Unfortunately, 24 percent of the force still has not achieved adequate fitness levels to meet Air Force standards or help decrease personal morbidity and mortality risks associated with low-level fitness. The Air Force should pat themselves on the back for taking a giant step forward, but then immediately set a course on continued advancement.

Special Feature

logistics

21st Century Logistics

Air Force Fitness Culture: Are We There Yet?
Can We Help? DoD Humanitarian Assistance Programs

This edition of the Journal presents two featured articles: "Air Force Fitness Culture: Are We There Yet?" and "Can We Help? DoD Humanitarian Assistance Programs" In the first article Colonel Thomas F. Roshetko examines the evolution of Air Force fitness and the options for reaching full program effectiveness. Areas of discussion include military fitness requirements, Air Force Fitness Program history, and the Fit-to-Fight Era. He concludes with Air Force Fitness—The Way Ahead. That section recommends developing a better Air Force fitness culture by improving alignment of health and fitness issues. Colonel Roshetko suggests several program adjustments, including renaming the Air Force instruction, limited use of random testing, approving wear of pedometers in uniform, and better analysis of fitness data.

In the second featured article Mr W. Darrell Phillips examines the limited role of, and fiscal constraints upon, the Department of Defense (DoD) in providing foreign humanitarian assistance. He concludes that as the focus of the Global War on Terrorism shifts to other locales, and disasters occur in various foreign countries, DoD's role will continue to expand and transform. The creation of United States Africa Command will undoubtedly lead to a closer engagement with the nations and peoples of Africa, and accompanying increases in humanitarian assistance. The Commanders' Emergency Response Program (CERP) has been a major factor in *winning hearts and minds* in Iraq and Afghanistan. He also notes that a major question will be whether Congress will apply CERP, or some variant of it, to future conflicts or peace missions.

Air Force Fitness Culture: Are We There Yet?

Thomas F. Roshetko, Colonel, USAF

Introduction

Special Feature

The Air Force significantly overhauled its fitness program in 2003 and released a new fitness Air Force instruction (AFI) in January 2004. Since that time, Air Force leadership has reevaluated this program several times, resulting in multiple program updates. Overall, subjective and objective data reflect an improved fitness commitment across the Air Force. Unfortunately, after 61 operational months, it appears that the program remains short of accomplishing its primary goal of motivating "all members to participate in a year-round physical conditioning program that emphasizes total fitness, to include proper aerobic conditioning, strength and flexibility training, and healthy eating."[1] This article will evaluate the evolution of Air Force fitness and some options for reaching full program effectiveness. Areas of discussion will include military fitness requirements, Air Force Fitness Program history, and the Fit-to-Fight Era. It will conclude with *Air Force Fitness—A Way Ahead*, that recommends developing a better Air Force fitness culture by improving alignment of health and fitness issues. The conclusion will also suggest several minor program adjustments including renaming the AFI, limited use of random testing, approving wear of pedometers in uniform, and better analysis of fitness data.

Military Fitness Requirements

Department of Defense Fitness Requirements

Department of Defense Instruction (DoDI) 1308.3, *DoD Physical Fitness and Body Fat Programs Procedures*, provides the legal directive for military fitness. Specifically, DoDI 1308.3 charges each military branch to be responsible for assuring Service members maintain physical readiness through appropriate nutrition, health, and fitness habits. It is stipulated that at a minimum, physical conditioning must include aerobic capacity, muscular strength, muscular endurance, and desirable body fat composition.[2] A fitness program must therefore be designed to enhance fitness and general health, meet the Services' specific mission requirements, and include an annual assessment of each member's fitness.[3]

Air Force Fitness Requirements

AFI 10-248, *Fitness Program*, serves as the Air Force's policy to meet DoDI 1308.3 and its objective is to assure that airmen attain physical fitness levels sufficient to meet the global Air Force mission. This document provides detailed administrative procedures, assigns responsibilities to 28 different individuals and offices, extols the benefits of fitness, describes required reports, and lists disciplinary action for noncompliant airmen. The AFI details minimal

Article Highlights

Through the decades, the Air Force Fitness Program walked a twisted path to arrive at its present status. Rather than focusing on assuring regular personal conditioning, the Air Force has spent decades searching for the latest and greatest annual evaluation tool.

Today, Air Force leadership can be proud of building the strongest fitness program in Air Force history. Improvement in personal fitness and total force fitness is evident by significant reductions in poor fitness test scores and slightly improved fitness activity levels. Unfortunately, 24 percent of the force still has not achieved adequate fitness levels to meet Air Force standards or help decrease personal morbidity and mortality risks associated with low-level fitness. The Air Force should pat itself on the back for taking a giant step forward, but then immediately set a course on continued advancement. Specifically, the Air Force must direct efforts toward building an Air Force fitness culture that emphasizes robust, comprehensive fitness lifestyles, rather than a fitness program that focuses on annual fitness testing and administrative details.

In "Air Force Fitness Culture: Are We There Yet?" Colonel Thomas F. Roshetko examines the evolution of Air Force fitness and options for reaching full program effectiveness. Major areas of discussion in the article include military fitness requirements, Air Force Fitness Program history, and the Fit-to-Fight Era. He concludes with Air Force Fitness—The Way Ahead. In that section he makes the following recommendations.

exercise requirements for each airman, including aerobic conditioning in the 70 to 85 percent maximum heart rate range for 20 to 60 minutes. It states that this should be done 3 days per week to maintain current fitness levels and 4 to 5 days per week to improve fitness levels. It also stipulates that strength training requires moderate weight bearing through a full range of motion using all major muscle groups at least 2 to 3 times per week. The annual fitness assessment serves as a primary compliance measure. The test consists of four scored components: a 1.5-mile run, a 1-minute push-up, a 1-minute crunch, and an abdominal circumference (AC) measurement. Summed component points produce a single composite score based on a 0 to 100 scale. Airmen must achieve 75 points or greater for a *passing* score. Airmen scoring below 75 are entered into an interventional program to include education, exercise oversight, and must retest within the next 45 to 90 days.

Air Force Fitness Program History

1947 to 2001: The Searching Years

Through the decades, the Air Force Fitness Program walked a twisted path to arrive at its present status. Rather than focusing on assuring regular personal conditioning, the Air Force has spent decades searching for the latest and greatest annual evaluation tool. In his autobiography, *A General's Life*, General Omar Bradley provides fitness frustration examples dating back to World War II. He states: "The rudest shock we experienced with the draftees was the discovery that they, the prime of America, were generally in appallingly poor physical condition. Only a few were capable of hard sustained physical exertion that we knew they would experience in combat."[4] In response, the Army instituted an intense 16-week physical conditioning for recruits. Because of war conditions, the Army felt little need to push formalized fitness beyond basic training. In fact, not until the draft ended in 1973, did the Army become concerned about retaining fit soldiers, with a primary focus on the growing obesity problem.[5]

At first, the Air Force continued the training camp only Army program when it became a separate Service in 1947. Later that year the Air Force published a three-paragraph fitness regulation leaving implementation to the major command's (MAJCOM) discretion.[6] The Air Force Fitness Program remained essentially unchanged from 1947 to 1959, when the Air Force School of Aviation Medicine concluded that "the overall state of physical fitness in Air Force personnel is poor."[7] At that time the Air Force instituted mandatory weekly physical exercise, but set no mandated fitness standards until 1962. For the next seven years the Air Force assessed conditioning via age-based weight standards and a timed five-component strength test.[8]

During the 1960s, Air Force Major (Dr) Kenneth Cooper, developed a fitness conditioning program for astronauts. His efforts revolutionized preventative medicine and created *aerobic* conditioning. He pioneered cardiovascular exercise and in 1969 the Air Force implemented his fitness plan. Unfortunately, the Air Force primarily focused on an annual 1.5 mile run rather than emphasizing Dr Cooper's weekly exercise point system. The annual run test remained in place for 23 years, but during this time the Air Force did nothing to proactively push personal fitness programs.

