



Assessment of health and fitness of members of the United States Air Force

Colonel J. DALE (United States),
Chief Health Promotion,
Office of the Surgeon General.

Introduction

Good morning/afternoon. It is an honour and a pleasure to be here and represent the men/women of military services of the United States of America and speak with you about the "Assessment of Health and Fitness of Members of the United States Air Force".

I would like to propose you that optimal health and total fitness are force multipliers. Healthy, fit individuals are more effective and efficient operators of weapon systems. So let me repeat that "Optimal Health and Total Fitness" are Force Multipliers. This has been true historically; it is true today; and, it will be even more important in the future.

Furthermore, I would propose that man, has been and will continue to be, THE ultimate weapons system in any military organization. A study of the history of warfare reveals many examples of how the outcome of battles and wars has been determined by the athleticism, fitness and health of the warriors.

For example in the 7th century BC Messenian wars, the Spartan hoplites were alleged to be so fit that they could battle and win while standing on one leg. Another example would be in 1356 at the Battle of Poitiers in the Hundred Years War where, against heavy odds, the skill and effectiveness with the longbow turned the tide for the English against the French. Lastly the stamina and long distance running skills of the Greeks and Native Americans of the southwest are legendary.

Turning from fitness to health, it was the absence of health or disease that affected many battles. The plague forced a seven year truce in the Hundred Years War as the Black Death ravaged warriors and civilians alike. In 1803 Napoleon was forced to draw back from Haiti when 29,00 of his 33,000 man force was lost to disease. And lastly in World War II in 1943, United State Army Colonel Merrill lead his 2750 man strong band called "Merrills Marauders" into Burma. Within 60 days disease reduced his force from the original 2750 to less than 400 and his army was disbanded.

Today the number of men and women serving in the military of the United States is smaller than it has been in many years. The money identified for health care and training is not growing.



Therefore, it is essential that we are as efficient and as effective as possible.

Many epidemiological studies have been conducted to analyze the effect of exercise, fitness and prevention. These studies have been conducted on companies and business from around the world. The studies have consistently found that fitness and prevention are highly beneficial. They have been shown to : reduce health care costs; reduce absenteeism; increase productivity; decrease turnover of personnel; and help with recruiting of new personnel. These facts reinforce the lessons we have learned from the history of warfare and that is why I so strongly believe that "Optimal health and Total Fitness are Force Multipliers".

But what about the future ? Future warfare and battlegrounds may be very different. Future battles will probably have greater use of technology; rapid changes of events; use of weapons far removed from the battlefield; and battles waged over long distances with fewer personnel. With battle teams composed of fewer members health and fitness will be even more important because even minimal losses of personnel could have great impact on the outcome of battles. Strong fitness and health programs will be essential to building units that are in top physical condition and that have high levels of immunity against disease.

In the United State Air Force we work to build healthy, fit forces in three ways : First through physical examinations and screening of personnel prior to their entry into the service. Second, through periodic examinations and screening. And third, through ongoing health promotion, fitness and wellness programs.

I would like to briefly address each of these points. All of the members of the military services of the United States are volunteers. They must request membership in the armed services. Prior to acceptance, they must successfully meet the requirements of the entrance physical examination and screening. This pre-entry examination includes a hands-on examination by a physician; eye sight and hearing tests; blood pressure, height, and weight measurement; a musculo-skeletal function screen; and basic medical laboratory tests.

After our members enter the services they get a variety of periodic examinations. They receive a yearly dental examination and blood pressure check. They also may receive yearly medical examinations based on their jobs - for example pilots get an examination validating their ability to fly and individuals working in high noise areas receive hearing tests. All personnel receive a preventive health examination every five years. Recently we have changed this examination from one that required the same detailed examination and screening for all, to one which was tailored to the individual. We have found that tailored or targeted examinations are less costly and more likely to identify problems if they exist. These preventive health examinations now are tailored based on age, gender, occupation, and risk factors such as smoking. Immunizations are maintained and counselling given to address unhealthy behaviours or lifestyles. Our tailored examinations are based on the recommendations of the United States Preventive Services Task Force.



