	9.6		27	7.5	36	5.3
16:23 - 16:57	High Risk	40.8		37.5	High Risk	8.3		26	7.3	35	5.0
16:58 - 17:34	High Risk	36.7		38.0	High Risk	6.9		25	7.2	34	4.5
17:35 - 18:14	High Risk	31.8		38.5	High Risk	5.4		24	7.0	33	4.3
18:15 - 18:56	High Risk	25.9		39.0	High Risk	3.8		23	6.5	32	4.0
18:57 - 19:43	High Risk	18.8		39.5	High Risk	2.0		22	6.3	31	3.5
19:44 - 20:33	High Risk	10.3		≥ 40.0	High Risk	0.0		21	6.0	30	3.0
≥ 20:34	High Risk	0.0						20	5.8	29	2.8
								19	5.5	28	2.5
								18 *	5.0	27	2.0
NOTES:								17	4.5	26	1.8
Health Risk Category = low, moderate or high risk for current and future								16	4.3	25	1.7
cardiovascular disease, diabetes, certain cancers, and other health problems								15	4.0	24	1.5
								14	3.5	23	1.0
Passing Requirements - member *must* : 1) meet minimum value in each of								13	3.0	≤ 22	0.0
the four components, *and* 2) achieve a composite point total ≥ 75 points								12	2.8		
								11	2.5		
* Minimum Component Values								10	2.0		
Run time ≤ 16:22 mins:secs / Abd Circ ≤ 35.5 inches								9	1.5		
Push-ups ≥ 18 repetitions/one minute / Sit-ups ≥ 38 repetitions/one minute								8	1.0		
								≤ 7	0.0		
Composite Score Categories:											
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0											

Excerpt from AFI 36-2905, Attachment 14, page 76

FITNESS ASSESSMENT CHART – FEMALE: AGE: 30 – 39

Cardiorespiratory Endurance			Body Composition			Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points	AC (inches)	Health Risk Category	Points	Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 10:51	Low-Risk	60.0	≤ 29.0	Low Risk	20.0	≥ 46	10.0	≥ 45	10.0
10:52 - 11:22	Low-Risk	59.5	29.5	Low Risk	20.0	40	9.5	42	9.5
11:23 - 11:38	Low-Risk	59.0	30.0	Low Risk	20.0	39	9.4	41	9.4
11:39 - 11:56	Low-Risk	58.6	30.5	Low Risk	20.0	38	9.3	40	9.0
11:57 - 12:14	Low-Risk	58.1	31.0	Low Risk	20.0	37	9.3	39	8.8
12:15 - 12:33	Low-Risk	57.6	31.5	Low Risk	20.0	36	9.2	38	8.5
12:34 - 12:53	Low-Risk	57.0	32.0	Moderate Risk	17.6	35	9.1	37	8.3
12:54 - 13:14	Low-Risk	56.2	32.5	Moderate Risk	17.1	34	9.1	36	8.2
13:15 - 13:36	Low-Risk	55.3	33.0	Moderate Risk	16.5	33	9.0	35	8.0
13:37 - 14:00	Low-Risk	54.2	33.5	Moderate Risk	15.9	32	8.9	34	7.8
14:01 - 14:25	Low-Risk	52.8	34.0	Moderate Risk	15.2	31	8.9	33	7.5
14:26 - 14:52	Low-Risk	51.2	34.5	Moderate Risk	14.5	30	8.8	32	7.0
14:53 - 15:20	Low-Risk	49.3	35.0	Moderate Risk	13.7	29	8.7	31	6.8
15:21 - 15:50	Moderate Risk	46.9	35.5 *	Moderate Risk	12.8	28	8.6	30	6.5
15:51 - 16:22	Moderate Risk	44.1	36.0	High Risk	11.8	27	8.6	29 *	6.0
16:23 - 16:57 *	Moderate Risk	40.8	36.5	High Risk	10.7	26	8.5	28	5.5
16:58 - 17:34	High Risk	36.7	37.0	High Risk	9.6	25	8.3	27	5.0
17:35 - 18:14	High Risk	31.8	37.5	High Risk	8.3	24	8.2	26	4.5
18:15 - 18:56	High Risk	25.9	38.0	High Risk	6.9	23	8.0	25	4.0
18:57 - 19:43	High Risk	18.8	38.5	High Risk	5.4	22	7.9	24	3.5
19:44 - 20:33	High Risk	10.3	39.0	High Risk	3.8	21	7.8	23	3.3
≥ 20:34	High Risk	0.0	39.5	High Risk	2.0	20	7.6	22	3.0
			≥ 40.0	High Risk	0.0	19	7.5	21	2.5
						18	7.0	20	2.0
NOTES:						17	6.8	19	1.8
Health Risk Category = low, moderate or high risk for current and future						16	6.5	18	1.5
cardiovascular disease, diabetes, certain cancers, and other health problems						15	6.0	17	1.3
						14 *	5.0	16	1.2
Passing Requirements - member ***must*** : 1) meet minimum value in each of						13	4.5	15	1.0
the four components, ***and*** 2) achieve a composite point total ≥ 75 points						12	4.3	≤ 14	0.0
						11	4.0		
* Minimum Component Values						10	3.5		
Run time ≤ 16:57 mins:secs / Abd Circ ≤ 35.5 inches						9	3.0		
Push-ups ≥ 14 repetitions/one minute / Sit-ups ≥ 29 repetitions/one minute						8	2.0		
						7	1.5		
Composite Score Categories:						6	1.0		
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0						≤ 5	0.0		