In 1992, in what may be considered one of the Air Force's all-time controversial decisions, the Air Force implemented an annual submaximal heart rate test called cycle ergometry. This was done at the behest of those pushing for greater science and safety. It was decided that riding a stationary bike for 8 to 14 minutes would maximize safety and still adequately assess military fitness. With this implementation, the organization most responsible for pioneering aerobics walked further away from the very research that had taken the wellness world by storm. Several problems resulted from cycle ergometry testing, but the most important was the Air Force once again relegated year-round personal aerobic conditioning to secondary importance. Just 14 years earlier, Major Cooper used data from 5,000 airmen to publish the world's most comprehensive study on health improvements secondary to aerobic exercise.[9] Although Major Cooper identified several assessments to measure individual fitness levels, he repeatedly emphasized daily personal fitness conditioning as the key to increased health and wellness. Dramatically, he highlighted the unfortunate fate of American farmers as a clarion call for increased physical fitness. He stated:

> Years ago, you could predict, sight unseen, that they were all in excellent condition. Not so today. The farms…have become so mechanized…the rural men are not much better off than their sedentary city brothers. The young recruits…today (1968) show little difference between boys raised in the city and…on a farm. Sad, but true.[10]

Unfortunately, AFI 40-501, *The Air Force Fitness Program*, changed only the test process and not the overall Air Force fitness mindset. The AFI required commanders to allow members to exercise three times per week on duty unless "mission requirements directly prohibit doing so."[11] It also required airmen to "meet and maintain Air Force fitness standards through participation in a regular and consistent exercise program throughout their military service, and into retirement."[12]

Despite this mandatory requirement a 1995 DoD survey found that only 50 percent of airmen self-reported meeting exercise standards, ranking the Air Force last of the four Services.[13] In April 2002, the Air Force Population Health Support Division (PHSD) determined self-reported minimal fitness activity levels had increased to 65 percent.[14] Both of these surveys are likely inflated since most studies of self-reported exercise prove to be exaggerated. In fact, studies show self-reported conditioning programs become more inflated in direct proportion to decreasing levels of fitness and increased levels of excess weight.[15] Furthermore, Air Force leadership's test-centric myopia can be illustrated further by the fact that no Air Force forum ever requested exercise activity data. Therefore, in 2003, the Air Force Fitness Program Manager needed to run a special query report for the working group designing the Fit-to-Fight Program (at that time called WarFit).[16]

The cycle ergometry era can be complemented for attempting to better quantify testing, but unfortunately, the test's limitations diluted the results. In fact, in the mid-90s, the Uniformed Services University of the Health Sciences (USUHS) evaluated cycle ergometry's effectiveness. Under controlled studies, USUHS determined that 77 percent of tests had a predictive error rate greater than one standard deviation. The report stated, "In sum, the Air Force test...is unreliable and underestimates VO2 [maximal oxygen uptake or aerobic capacity] (on average) by approximately 15 percent."[17] Furthermore, the error rate was 960

Article Highlights

- Develop a fitness culture not a fitness program, including renaming the Air Force Instruction
- Establish limited random fitness testing
- Permit the wearing of a pedometer plus one other device on the waist when in uniform
- Improve health and wellness center staffing
- Increase analysis of fitness data

Article Acronyms

AC – Abdominal Circumference
AD – Active Duty
ADAF – Active Duty Air Force
AFB – Air Force Base
AFFMS – Air Force Fitness Management System
AFI – Air Force Instruction
AFR – Air Force Reserve
AFSPC – Air Force Space Command
AFSVA – Air Force Services Agency
ANG – Air National Guard
BMI – Body Mass Index
CDC – Center for Disease Control
DDRP – Drug Demand Reduction Program
DoD – Department of Defense
DoDI – Department of Defense Instruction
EPR – Enlisted Performance Report
FAB – Fitness Advisory board
FPM – Fitness Program Manager
GE – General Electric
HAWC – Health and Wellness Center
HE – Health Educator
HPM – Health Promotion Manager
NASA – National Aeronautics and Space Administration
OPR – Officer Performance Report
PHA – Periodic Health Assessment
USUHS – Uniformed Services University of the Health Sciences
WBFMP – Weight and Body Fat Management Program

times more likely to underestimate fitness than to overestimate fitness.

To accommodate these (and other) test sensitivities minimal passing scores were set between the seventh and eighteenth percentile range of the adult United States (US) population. Thus airmen who barely passed cycle ergometry testing reflected fitness levels equivalent to the least fit civilians. Despite these low standards, at the conclusion of calendar year 2002, only 73.15 percent of the airmen who took the test achieved a passing cycle ergometry score. In addition to these poor test results, 22.8 percent of the Air Force did not complete the required annual test.[18] Most importantly, because cycle ergometry measured a submaximal heart rate response, there was limited ability to predict the Air Force fitness capabilities under intense combat conditions.[19]

2001 to 2004: The Origin of Fit-to-Fight

Many times experts conceive of better ways to do things, yet need to wait for the right opportunity to introduce the idea. So exercise physiologists and health promotion experts across the Air Force anxiously waited for a chance to improve the Air Force fitness culture. In November 2001, the door to changing the fitness program opened slightly and the full weight of the AF/SGP (Air Force Flight Surgeon) office and many field offices applied pressure.

While presenting an overview on Air Force medical issues to AFSPC leaders, Colonel Steve Meigs, surgeon, Air Force Space Command (AFSPC/SG), reviewed findings from two DoD studies regarding similar prevalence of obesity between active duty and civilian males (59 percent and 62 percent, respectively).[20] He also noted the studies estimated costs related to this excess body weight.

- Direct Care Medical Costs = $23.9M
- Lost Productivity Costs = $4.2M
- Lost Work Days = 33,645 (approximately 157 lost full time equivalents)[21]

Command Chief Bruce Brady, 90th Space Wing (SW/CCC), FE Warren Air Force Base (AFB), politely interrupted Colonel Meigs' presentation, seeking clarity about the Air Force Weight and Body Fat Program (WBFMP). In essence, Chief Brady felt that the program unfairly punished moderately heavy members who were capable of meeting all duty responsibilities and presented a professional image. Likewise, he stated, some overweight members avoided similar discipline, because tape measuring procedures to determine body fat favored members with thick necks. Chief Brady's question prompted a spontaneous and aggressive discussion between wing commanders and fellow chiefs. Witnesses state that General Ed Eberhart, Commander, Air Force Space Command (AFSPC/CC), let the conversation continue for 30 minutes before calling a halt. He then directed Colonel Meigs to have his SG staff evaluate the WBFMP via the following statement.

> We spend a lot of money every year assisting our personnel in tobacco cessation and alcohol abuse treatment but do very little to assist those having trouble maintaining weight standards. It seems like we could do better.[22]

Chief Brady had firmly hit on a challenging regulation. AFI 40-502, *The Weight and Body Fat Management Program*, required members exceeding weight-height standards to have body fat assessed by anthropometric taping. Those exceeding body fat standards required formal enrollment in an education and disciplinary program with seven separate phases. The AFI dictated that commanders take an aggressive series of actions leading to administrative discharge for those not attaining body fat standards. Regardless of fitness levels, excessive body fat levels resulted in disciplinary action. In addition, enrollees had to meet body fat standards prior to WBFMP disenrollment, even if they reduced their weight to proper standards.[23] Thus, airmen who met Air Force weight standards were actually discharged from the Air Force . Furthermore, despite mandatory enrollment processes for everyone exceeding weight standards, it appeared that commanders unequally enforced WBFMP enrollment for officers and enlisted personnel.[24] According to Dennis Davis, HQ AFPC/DPSART (AFPC Data Retrieval Section), between January 1993 and May 2001 the Air Force discharged 4,086 enlisted members and 76 officers for failure to meet WBFMP standards, an astonishing 54 to 1 ratio.[25]

The HQ AFSPC/SG clinical staff quickly determined the answer to General Eberhart's tasker lay in improving airmen's fitness rather than solely concentrating on body fat reduction. General Eberhart agreed and created the AFSPC WarFit pilot fitness program to run concurrently with the WBFMP. Over the next 24 months AFSPC, in concert with the AF/SGP staff, assessed a series of fitness options directed at increasing personal fitness, improving commander and airman fitness education, and field testing a composite fitness assessment. Specifically, the WarFit Program emphasized duty time workouts three times a week and unit-led group workouts at least once a week. The assessment included the four-part score now used as the Air Force Fitness Test.

WarFit succeeded immediately in several areas, but most dramatically among those enrolled in the WBFMP. Upon initial WarFit testing, 28 percent of those enrolled were identified with fitness composite scores reflecting low health risks. Dramatically, 40 percent of enrollees with high health-risk indicators were able to achieve low risk standards after completing a 3-month intensive WarFit Program. By contrast the official WBFMP Mandatory Fitness Improvement Program demonstrated only a 14 percent conversion of personnel from high to low health risk.[26]

These results paralleled civilian research which identified poor physical fitness as a greater health threat than body fat. In these studies, obese men, as defined by body mass index (BMI) greater than or equal to 30 kg/m^2, reduced their cardiovascular disease risk by 333 percent after establishing moderate to high fitness levels. In contrast, unfit lean men, with BMIs between 18.5-24.9 kg/m^2, had 2.2 times the relative risk for mortality compared to obese men who were fit (see Figure 1).

Dr Steve Blair, president and chief executive officer of the Cooper Institute (of Major Cooper fame), a leading researcher of these studies stated: "It is better to be fat and fit than it is to be a normal weight and unfit in terms of mortality predictors. You cannot determine how fit someone is by looking at them."[27]

Dr Rick Kausman, Australian Medical Association spokesman, concurs advocating for fitness over body size. "We've been brainwashed to believe that healthy weight is a size 8…. We're clearly not all meant to have a BMI of 22, or be a size 8 or 10. Human beings are meant to come in all shapes and sizes."[28]

AFSPC and AF/SGP, with support of the Air Force Chief of Staff (AF/CC) began marketing WarFit information across the Air Force in 2002. Overall, WarFit met strong support, but consistently leadership raised concerns regarding "being able to afford" duty time for workouts and about the fairness of the abdominal circumference. Repeatedly, WarFit presenters answered duty time concerns using extensive corporate studies, including the National Aeronautical Space Administration (NASA) and General Electric (GE) aircraft. These civilian studies showed work hour fitness programs resulted in increased individual productivity, increased employee retention, and decreased employee sick days.[29] Abdominal measurement issues were addressed via many health care studies identifying fitness as more important than fatness, with abdominal circumference serving as an independent risk indicator for cardiovascular related morbidity and mortality.