Lastly, I would like to talk about our Health Promotion, Fitness, and Wellness Program. In the November of 1993 issue of the Journal of the American Medical Association there was a landmark article which looked at the REAL or ACTUAL causes of death. Each year approximately 2 and 1/2 million Americans die. Of those deaths, 400 cases die of tobacco related disease; 300 cases die of disease related to poor exercise and bad eating habits; while another 100 cases die of alcohol related disease or injury.

It is these same bad health habits or lifestyles that affect the health of the men and women of the United States Military Service. To identify our personnel with unhealthy lifestyle we periodically give them a Health Risk Appraisal. This appraisal identifies poor health habits and disease risks that the members might have.

Over the last few years we in the Air Force have embarked on a new fitness program. The goals of the program are to motivate our members to exercise regularly; to promote health, to promote fitness and to promote combat readiness; and lastly to safely and accurately measure aerobic fitness.

There have been numerous studies that have shown that 30 minutes of aerobic exercise 3 to 5 times a week will build fitness levels that are conducive to good health. Therefore, all our personnel are encouraged to adopt solid exercise programs. Many of our members jog, some bicycle or ride stationary bikes, others walk stairs or stair machines, while still others join in group aerobic dance activities. Power walking is also popular with a small number of individuals.

Fitness, is and has been, measured by estimating the maximal amount of oxygen consumed at maximum exercise or what is called VO_2 max. VO_2 max defines the maximal aerobic capacity is an important indicator of the ability to perform sustained muscular work; of cardiovascular health; and of general fitness. VO_2 max can be measured directly in specialized exercise physiology laboratories or can be estimated by field tests for populations. Field tests to estimate VO_2 max are either "maximal" or "submaximal". Maximal tests are design to elevate heart rates to their age predicted maximal rates whereas submaximal test do not. Maximal tests include treadmill, cycle ergometry, timed run, or step. Cycle ergometry has been demonstrated to be an effective submaximal test. Submaximal tests can be used because of the linear relationship of three things : workload of exercise, heart rate and VO_2 max. These three are linearly related. This is particularly true between 50 % and 100 % of maximum exercise. Therefore, it has been shown that submaximal tests utilizing multiple workload - heart rate relationships, taken over several different workloads can predict VO_2 max.

Prior to October 1992 we used the 1 and 1/2 mile timed run or a 3 mile timed walk to test fitness. Research showed that the run and walk evaluations were not motivating our members to exercise regularly and that run time standards did not reflect a physically fit population. Faster run times standards were proposed to raise fitness levels and were to be phased in over several years. However, concerns over possible deaths, related to the maximal run test, lead to the development of the submaximal cycle ergometry test.



Our cycle ergometry test is based on the original 1954 work of Astrand and Rhyming. They developed a nomogram which estimated VO_2 max from submaximal power output and body weight. Over the past 40 years, many studies have been done on a variety of populations that have resorted in the refinement of the original nomogram. The basic Astrand and Rhyming equation was studied at Brooks Air Force Base, Texas in the 1980s and further refined. This refined version was fielded as the basis of the Air Force Fitness Program. A table was developed to address the need for fitness standards. This fitness standard table was constructed using the estimated VO_2 max associated with the faster 1 and 1/2 mile run times needed to adequately measure fitness. Six levels of fitness were established. They were based on equivalent cycle ergometry scores for VO_2 max.

Here are the results of our first two years of testing. These results have been adjusted for age and gender. As you can see the trend is toward improved fitness. Members in category I or II are enrolled in fitness improvement programs. Individuals that are close to meeting their standard are counselled and entered into a self-paced fitness enhancement program and tested again in 3 months to see if they meet their standard. Individuals in poor physical condition are enrolled in structured fitness classes or exercise programs. These individuals are also retested in three months.

Our nutrition programs include: following the "Dietary Guidelines for Americans"; encouraging our members to eat 5 fruits and vegetables a day; and programs to help our members make healthy food choices.

Here is a listing of the Dietary Guidelines. Following these guidelines and getting adequate exercise are obviously key to our Health Promotion and Wellness program.

The 5 a Day program is a business marketing approach developed by the United States National Cancer Institute. Their studies and many others have found that people eating more fruits and vegetables have less cancer and are healthier. Thus the Institute developed the common sense 5 a Day program. We believe in it and promote it.