Excerpt from AFI 36-2905, Attachment 14, page 77

FITNESS ASSESSMENT CHART – FEMALE: AGE: 40 – 49

Cardiorespiratory Endurance				Body Composition				Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points		AC (inches)	Health Risk Category	Points		Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 11:22	Low-Risk	60.0		≤ 29.0	Low Risk	20.0		≥ 38	10.0	≥ 41	10.0
11:23 - 11:56	Low-Risk	59.9		29.5	Low Risk	20.0		33	9.5	38	9.5
11:57 - 12:14	Low-Risk	59.8		30.0	Low Risk	20.0		32	9.4	37	9.4
12:15 - 12:33	Low-Risk	59.6		30.5	Low Risk	20.0		31	9.2	36	9.2
12:34 - 12:53	Low-Risk	59.4		31.0	Low Risk	20.0		30	9.1	35	9.1
12:54 - 13:14	Low-Risk	59.1		31.5	Low Risk	20.0		29	9.0	34	9.0
13:15 - 13:36	Low-Risk	58.7		32.0	Moderate Risk	17.6		28	8.9	33	8.8
13:37 - 14:00	Low-Risk	58.2		32.5	Moderate Risk	17.1		27	8.8	32	8.5
14:01 - 14:25	Low-Risk	57.7		33.0	Moderate Risk	16.5		26	8.7	31	8.3
14:26 - 14:52	Low-Risk	56.9		33.5	Moderate Risk	15.9		25	8.6	30	8.2
14:53 - 15:20	Low-Risk	56.0		34.0	Moderate Risk	15.2		24	8.6	29	8.0
15:21 - 15:50	Low-Risk	54.8		34.5	Moderate Risk	14.5		23	8.5	28	7.5
15:51 - 16:22	Low-Risk	53.3		35.0	Moderate Risk	13.7		22	8.4	27	7.0
16:23 - 16:57	Moderate Risk	51.4		35.5 *	Moderate Risk	12.8		21	8.3	26	6.8
16:58 - 17:34	Moderate Risk	49.0		36.0	High Risk	11.8		20	8.2	25	6.4
17:35 - 18:14 *	Moderate Risk	45.9		36.5	High Risk	10.7		19	8.1	24 *	6.0
18:15 - 18:56	High Risk	42.0		37.0	High Risk	9.6		18	8.0	23	5.5
18:57 - 19:43	High Risk	37.1		37.5	High Risk	8.5		17	7.8	22	5.0
19:44 - 20:33	High Risk	30.8		38.0	High Risk	6.9		16	7.5	21	4.5
20:34 - 21:28	High Risk	22.9		38.5	High Risk	5.4		15	7.0	20	4.0
21:29 - 22:28	High Risk	12.8		39.0	High Risk	3.8		14	6.5	19	3.5
≥ 22:29	High Risk	0.0		39.5	High Risk	2.0		13	6.0	18	3.3
				≥ 40.0	High Risk	0.0		12	5.5	17	3.0
								11 *	5.0	16	2.5
NOTES:								10	4.5	15	2.3
Health Risk Category = low, moderate or high risk for current and future								9	4.0	14	2.0
cardiovascular disease, diabetes, certain cancers, and other health problems								8	3.5	13	1.5
								7	3.0	12	1.3
Passing Requirements - member ***must***: 1) meet minimum value in each of								6	2.0	11	1.2
the four components, ***and*** 2) achieve a composite point total ≥ 75 points								5	1.5	10	1.0
								4	1.0	≤ 9	0.0
* Minimum Component Values								≤ 3	0.0		
Run time ≤ 18:14 mins:secs / Abd Circ ≤ 35.5 inches											
Push-ups ≥ 11 repetitions/one minute / Sit-ups ≥ 24 repetitions/one minute											
Composite Score Categories:											
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0											