Air Force Chief of Staff, General John P. Jumper, took great interest in the AFSPC effort, and via the Air Force Medical Operations office directed the Human Systems Information Analysis Center to coordinate an independent technical review of the proposed program before making Air Force-wide changes.[30] A panel of six civilian fitness and nutrition experts, along with Colonel Karl Friedl, US Army, Military Operational Medicine Research Program director, concluded:

> This programmatic approach should be considered a significant improvement in the Air Force fitness assessment and health screening policies. To ensure its acceptance…the Air Force should promote the emotional appeal of the program and minimize…the punitive measures. The program will need strong leadership support and aggressive marketing with an emphasis on establishing a *culture of fitness* (emphasis added).[31]

The 22-page report, while supportive of the program, identified numerous issues to beware of including the challenge of correlating body fat directly to a fitness-centric test. One reviewer stated, the "exact weighting" of categories is difficult, but the proposed scoring system is "certainly an educated judgment call." A second reviewer corroborated that the category cutoffs points are "somewhat arbitrary and subjective," but "seem reasonable and justified in terms of our general knowledge of the relation between aerobic fitness levels, body fat and risk for morbidity, and adequacy for physical readiness." In direct contrast, one panel member hesitated to endorse the cut points saying: "A great deal of additional work is needed to determine the reliability and validity of this scheme." In summary, the panel accepted the Fit-to-Fight assessment tenets as pragmatic, but untested, firmly agreeing that continued cut-point assessments would be required as additional data becomes available.[32]

The report put greater emphasis on creating robust health-fitness knowledge and stimulus. One panel member stressed the importance of communication by saying, "Structure, organization, consistency, communication, communication, communication, and general corporate culture are keys to your success."[33] A second member pleaded, to concentrate on the positive carrot and go lightly on the "looming career-stopping" stick. Additional direction exhorted the Air Force to market the program to each airman, directing them to understand the "relationship among fitness, fatness, and health, and work toward inculcating fitness" into a lifestyle."[34] In the end, the panel supported the proposed Fit-to-Fight Program as a strong plan, but argued that success required strong execution from the highest level of Air Force leadership down to each airman.

General Jumper accepted the panel's recommendation and directed the Air Force surgeon general to create a Fit-to-Fight Program, including a new AFI that combined AFI 40-501, *The Air Force Fitness Program* and AFI 40-502, *Weight and Body Fat Measurement Program*. In preparation for the change, in late 2003, General Jumper directed added attention to fitness across the Air Force. On 1 January 2004, AFI 10-248, *Fitness Program*, became operational.

In the January-February 2004 TIG Brief, General Jumper addressed the Air Force, stating that the amount of time we spend on fitness is not "consistent with the growing demands of our growing warrior culture. It is time to change that." Later in the letter he stated, "Over the past several months, I have received extremely positive feedback regarding our fitness changes. I've personally observed some outstanding leadership out in our Air Force—commanders and supervisors leading from the front and making fitness a priority in their daily schedules."[35] The Fit-to-Fight Era was off and running.

The Fit-to-Fight Era

The fitness program debuted with enthusiasm and great support. Almost overnight, airmen of all ranks improved their fitness focus. Data since program inception shows the Air Force has collectively improved fitness conditioning. Air Force bases now bear witness to daily group exercise, a site fairly nonexistent prior to 2004. Unfortunately, several Fit-to-Fight components require additional attention. Below are a series of Fit-to-Fight brags and concerns.

Increased Fitness Center Usage and Facility Improvement

Air Force Services Agency (AFSVA) data reflects a "36 percent increase in fitness center usage since the onset of Fit-to-Fight."[36] In support of Fit-to-Fight, AFSVA revitalized their primary mission to a three-prong approach.

- Support unit commanders' fitness programs
- Support fitness improvement program enrollees
- Provide on-site, interactive customer service with equipment

In addition, AFSVA has exponentially elevated fitness facility quality as defined by a *star-level* grading system ranging from 1 (poor) to 5 (excellent). Since 2002, using this Air Force 5-star level program scores, AFSVA increased from three 5-star programs to 29, and 4-star level programs increased from 4 to 29 out of a total of 144 Air Force fitness centers. Though the star-

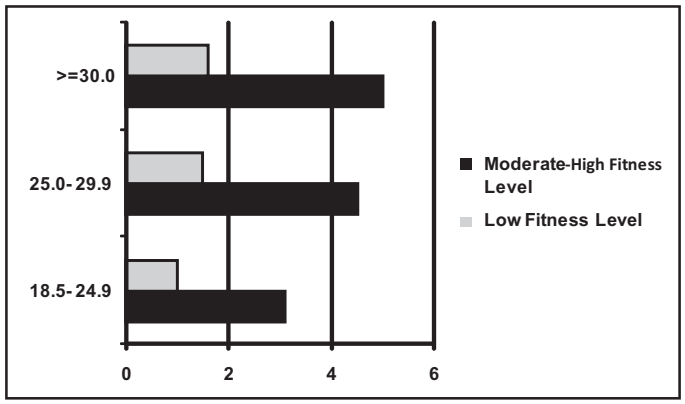


Figure 1. Mortality Risk Based on BMI and Fitness Level

level program began prior to Fit-to-Fight's inception, the new fitness push aligned well with this AFSVA goal. As a result, fitness center personnel refocused their effort to better meet customers' needs. Now commanders and airmen enjoy better facilities for their increased workouts. In turn, the better fitness center programs helped improve many facilities' star rating.[37] Due to facility usage demand, the Air Force also increased space requirements for 61 planned fitness center construction projects.[38]

Decreased Poor Fitness Scores

A substantial decrease in the percentage of *poor* composite fitness scores indicates that Fit-to-Fight is a success. According to annual Air Force fitness reports (see Figures 2 and 3) the percentage of poor fitness scores among both genders and enlisted personnel increased slightly in 2005 before substantially decreasing in 2007.[39 40 41] Officers in the poor category decreased in 2005 and 2007. (Note. This author has been unable to obtain a copy of the 2006 report.)

When the Air Force components are separated there is variation noted in the improvement rate of poor fitness scores. According to the 2007 annual report active duty Air Force (ADAF) poor fitness rates were reduced to 2.89 percent, whereas poor rates for the Air National Guard (ANG) and the Air Force Reserve (AFR) were reduced to 4.75 percent and 8.75 percent, respectively. Interestingly, while ANG and AFR poor category rates declined each of the three recorded years, the ADAF increased in 2005 before significantly dropping in 2007 (see Figure 4).

Air Force Fitness Advisory Board

In 2006, the commander for the Air Force Medical Operations Agency (AF/SG3) created an Air Force Fitness Advisory Board (FAB) for the purpose of assessing "scientifically valid and defensible research and guidelines that support fitness policy."[42] Establishing the FAB demonstrates the Air Force plans to continually refine the Air Force Fitness Program. In fact, under guidance of the FAB, the Air Force Audit Agency conducted a Fit-to-Fight Program review at 15 Air Force locations between August 2007 and June 2008. The audit report, date 11 December 2008, identified significant variation in program implementation between squadrons and across the Air Force. The report suggested several improvements in the areas of unit-level fitness policies, fitness test exemptions, group exercise, and administrative action for airmen with poor fitness scores.[43] The FAB is currently reviewing theses recommendations and plans to provide new Air Force guidance in the future.