Lastly I'd like to address alcohol and tobacco. We promote responsible alcohol use. Studies have shown that populations having on average 1 to 2 normal alcoholic drinks per day are actually healthier than those that do not drink or those that drink heavily. However, the biggest killer of young Air Force personnel is alcohol-related accidents. Like I noted before, we promote responsible alcohol use.

And now tobacco. Tobacco and our military have a long history. Military personnel have been heavy users of tobacco. However, we know that tobacco is a killer and is related to many other problems. As a group tobacco users: have higher health costs; have more accidents and injuries; and are absent from work more often to name just a few problems. We are expanding our tobacco cessation efforts. We have banned smoking from all work areas on our Air Force bases and have removed cigarette vending machines from all work areas. We are having all our physicians and dentists talk to their patients at each visit about the health hazards of tobacco use and urge them to quit. Furthermore, we are working very hard to help those to quit that are ready to rid themselves of their tobacco addiction.



We have recently proposed a new tobacco initiative that is based on assessing readiness to quit. This initiative uses the stages of change model and a simple assessment questionnaire. The stages of change model was developed by Dr Carlos Di Clementi at the University of Texas at Houston TX and by Dr Jim Prochaska of the University of Rhode Island. As you can see from the model, they propose that individuals go through a progressive cycle of change before they actually adopt a new behaviour. They propose that some individuals are not even thinking about changing and are considered precontemplative. Once individuals start to think about change they are considered contemplative. These individuals can progress through the cycle to preparation then take action to quit smoking. Once they quit they can be in the maintenance phase for up to two or more years before that can be truly called quitters. Dependent on the stage of change that a tobacco user is in, different motivational messages can be used to accelerate them to the next stage. Awareness must be raised with precontemplators and the benefits of quitting must outweigh the perceived benefits of tobacco use before a contemplator or an individual in preparation will go on toward the action stage.

Assessment of an individual's stage of change can be done with this simple questionnaire. It addresses both past and future actions. Studies have found that quitters usually have to quit many times before they stay quit. Yes to all three questions means they are action oriented while no to all three means precontemplative. Understanding the stage of changes helps us to craft motivational messages to help tobacco use quit.

We are proposing to use this same assessment tool and apply it to exercise, diet, stress management and alcohol use. We feel that through the stages of change approach we can reach out to many more individuals and change the behaviour of more of them. We are excited about the prospects of using these new tools.

For the last few minutes I have addressed how the United States Air Force is building an "Optimally Healthy and Totally Fit" team. As I noted, to do this we screen and examine personnel before admitting them for service. We give them yearly and periodic preventive examinations. And lastly, we have established a vigorous health promotion, fitness and wellness program.

Because our goal is to keep them healthy : flying not return them to flying.

Thank you for your kind attention.

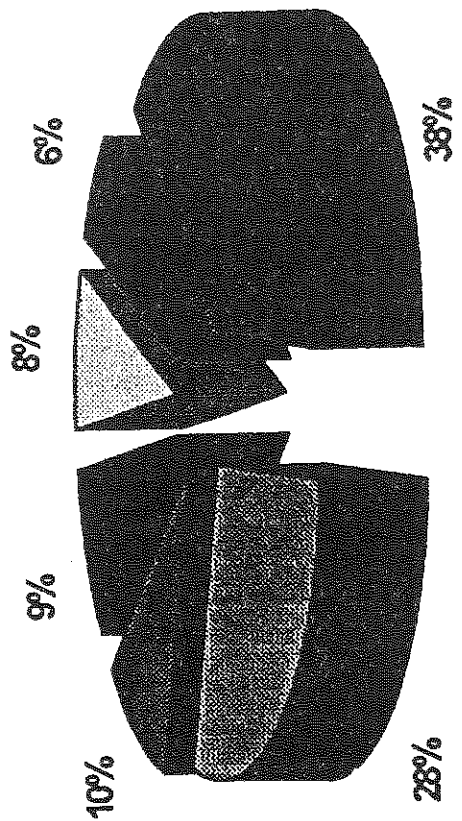


ACTUAL CAUSES OF DEATH IN THE U.S.