Excerpt from AFI 36-2905, Attachment 14, page 78

FITNESS ASSESSMENT CHART – FEMALE: AGE: 50 – 59

Cardiorespiratory Endurance			Body Composition			Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points	AC (inches)	Health Risk Category	Points	Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
≤ 12:53	Low-Risk	60.0	≤ 29.0	Low Risk	20.0	≥ 35	10.0	≥ 32	10.0
12:54 - 13:36	Low Risk	59.8	29.5	Low Risk	20.0	30	9.5	30	9.5
13:37 - 14:00	Low-Risk	59.6	30.0	Low Risk	20.0	29	9.4	29	9.0
14:01 - 14:25	Low-Risk	59.3	30.5	Low Risk	20.0	28	9.3	28	8.9
14:26 - 14:52	Low-Risk	58.9	31.0	Low Risk	20.0	27	9.2	27	8.8
14:53 - 15:20	Low-Risk	58.4	31.5	Low Risk	20.0	26	9.1	26	8.6
15:21 - 15:50	Low-Risk	57.7	32.0	Moderate Risk	17.6	25	9.0	25	8.5
15:51 - 16:22	Low-Risk	56.8	32.5	Moderate Risk	17.1	24	8.8	24	8.0
16:23 - 16:57	Low-Risk	55.6	33.0	Moderate Risk	16.5	23	8.7	23	7.6
16:58 - 17:34	Low-Risk	54.0	33.5	Moderate Risk	15.9	22	8.6	22	7.0
17:35 - 18:14	Low-Risk	51.9	34.0	Moderate Risk	15.2	21	8.6	21	6.5
18:15 - 18:56	Moderate Risk	49.2	34.5	Moderate Risk	14.5	20	8.5	20 *	6.0
18:57 - 19:43 *	Moderate Risk	45.5	35.0	Moderate Risk	13.7	19	8.4	19	5.5
19:44 - 20:33	High Risk	40.7	35.5 *	Moderate Risk	12.8	18	8.3	18	5.3
20:34 - 21:28	High Risk	34.3	36.0	High Risk	11.8	17	8.2	17	5.0
21:29 - 22:28	High Risk	25.9	36.5	High Risk	10.7	16	8.1	16	4.5
22:29 - 23:34	High Risk	14.7	37.0	High Risk	9.6	15	8.0	15	4.3
≥ 23:35	High Risk	0.0	37.5	High Risk	8.3	14	7.5	14	4.0
			38.0	High Risk	6.9	13	7.0	13	3.6
			38.5	High Risk	5.4	12	6.5	12	3.0
			39.0	High Risk	3.8	11	6.0	11	2.5
			39.5	High Risk	2.0	10	5.5	10	2.0
			≥ 40.0	High Risk	0.0	9 *	5.0	9	1.8
						8	4.5	8	1.7
NOTES:						7	4.0	7	1.5
Health Risk Category = low, moderate or high risk for current and future						6	3.5	6	1.0
cardiovascular disease, diabetes, certain cancers, and other health problems						5	3.0	≤ 5	0.0
						4	2.0		
Passing Requirements - member *must* : 1) meet minimum value in each of						3	1.0		
the four components, *and* 2) achieve a composite point total ≥ 75 points						≤2	0.0		
* Minimum Component Values									
Run time ≤ 19:43 mins:secs / Abd Circ ≤ 35.5 inches									
Push-ups ≥ 9 repetitions/one minute / Sit-ups ≥ 20 repetitions/one minute									
Composite Score Categories:									
Excellent: ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0									