Emphasizing Test Compliance over Personal Fitness Program

Air Force leadership's test-focused mentality continues to inhibit greater fitness progress. During WarFit marketing, the AFSPC/SG staff continuously warned audiences that overemphasis on the annual test risked program success. In fact, the WarFit presentation included several slides that simply said, "It's About a Personal Fitness Program." According to Deena Ellin, WarFit co-designer, prior to presentations the speakers would disperse laminated cards printed with those words. Whenever audience questions or comments became too focused on fitness test issues, the presentation speakers would have the audience hold up these cards. In fact, many times the audience spontaneously raised their cards without being prompted.[44] Unfortunately, as of today the Air Force still directs greater attention to the test than on each airman developing a year-round aerobic, strength, stretching, and nutrition physical conditioning program. The test addresses how well an airman does for one hour each year, but does not reflect whether the airman worked out 156 days a year, as required for those attempting to maintain

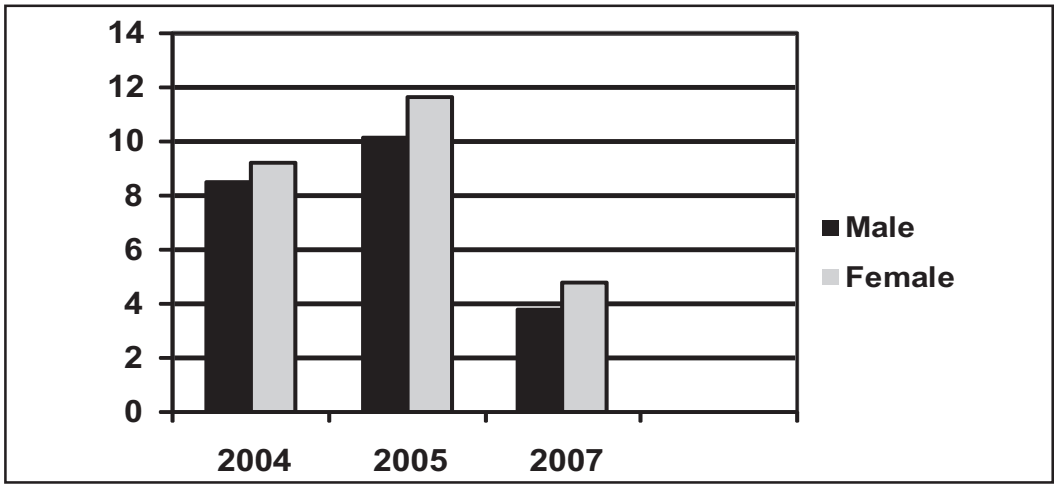


Figure 2. Percentage of Total Force Air Force Personnel in Poor Fitness Category by Gender

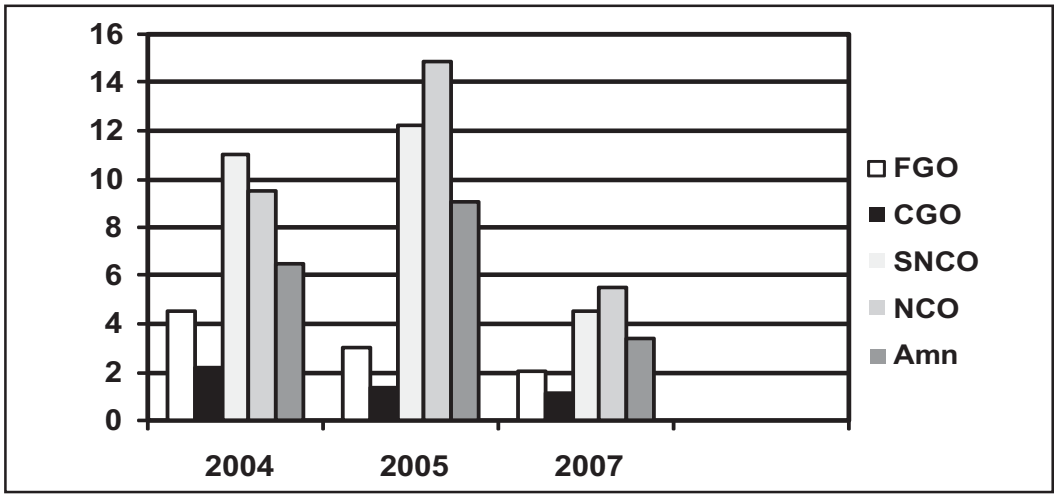


Figure 3. Percentage of Total Force Air Force Personnel in Poor Fitness Category by Rank

their current fitness level, or 260 times a year, as required, if they are trying to improve their current fitness level.

Individual and population fitness workout data is gathered on two separate military surveys, but unfortunately they do not align with the Air Force fitness assessment databases. One source of fitness activity can be extracted from the periodic DoD health-related behavior surveys which anonymously obtain active duty fitness behavior. Results have been published nine times since 1980.[45] The last publication occurred in December 2006 and reported survey information collected from April to August 2005. This edition notes that in 2005 only 66.9 percent of active-duty airman reported having moderate or vigorous physical activity in the past 30 days for 3 or more days per week. This percentage dropped to 45.9 percent when the question was restricted to only vigorous activity.[46] This is an alarming low rate considering this survey was conducted 16 months after the Air Force initiated Fit-to-Fight. It also identified only a slight improvement over the 64.9 percent rate identified by the Air Force Population Health Support Division in 2002—two years before Fit-to-Fight was initiated.[47]

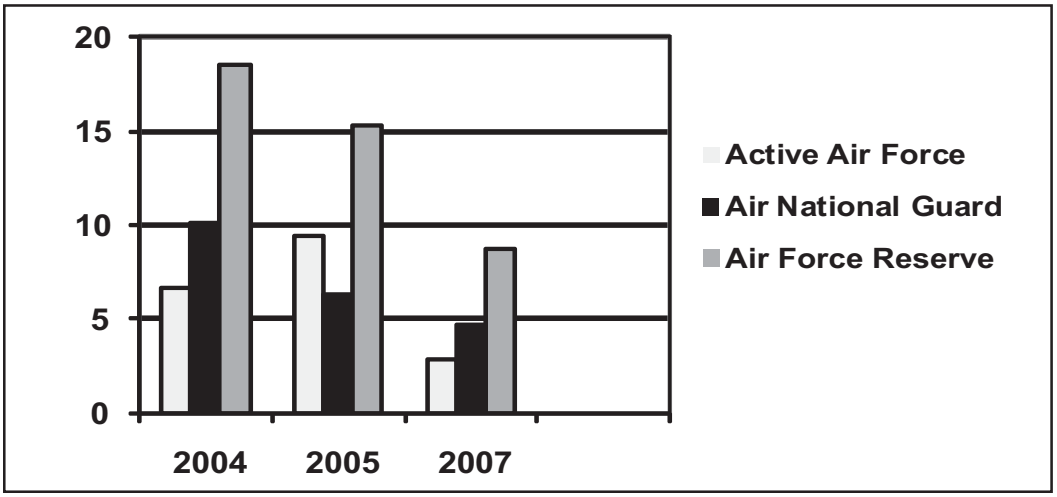


Figure 4. Percentage of Air Force Personnel in Poor Fitness Category by Component

A second source of fitness activity level can be extracted from the Periodic Health Assessment (PHA) data. Since January 2008, each airman has been required to complete an electronic health survey as part of their annual PHA assessments. This evaluation includes the following questions.

- In a typical week, on how many days do you do any VIGOROUS activities for at least 30 minutes that caused heavy sweating, or large increase in breathing or heart rate?
- In a typical week, on how many days do you do any MODERATE activities for at least 30 minutes that caused only light sweating, or slight to moderate increase in breathing or heart rate?
- In a typical week, on how many days do you do any physical activities specifically designed to strengthen your muscles such as lifting weight, push-ups or sit-ups?

Though data has not been formally analyzed, a cursory review of PHA questionnaire data from 156,286 airmen collected during the first 3 quarters of calendar year 2008 indicates a modest improvement in fitness activity as compared to the 2006 DoD survey report. Specifically, the percentage of airmen meeting Center for Disease Control (CDC) recommendations for weekly physical activity (two or more days of strength training and either three or more days of vigorous activity or five or more days of moderate activity) are demonstrated by the ranges depicted in Table 1.

In general, this data denotes a continued improvement in overall fitness activity among active-duty members. Yet, several issues limit absolute comparison to the 2002 and 2006 reports. PHA data is client-specific medical information, so survey data are not anonymous. In addition, PHA data summary combines compliance with aerobic conditioning and strength training, and thus depicts a better evaluation of fitness activity. The 2002 and 2006 reports were anonymous and only evaluated aerobic fitness activity. Finally, previous studies were presented as total population data, so it cannot be directly compared to subcomponents listed in Table 1.

		% Range Meeting CDC Weekly Physical Activity Goal
TOTAL SURVEY		73.18% - 75.15%
AGE	17-24	74.84% - 77.36%
	25-29	76.01% - 77.97%
	30-34	74.16% - 75.20%
	35-39	69.59% - 71.92%-
	40+	66.69% - 68.01%
GRADE	Enlisted	73.49% - 75.77%
	Officer	72.01% - 72.86%
GENDER	Male	74.89% - 77.07%
	Female	66.18% - 67.36%
BMI	Healthy Weight	71.92% - 73.92%
	Overweight	74.37% - 76.53%
	Obese	73.02% - 74.04%

Table 1. Air Force PHA Activity Level Questions for First to Third Quarter 2008

Despite these limitations, the PHA data present several discussion points. The Air Force deserves credit for continuing to improve fitness activity levels. The PHA data indicates a 6 to 8 percent improvement in personnel meeting CDC fitness activity standards as compared to results from the less stringent 2006 DoD survey. Unfortunately, at least 24 percent of Air Force active-duty members continue to not meet AFI fitness activity requirements. Thus 61 months after the Air Force set a year-round workout goal for all members one in four airmen remain noncompliant. A closer look at the numbers presents several other findings of concern.