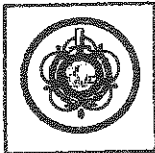
CISM INTERNATIONAL SYMPOSIUM
WARSAW - POLAND
1995

● Tobacco Related	400,000
● Diet/Activity	300,000
● Alcohol	100,000
● Microbial Agents	90,000
● Toxic Agents	60,000
● Firearms	35,000
● Sexual Behavior	30,000
● Motor Vehicles	25,000
● Illicit Use of Drugs	20,000
Total	1060,000

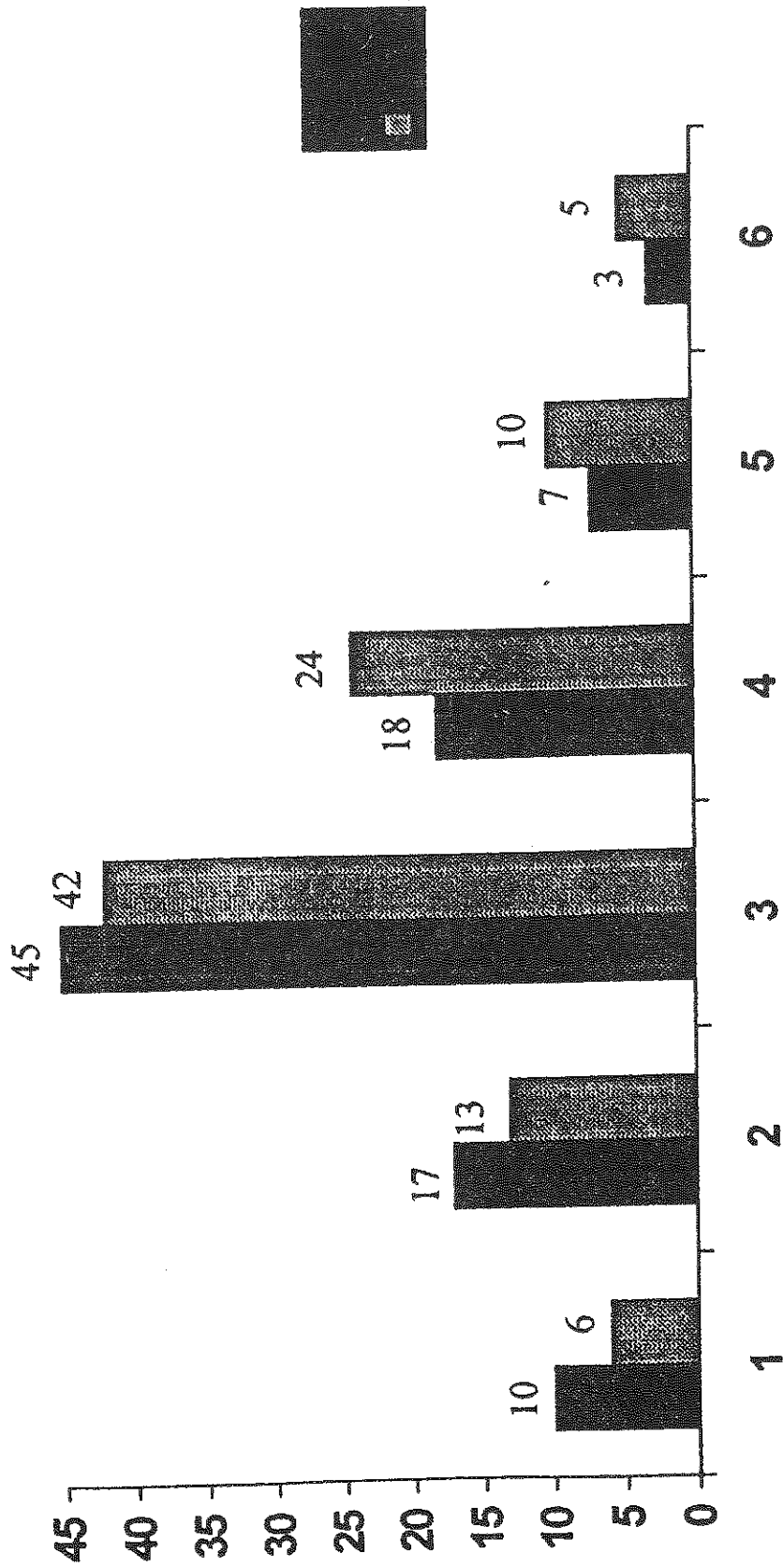




FITNESS CATEGORIES 1993-94 BY PERCENT



CISM INTERNATIONAL SYMPOSIUM
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STAGES OF CHANGE MODEL