Excerpt from AFI 36-2905, Attachment 14, page 79

FITNESS ASSESSMENT CHART – FEMALE: AGE: 60+

Cardiorespiratory Endurance			Body Composition			Muscle Fitness			
Run Time (mins:secs)	Health Risk Category	Points	AC (inches)	Health Risk Category	Points	Push-ups (reps/min)	Points	Sit-ups (reps/min)	Points
< 14:00	Low-Risk	60.0	< 29.0	Low Risk	20.0	> 21	10.0	> 31	10.0
14:01 - 14:52	Low-Risk	59.8	29.5	Low Risk	20.0	19	9.5	28	9.5
14:53 - 15:20	Low-Risk	59.5	30.0	Low Risk	20.0	18	9.4	27	9.4
15:21 - 15:50	Low-Risk	59.1	30.5	Low Risk	20.0	17	9.0	26	9.0
15:51 - 16:22	Low-Risk	58.6	31.0	Low Risk	20.0	16	8.8	25	8.9
16:23 - 16:57	Low-Risk	57.9	31.5	Low Risk	20.0	15	8.5	24	8.8
16:58 - 17:34	Low-Risk	57.0	32.0	Moderate Risk	17.6	14	8.0	23	8.7
17:35 - 18:14	Low-Risk	55.8	32.5	Moderate Risk	17.1	13	7.5	22	8.6
18:15 - 18:56	Low-Risk	54.2	33.0	Moderate Risk	16.5	12	7.0	21	8.5
18:57 - 19:43	Low-Risk	52.1	33.5	Moderate Risk	15.9	11	6.5	20	8.4
19:44 - 20:33	Moderate Risk	49.3	34.0	Moderate Risk	15.2	10	6.0	19	8.3
20:34 - 21:28	Moderate Risk	45.6	34.5	Moderate Risk	14.5	9	5.7	18	8.2
21:29 - 22:28 *	Moderate Risk	40.8	35.0	Moderate Risk	13.7	8	5.3	17	8.0
22:29 - 23:34	High Risk	34.4	35.5 *	Moderate Risk	12.8	7 *	5.0	16	7.8
23:35 - 24:46	High Risk	26.0	36.0	High Risk	11.8	6	4.5	15	7.5
24:47 - 26:06	High Risk	14.8	36.5	High Risk	10.7	5	4.0	14	7.3
≥ 26:07	High Risk	0.0	37.0	High Risk	9.5	4	3.0	13	7.0
			37.5	High Risk	8.3	3	2.0	12	6.5
			38.0	High Risk	6.9	2	1.0	11 *	6.0
			38.5	High Risk	5.4	≤1	0.0	10	5.5
			39.0	High Risk	3.8			9	5.3
			39.5	High Risk	2.0			8	4.5
			≥ 40.0	High Risk	0.0			7	4.3
								6	4.0
NOTES:								5	3.5
Health Risk Category = low, moderate or high risk for current and future								4	2.5
cardiovascular disease, diabetes, certain cancers, and other health problems								3	2.0
								2	1.5
Passing Requirements - member ***must***: 1) meet minimum value in each of								≤1	0.0
the four components, ***and*** 2) achieve a composite point total ≥ 75 points									
* Minimum Component Values									
Run time ≤ 22:28 mins:secs / Abd Circ ≤ 35.5 inches									
Push-ups ≥ 7 repetitions/one minute / Sit-ups ≥ 11 repetitions/one minute									
Composite Score Categories:									
Excellent ≥ 90.0 pts / Satisfactory = 75.0 - 89.9 / Unsatisfactory < 75.0									

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