- After age 29, fitness activity levels drop precipitously.
- Officers work out less than enlisted personnel.
- Females work out approximately 7.4 percent less than men.

- Overweight airmen (BMI 25.1-29.9) work out more than obese airmen (BMI ≥ 30).
- Overweight and obese airmen work out at a greater rate than airmen that are within healthy weight standards (BMI ≤ 25).

Although conclusive evaluation requires more extensive data analysis, this cursory review presents opportunities for immediate attention. My conclusion is that senior leaders and officers are not leading by example with regard to personal conditioning programs. The low female gender activity numbers reflect a significant deficit compared to men. It is possible low female fitness levels are merely related to medical conditions such as pregnancy, but assumptions should not delay further analysis and recommended resolutions. Accolades should be given for those overweight and obese members who established fitness regimes, yet 25 percent of members with overweight health risks are not meeting the activity levels most likely to reduce their risk.

To date, the Air Force has not formally taken action to address personal fitness programs, yet has expended substantial effort refining the annual fitness exam. In fact, the Air Force has made at least eight changes to the annual assessment process. Though some fitness assessment component changes were merited and effective, at least three contributed to further distancing the Fit-to-Fight focus from the AFI's main goal. These problematic changes are discussed below.

- 2005—Added A8.4, Run times/scores will be adjusted automatically in the AFFMS for those members who test at facilities with an altitude of 5, 000 feet or greater**.**
  Rationale. Airmen running above 5,000 feet require a point adjustment to account for the effects of altitude on aerobic capacity.
  Counter to rationale. The AFI already requires a 42-day acclimation period for all airmen prior to testing at new locations. This accurately compensates for altitude acclimation within the testing environments. Using the over 5,000 feet logic could be equally argued for all altitudes above sea level, thus the only fair scoring system would be a sliding scale of points per run time at a series of altitude intervals. It is interesting to note that no low-altitude college or professional sports teams are spotted *altitude adjustment* points prior to a game held above 5,000 feet.
- 2005—Added 3.2.2.1, Full complement of points (30) is awarded to those with a body composition BMI of ≤25 kg/m^2 regardless of AC measurements.
  Rationale for change. Air Force leaders felt if weight-to-height association fell within *normal* standards, BMI should take precedent over AC and the full 30 points should be earned.
  Counter to rationale. AC is an independent measure of the relative risk for cardiovascular disease. Multiple studies have determined AC risks are independent of height. Thus a male with a 40-inch AC has equal risk for cardiovascular disease whether they are 5 or 6 feet tall. Likewise for women with a 35-inch AC. Furthermore, abdominal adiposity health risks are independent of BMI.[48] At the very least, points awarded for ≤25 BMI should not be the full 30 AC points. Lieutenant Colonel Lisa Schmidt, the original author of AFI 10-248, believes such individuals should receive at most 22.5 points, 75 percent of possible 30 points. [49]
- 2007—Added fitness to officer and enlisted performance reports (OPRs/EPRs), requiring the most current fitness assessment be labeled as *met standards* (composite score 75 or greater) or *does not meet standards* (composite score less than 75), to include making report referrals, if the ratee does not meet standards.
  Rationale for change. Air Force leadership desired to factor health into promotion by giving additional information to promotion boards. This reinforced the importance of fitness in the warrior ethos and provided objective criteria when assessing which airmen should be separated from the Air Force.[50]
  Counter to rationale. By making OPR and EPR referrals for airmen not meeting fitness standards, it essentially makes the test a pass or fail event. Unfortunately, this compromises the intended purpose of the 1 to 100 composite score scale created to depict individual health risk along a continuum. In addition, the Air Force has not yet administered the fitness program sufficiently to warrant going to such a punitive route at this time. Specifically, as noted by the Air Force Audit Agency report, "the Air Force needs commanders to improve compliance with duty time workouts as directed by AFI 10-248."[51]

Limited Use of Fitness Data Base

The Air Force Fitness Management Systems (AFFMS), was implemented in early 2004, and designed as the primary repository of fitness assessment information, including dates, scores, and demographic information. The AFFMS links with several other Air Force databases, including the Military Personnel Data System and the Dental Data System. In addition, the system generates a series of reports, including individual evaluations with trended composite scores over time and comprehensive unit level reports. The reports are easy to generate and appropriate levels of database access are controlled at the base level.

The basic AFFMS program works well, but improvements need to be made. Currently many composite score cells have null values, making it very difficult to assure accuracy of reports, especially those compiled for large populations. The United States Air Force School of Aerospace Medicine identified this problem while compiling a comparative fitness score study from AFFMS data for the years 2004 to 2006. Colonel Jon Casbon, an Air Force flight surgeon and primary author of the study, stated that the data needed major cleaning up and that though the final analysis seems sound it "required us to take a lot of liberties and make assumptions."[52]

AF/SG's clinical information's branch (AFMSA/SGKRP) provided this author with a large AFFMS database in an effort to duplicate the study using 2006 to 2008 fitness data. Unfortunately, null problems remained evident in thousands of cells, making it very difficult to assure data integrity and to accurately duplicate all assumptions made during Colonel Casbon's analysis. Because of these extreme challenges this author abandoned efforts to perform a comparative study. The Air Force Audit Agency report also noted that AFFMS "data reliability showed an error rate that casts doubt on the data's validity."[53]

On the other hand, Dr Casbon's study provides an outstanding review of fitness test assessment between three testing cycles starting at the program stand-up. The data compared individual

airmen's composite fitness scores and 1.5-mile run times between 2004 and 2006. Among the many conclusions, the study determined that:

> [The] mean composite scores improved 3 to 5 percent for those in the marginal fitness category (this category was eliminated in August 2007[54]) and 22 percent in the poor category. Mean score for the 1.5-mile run improved by 3 to 4 percent in the marginal group and by 10 to 12 percent in the poor group.[55]

Furthermore, the study seemed to support the contention that airmen are focused on passing the fitness test and not improving personal fitness year-round.

> As hypothesized, results of the study indicate the new Air Force Fitness Program had little impact on those who already met fitness standards. The proportion of individuals in the good fitness category remained essentially unchanged and the excellent category increased by only 6 percent. Despite this apparent upward migration, mean composite scores showed little change and mean 1.5-mile run times were slightly slower in the combined good/excellent group.[56]

HAWC Staffing

The Fit-to-Fight Program experienced *collateral damage* because of changes made in October 2005 within Air Force Health and Wellness Centers (HAWC). In an effort to align active-duty positions with deployable skill sets and support manpower cuts, the AFMS transitioned the health promotion manager (HPM) role to a contract health educator position. Though meritorious from a force structure standpoint, the decision unintentionally shifted many HAWC administrative duties to the civilian fitness program managers (FPM). In fact, Deena Ellin states that in most HAWCs the FPM now serves as the de facto HPM.[57] The shift of these HPM duties coincided with additional FPM workload associated with maturing wing fitness programs. Specifically, the fitness AFI required FPMs to conduct fitness review panels for all members achieving three consecutive poor fitness scores. According to Ms Terri Jordan, FPM, Keesler AFB, Mississippi, these panels take only 15 to 30 minutes to conduct, but can take several hours to coordinate the schedules of all five panel members, In addition, FPMs are required to compile a three to four page post-panel report. (Note. The panels appear to foster greater testing success. Ms Jordan estimates 60 percent of airmen receiving a fitness review panel earn a composite score above 75 on their next fitness assessment.)[58]

AFI 10-203, *Duty Limiting Conditions*, dated 27 October 2007, further expanded FPM responsibilities. In order to establish consistency across each base, FPMs were granted sole authority to grant fitness exemptions for any member requiring exemptions greater than 30 days or for any member required to complete their fitness assessment in the next 30 days. [59] FPMs must meet with each member and establish a personalized exercise prescription that accommodates the member's duty restriction, yet maximizes fitness conditioning. The appointment and followup requires substantial planning and coordination.

Since 2004, many FPMs have also added running gait clinics in their HAWCs. These dynamic assessments "have been used in military clinics across the country to encourage safe training and injury prevention by providing proper equipment."[60] The analysis includes videotaping airmen running barefoot and with their current running shoes. Computer modeling determines foot-ground touch points, foot shape, height of arch, and degrees of foot pronation with each stride. Once the running gait is determined, the technician provides running education, then using a database determines the running shoe models best suited for proper fit and deemed functionally correct for the individual's gait.[61] These assessments are extremely popular and take 20 to 30 minutes per airman. Per Mr Brent Cowen, FPM, Hurlburt Field, Florida, "The clients absolutely love the shoe clinics. They are appreciative…that it points them in the right direction and…that it is free of charge. I would say 98 percent of the people that we have complete this training are totally satisfied."[62] At Hurlburt, the running gait analysis finds 75 percent of the airmen evaluated are wearing the wrong shoes.[63] Mr Cowen emphasized the benefit by stating, "having a shoe clinic in place provides us with very tangible results," and for those who "purchase the new shoes, the results are almost immediate."[64] Unfortunately, per Mr Cowan, the demand for running shoe analysis exceeds the scheduled appointments. Attempts are made to accommodate walk-in customers, but that is extremely "disruptive to the work flow."[65] Because of the many HPM taskings, Mr Cowan can only schedule six appointments per week, plus adds, on average, two walk-ins. In total he provides approximately 400 analyses annually. At this rate it would take 19 years to assess the entire base of 7,710 active-duty members.

Complicating the FPMs' success, many HAWCs continue to operate without the administrative support personnel that each wing is required to provide. When finally assigned these personnel need significant training to fully support all HAWC functions. Unfortunately, these employees regularly rotate out of these roles, leaving gaps and causing another steep learning curve when a replacement eventually arrives. In the meantime, the small HAWC staff must cover front desk duties, take all calls, and schedule attendance at the myriad of HAWC sponsored classes, panels, or one-on-one evaluations. A survey of FPMs in the spring of 2008 noted that only 33 percent of HAWCs were manned with permanent administrative support personnel.[66]

In addition to the duties described above, the FPMs oversee administration of the installation fitness program.[67] These duties include annual training of unit fitness program monitors, approving unit group physical training programs, and conducting annual quality checks on each unit's fitness and testing program.

Since 2004 the Air Force HAWCs have experienced a *perfect storm*. As the Air Force transitioned to a robust fitness platform and improved the active-duty profile system, the FPM's responsibilities increased by approximately 50 percent.[68] Unfortunately, this coincided with a decrease in overall HAWC staffing. According to Colonel Casbon, who has evaluated this situation from the headquarters and wing level, "HAWCs are not resourced adequately to provide the assistance required by the fitness AFI"[69]

Limited Fitness Education

Health and fitness education remain limited for the general Air Force population. Those scoring below 75 composite points on annual fitness testing receive education via the Healthy Living Program, Body Composition Improvement Program, or Fitness Improvement Program. Currently, no formal fitness education is mandatory for all airmen.

Ms Shannon Crumpton, Air War College exercise physiologist summarized this concern, "I believe the message was clear as to the intent of the fitness program; however, it lost its gusto not

long after roll-out."[70] Dr Casbon provides a similar view by saying: "The educational component is lacking. How do people learn about proper aerobic conditioning, strength and flexibility training, and especially healthy eating? This is generally only offered to those who are deemed unfit in the fitness test."[71]

Air Force Fitness—The Way Ahead

The Air Force Fit-to-Fight effort remains in the *toddler stage*. Fortunately, the Air Force established the FAB as a forum to continuously evaluate fitness program progress and propose improvements. Several fitness improvement options for the FAB to consider for immediate implementation are listed below.

Developing a Fitness Culture not a Fitness Program

The main goal of AFI 10-248 is for each airman to develop a robust fitness lifestyle across the spectrum of aerobic conditioning, strength and flexibility training, and healthy eating. To date, most Fit-to-Fight attention has been focused on annual testing, group exercise, and administrative action. The AFI goal remains sound, thus the Air Force must formerly develop action to meet this goal. Specifically, I suggest the Air Force change the AFI name to "Health and Fitness Program." This simple change will call attention to the AFI's far broader intent of establishing full spectrum health and fitness for each airman.

The FAB should also develop a series of health and fitness education tools for each airman to review. Furthermore, unit physical training leaders should regularly incorporate exercises from the education tools into group fitness activities with a brief reminder of the value this exercise adds to fitness programs. Education tools could be easily added to recurrent computer-based training requirements. Another education option would be to hold in-person briefings similar to suicide prevention and sexual assault prevention training that could include personalized health-fitness information at the unit, group, or wing level. Commanders and senior noncommissioned officers also need leadership training on health and fitness issues, specifically addressing their role in guiding subordinates to establish and maintain healthy lifestyles. The best mode of health and fitness training can be determined by the FAB, but individual and leadership education is long overdue.

Establish Random Fitness Testing

The current annual testing requirement presents several issues related to fairness and value. The annual fitness assessment meets the DoD annual test requirement, but fails to assure "Service members maintain physical readiness." To illustrate, two members earning a 75 and a 100 composite score, respectively, both technically earn passing assessments. Yet, the statistical likelihood these members will *maintain* physical readiness for the next 12 months vary dramatically. The composite score 0 to 100 spread reflects a health-fitness continuum measured against morbidity-mortality rates and muscular endurance standards. The value of each successive test point is merely a slight decrease of risk. Thus equating a 75 score and 100 score as equally reflecting sufficient fitness for the next 365 days is incongruent with science.

The Air Force further muddied the value of annual assessments by applying the fitness scores to OPRs and EPRs, thus reinforcing a distorted pass-fail labeling. In essence, an airman earning a 75 today earns the label *pass* while the airman earning 74.9 is labeled *fail*. From a health care and physical readiness perspective, the difference between these airmen is imperceptible. Yet, airman *75* need not prove his fitness capability for another 12 months, while airman *74.9* receives a series of beneficial and derisive interventions, to include retesting every 90 days until achieving a passing score.

Random fitness testing provides significant resolution to this problem. In essence, airmen with passing scores would be at risk for random fitness testing before the next due date. Risk of random selection could be adjusted relative to each airman's most recent fitness score. Thus, an airman with a 75 score faces significantly greater risk of random test selection than an airman with a 95 score. Randomly selected airmen would need to test within five duty days of notification. Minimal extensions for mitigating circumstances (on leave, experiencing their menstrual cycle, within their acclimation period) would be accounted for within the rules.

Clearly, the logistics need to be worked out, but Air Force fitness experts believe random testing puts the focus on year-long fitness activity and prevents a surge effort just prior to a self-selected fitness test date. Lieutenant Colonel Laura Trent, Chief, Operational Health Promotion and Public Health (AMC/SGP) stated, "A randomized fitness exam schedule would likely improve our overall fitness."[72] Ms Crumpton simply states, "…random testing reinforces being at the ready" and helps members "still too conditioned to 'the test' rather than understanding the overall benefit received from improved health and fitness."[73] Deena Ellin feels random testing would have benefit, but suggests a possible alternative option of having "units conduct a monthly or quarterly practice assessment and self-manage those individuals who did not meet standards" in order to "make it a more positive experience than a punitive requirement."[74]

Lieutenant Colonel Schmidt supports random testing, but identifies some concerns: "A random test would be a great way to keep members motivated throughout the year, but we would need to make it manageable for commanders."[75] Colonel Casbon also believes random testing would encourage people to work out more often.

> Many people get fit in time for their annual evaluation and then ease up on fitness activities the rest of the year. I think random testing would encourage people to work out often enough to be able to pass the test, and I like the idea of adjusting based on fitness score; but, I'm afraid there could be a tremendous administrative tail to random testing. Look at the drug demand reduction program. You have to build the system and processes to randomly identify people for testing. I would not want to see the additional burden placed on commanders.[76]

Colonel Casbon has valid concerns, but the Drug Demand Reduction Program (DDRP) does provide historical support for random testing. Drug use amongst military members became rampant during the Vietnam War, reaching 42 percent in 1971.[77] During this period an amnesty program resulted in 16,000 Servicemen admitting to heroin use at a level requiring drug abuse treatment.[78] In response, President Nixon developed a urinalysis program for the purpose of detection, education, and rehabilitation.[79]

Though successful for treatment, the nonpunitive urinalysis did not reduce drug use to acceptable levels. In fact, "the 1980 DoD Survey of Health Related Behavior Among Military

Personnel showed that 27.6 percent of Service members had used an illegal drug in the past 30 days."[80] "The need for the stronger drug policy was further supported by a jet crash in May 1981 on the aircraft carrier *USS Nimitz*. Autopsies of 13 personnel killed in the crash revealed that 6 had recently used marijuana and the pilot had especially high levels of antihistamine not prescribed by a doctor."[81] The lethal accident and stunning survey results ushered in a punitive drug abuse detection process.

DoD established DDRP in 1981 to deter members from using prohibitive drugs which negatively impact the unique hazardous conditions associated with military work. Since its inception, DDRP has claimed stunning results. In 2007, positive active duty drug testing remained below the 2 percent goal. In fact, per Mr William O. Cooley, Air Force Drug Demand Reduction Program consultant, Keesler Air Force Base, Mississippi, the Air Force rate has remained below 1 percent for 15 consecutive years.[82]

In 2000, DDRP studies determined that the vast majority of positive drug tests occurred among the ranks of E1 to E4 and 01 to 02. In response, DoD implemented Smart Testing and increased annual random testing among these ranks to 100 percent of the total population. Per Air Force Medical Operations Agency (AFMOA), "there was an initial small increase in positives when the program was implemented that lasted for a couple of years. However, in 2005 the positive rate was less than 2004 and continued to decrease through 2007 with 2008 expected to show further declines in positives."[83]

Similar to *zero tolerance* for illicit drug use, the Air Force should establish *zero tolerance* for poor fitness. Random fitness assessments would greatly support this effort and greatly reinforce the AFI year-long fitness goal. With the goal of encouraging year-long fitness, random fitness testing could be initiated using Smart Testing format. There are a many options, but I would suggest individuals with fitness scores between 75 and 85 would be at risk for random testing starting 45 days after the previous test. Members with scores of 85 to 95 would be at risk starting at 90 days. In addition, those achieving over 95 would be exempt until their annual date. Any airman not chosen randomly would test before their normal annual due date. The random selection process could be done centrally or at the wing level, and then sent down via the HAWC to unit fitness program managers. Though similar to random drug testing, the five-duty-day testing window makes the entire administrative process less time sensitive than those associated with urinalysis. The FAB should determine a feasibility study for random fitness testing.

Chief Master Sergeant Rodney McKinley, AF/CCC, has suggested testing should be conducted at least twice a year. A recent Air Force Times article also stated McKinley is encouraging commanders to direct on-the-spot testing.[84] Though possible, this practice will result in inconsistent administration between units. A random test would mitigate this risk and prevent allegation of commander bias.

Wear of Pedometers with Military Uniforms

There are many days demands of military life prevent time for formal physical workouts. Airmen, on these days, would benefit from additional walking during normal daily activities. Fitness experts suggest taking 10,000 steps per day (approximately 5 miles) as a reasonable goal to achieve adequate daily physical activity levels. Pedometers, small devices worn on waistbands, count the number of steps taken by a person over a period of time. A review of 26 pedometers studies with 2,767 participants concluded users significantly increased their physical activity by 2,491 steps per day more than control participants. Overall, pedometer users increased their physical activity by 26.9 percent over baseline. When data from all studies were combined, pedometer users decreased their body mass index by 0.38 and noted favorable changes in their systolic blood pressure.[85]

Currently, military members are restricted to wearing a single device on their waste in any uniform. Amending policy to permit a pedometer plus one other device would be a simple, pragmatic, and visionary step toward improving the Air Force fitness culture.

Improve HAWC Staffing

The AF/SG Health Promotions Operations recently secured additional HAWC manpower for bases exceeding 5,000 active-duty members. During fiscal year 2010, 24 bases will gain fitness technicians. In addition, contract health educators (HE) in the many HAWCs will be converted to government civilian employees; these civilian job descriptions will be written to allow HEs to assume the HPM role. Per Major Dana Whelan, Chief, Air Force Health Promotion Operations, these changes will help reduce the burden on exercise physiologists and reestablish a balance within the HAWCs. "It is not a complete answer for the HAWCs, but it will definitely help, especially the large HAWCs."[86]

AF/SG and the FAB should perform a comprehensive manpower study of HAWCs to determine actual staffing requirements, then aggressively provide proper personnel. Air Force leadership should ensure every wing fills the HAWC administrative position and maintain that person in place for minimal period of time (as determined appropriate by the FAB).

Increase Analysis of Fitness Data

AFMSA and FAB should develop robust use of the health and fitness data available via AFFMS, PHA surveys, and other medical databases. Studies, especially if carried out long term, could assess the impact of self-reported activity levels on health and annual fitness scores. Repeating the Casbon study using 2007 and 2008 data would be a great initial study. Refining the AFFMS data entry process to minimize null cells and other data clutter needs to be a priority, but should be fairly easy to accomplish.

Conclusion

Air Force leadership can be proud of building the strongest fitness program in Air Force history. Improvement in personal fitness and total force fitness is evident by significant reductions in poor fitness test scores and slightly improved fitness activity levels. Unfortunately, 24 percent of the force still has not achieved adequate fitness levels to meet Air Force standards or help decrease personal morbidity and mortality risks associated with low-level fitness. The Air Force should pat itself on the back for taking a giant step forward, but then immediately set a course on continued advancement. Specifically, the Air Force must direct efforts toward building an Air Force fitness culture that emphasizes robust, comprehensive fitness lifestyles, rather than a fitness program that focuses on annual fitness testing and administrative details.

Notes

1. Air Force Instruction 10-248, *Fitness Program*, 22 September 2006 (Incorporating Change 1), 1.

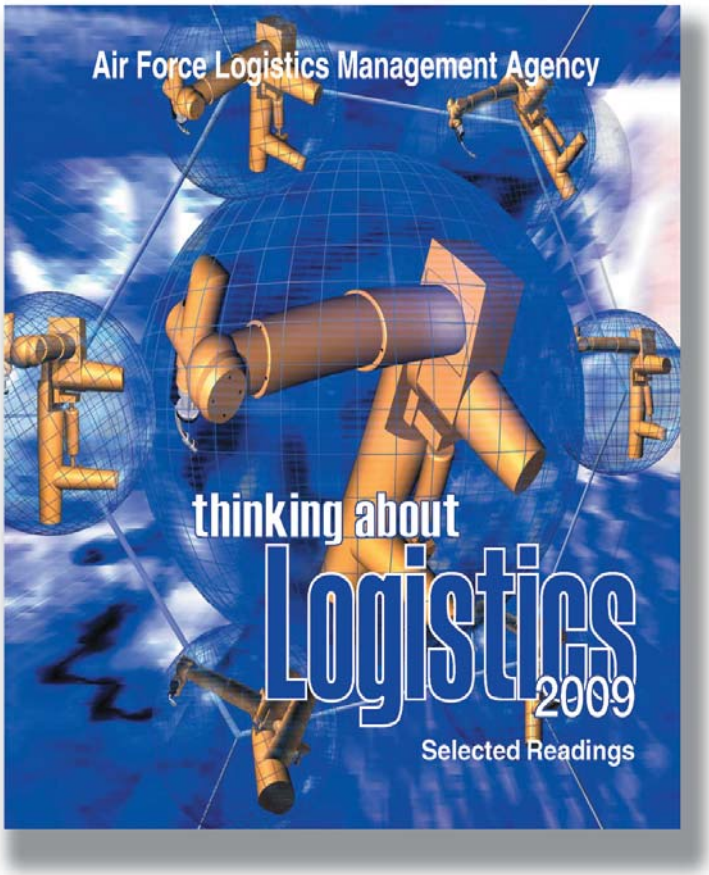
2. Department of Defense Instruction 1308.3, *DoD Physical Fitness and Body Fat Programs Procedures*, 5 November 2005, 2.
3. Department of Defense Instruction 1308.3, 2, 4-6.
4. Omar Bradley and Clay Blair, *A General's Life*, New York, New York: Simon and Schuster Inc, 1983, 106.
5. Major Mark A. Forman, *Too Fat to Fight—Too Weak to Win, Soldiers Fitness in the Future*, Leavenworth, Kansas: US Army Air Command and Staff, 1997, 4.
6. Major Richard T. Gindhart, *The Air Force Physical Fitness Program Is It Adequate?* thesis, Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, April 1999, 14.
7. Gindhart, 14-15.
8. Forman, 22, 26.
9. Major Kenneth H. Cooper, *Aerobics*, New York, New York: M. Evans and Company, 1968, 17.
10. Cooper, 62.
11. Air Force Instruction, 40-501, *The Air Force Fitness Program*, 1 October 1998, 13.
12. Air Force Instruction, 40-501, 15.
13. William J. Wilkinson, et al., "Physical Fitness & Health: A Comparative Review of the US Air Force Fitness Program," United States Air Force Research Laboratory, SM-FE-BR-TP-2000-0001, January 2000, 3.
14. Lieutenant Colonel Thomas F. Roshetko, "An Analysis of Air Force Fitness Policy, Culture, and Impact, graduate thesis, Air War College, Maxwell Air Force Base, Alabama, 29 May 2003, 5-6.
15. M. C. Walsh, et al., "Comparison of Self-reported with Objectively Assessed Energy Expenditure in Black and White Women Before and After Weight Loss," *American Journal of Clinical Nutrition*, 79, 2004, 1013-1019.
16. Roshetko, 17.
17. Park A. Lockwood, et al., "Comparison and Cross-Validation of Cycle Ergometry Estimates of VO2 Max," *Official Journal of the American College of Sports Medicine*, Vol 29, No 11, 1997, 1512, 1514-1515.
18. Roshetko, 18.
19. Harley G. Hartung, PhD, et al., "Prediction of Maximal Oxygen Uptake from Submaximal Exercise Testing in Aerobically Fit and Nonfit Men," *Aviation, Space, and Environmental Medicine*, August 1993, 735-736.
20. AFSPC, "WarFit" Fitness Improvement Initiative Power Point presentation, AFSPC/SG, August 2003, slide 3
21. *Ibid*.
22. AFSPC, "WarFit" Fitness Improvement Initiative Power Point presentation, slide 5.
23. Air Force Instruction 40-502, *The Weight and Body Fat Management Program*, 1 July 1999, 28-30.
24. AFSPC, "WarFit" Fitness Improvement Initiative Power Point presentation, slide 14.
25. Officer and Enlisted Discharge for Failure to meet Weight and Body Fat standards, HQ Air ForcePC/DPSART, 7 May 2003.
26. Deena Ellin, "AFSPC WarFit Results to Date," Talking Paper, HQ AFSPC/SGO, Peterson Air Force Base, Colorado, 15 May 2003.
27. Brook Bates, "Steve Blair Speaks on the High Risk of Physical Inactivity," Talking on UGA, 26 April 2008.
28. "Fit, Fat and Healthy," [Online] Available: http://www.theage.com.au/articles/2003/10/05/1065292465637.html, 6 October 2003.
29. Roshetko, 15-16.
30. Barbara Palmer and Becky Singer, *A Review of the Proposed Changes to the Air Force Fitness Program*, The Air Force Medical Operations Agency, February 2003, 1.
31. Palmer and Singer, 2.
32. Palmer and Singer, 12-13.
33. Palmer and Singer, 10.
34. *Ibid*.
35. General John J. Jumper, "Focus on Fitness—Are You Fit-to-Fight?," *TIG Brief*, January-February 2004.
36. Air Force Services Agency, "Right Start," Power Point Presentation, Air Force/SVC, October 2008, NP.
37. *Ibid*.
38. Air Force Services Agency, "Design: Fitness Centers," *Air Force Facilities Services Facilities Design Guide*, AF/SVC, 30 December 2005.
39. AFMSA/SG3O, *Air Force Fitness Program Annual Report*, 1 January 2004 - 31 December 2004, 2-4.
40. *Ibid*.
41. AFMSA/SG3O, *Air Force Fitness Program Annual Report*, 1 January 2007 - 31 December 2007, 3-5.
42. AFMSA/SG3O, *Air Force Fitness Program Annual Report*, 1 January 2007 - 31 December 2007, 6.
43. Air Force Audit Agency, *Air Force Fitness Program Audit Report*, F2009-004-FD4000, 11 December 2008, 2.
44. Author's interview with Deena Ellin, AFSPC/SGP, Air Fitness Program Consultant, October 2008.
45. Department of Defense, *2005 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, Report RTI/7841/106-FR (RTI International), December 2006, 4.
46. Department of Defense, *2005 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel*, 153.
47. Roshetko, 5.
48. W. B. Kannel, L.A. Cupples, et al., "Regional Obesity and Risk of Cardiovascular Disease: The Framingham Study," *American Journal of Clinical Epidemiology*, 44:183-190, 1991.
49. Lieutenant Colonel Lisa Schmidt, e-mail, 24 October, 2008.
50. Patrick Winn, "Get Fit (They're not Kidding)—Leaders Want You to Be Strong. They'll Help, But Only So Long," *Air Force Times*, 13 August 2007, 14.
51. Air Force Audit Agency, 2.
52. Author's interview with Colonel Jon Casbon, US Air Force, MC, FS, 55 MDOS/CC, 8 October 2008.
53. Air Force Audit Agency, 14.
54. AFMSA/SG3O*, Air Force Fitness Program Annual Report*, 1 January 2007 - 31 December 2007, 6.
55. J. M. Casbon, et al., "Physical Fitness Improvement in a Cohort of United States Air Force Personnel, 2004 to 2006" United States Air Force School of Aerospace Medicine, Brooks City-Base, Texas, 7.
56. Casbon, et al., 8.
57. Author's interview with Deena Ellin, AFSPC/SGP, Air Fitness Program Consultant, October 2008.
58. Author's interview with Terri Jordan, Fitness Program Manager, Keesler Air Force Base, MS, 7 November 2008.
59. Air Force Instruction 10-203, *Duty Limiting Conditions*, 27 October 2006, 8.
60. Shari Tomasetti and Mark Jacobs, "Digital Image Running Injury Prevention Program," *Armed Forces Comptroller*, Winter 2003, [Online] Available: http://entreprenuer.com/tradejournals/article/101529110.html, 2.
61. Tomasetti and Jacobs, 1.
62. Brent Cowen, Fitness Program Manager, Hurlburt Field, Florida, e-mail, Subject: Fitness/Running Shoe information, 5 December 2008.
63. Brent Cowen, e-mail, Subject: Fitness/Running Shoe Information, 26 November 2008.
64. Cowen, e-mail, Subject: Fitness/Running Shoe Information, 5 December 2008.
65. Cowen, e-mail, Subject: Fitness/Running Shoe Information, 26 November 2008
66. Deena Ellin, Air Force Fitness Program Consultant, Peterson Air Force Base, Colorado, e-mail—Subject: 3As in HAWCs, 21 November 2008.
67. Air Force Instruction 40-501, 14.
68. Author's interview with Deena Ellin, Air Force Fitness Program Consultant, Peterson Air Force Base, Colorado, 21 November 2008.
69. Colonel Jon Casbon, 55 MDOS/CC, Offut Air Force Base, Nebraska, e-mail, 16 October 2008.
70. Shannon Crumpton, Unit Fitness Program Manager, Maxwell Air Force Base, Alabama, e-mail, 5 November 2008.
71. Casbon, e-mail, 16 October 2008.
72. Lieutenant Colonel Laura Trent, Chief, Operational Health Promotion, Scott Air Force Base, Illinois, e-mail, Subject: Seeking Your Help, Fitness Program Questions, 23 October 2008.
73. Crumpton, e-mail, 5 November 2008.
74. Deena Ellin, Air Force Fitness Program Consultant, Peterson Air Force Base, Colorad, e-mail, Subject: WarFit Question, 24 October 2008.
75. Lieutenant Colonel Lisa Schmidt, 42 MDOS/CC, Maxwell Air Force Base, Alabama, e-mail, Subject: Fitness Program Questions, 24 October 2008.
76. Casbon, e-mail, 16 October 2008.
77. L. N. Robins, *The Vietnam Drug User Returns* (Series A, Number 2), Washington, DC: Government Printing Office, May 1974.
78. Elaine Casey, "History of Drug Use and Drug Users in the United States," Schaffer Library of Drug Policy, [Online] Available: http://www.druglibrary.org/schaffer/history/casey1.htm, 29.
79. Mark Biegel and James F. Holcomb, "A Study of Department of Defense Drug Abuse Prevention and Control Programs," Contract

DAHC 15-73-C-304, Cambridge Massachusetts: Arthur D. Little, Inc, January 1975 (AD-AO17576).
80. "DDRP history resource reference in, "Highlights, 2002 Department of Defense Survey of Health Related Behaviors Among Military Personnel," [Online] Available: http://www.tricare.mil/main/news/dodsurvey.htm.
81. Perrin Clausen, "EA-6B Crash on Nimitz Attributed to Pilot Error," *Aviation Week & Space Technology*, 117: 22-23, 16 August 1982.
82. Author's interview with William O. Cooley, Air Force Drug Demand Reduction Program Consultant, 81 MDOS, Keesler Air Force Base, Mississippi, 10 November 2008.
83. William O. Cooley, Air Force Drug Demand Reduction Program Consultant, 81 MDOS, Keesler Air Force Base, Mississippi, e-mail—Subject: Smart Testing, 1 December 2008.
84. Michael Hoffman, "PT Shape-up: Air Force Officials Looking at Everything to Improve Fitness Program," *The Air Force Times*, 24 November 2008, 14.
85. Dena A. Bravata, et al., "Using Pedometers to Increase Physical Activity and Improve Health: A Systematic Review," *JAMA,* 21 November 2007, 2296.
86. Author's interview with Major Dana Whelan, Chief, Air Force Health Promotion Operations, 8 December 2008.

Colonel Thomas F. "Chet" Roshetko *earned a bachelor degree in nursing from Bowling Green State University, Ohio and was a direct commission in January 1986. He subsequently earned a masters degree in human resource management from Troy State University, Alabama. Colonel Roshetko has held a variety of assignments during his career—staff nurse on multiple inpatient units, emergency room evening supervisor, TRICARE contract administration, flight commander, and Air Mobility Command/SG executive officer. He has served as Commander, 1st Special Operations Medical Operations Squadron, Hurlburt Field, Florida and Commander, 81st Inpatient Operations Squadron, Keesler Air Force Base, Mississippi. He co-designed the Air Force Fit-to-Fight policy. At the time of writing he was a student at the Air War College, Maxwell Air Force Base, Alabama.*

Available Now

Newest Book:
What You Need, When You Need It!



Thinking About Logistics 2009 is a collection of 37 essays and articles—in three sections: Historical Perspective, Contemporary Thought, and Issues, and Studies and Analyses—that lets the reader look broadly at a variety of logistics areas. Included in the volume is the work of many authors with diverse interests and approaches.

The content of *Thinking About Logistics 2009*, ranging across approximately 10 years, was selected for two basic reasons—to represent the diversity of ideas and to stimulate thinking.

Items contained in *Thinking About Logistics 2009* may be reproduced without permission; however, reprints should include the courtesy line "originally published by the Air Force Logistics Management Agency."

AFLMA
Generating Transformational Solutions Today; Focusing the Logistics Enterprise of the Future