

Initiative

6

Develop and implement national medical and physical fitness standards that are equally applicable to all firefighters, based on the duties they are expected to perform.

Executive Summary

The initial report of the first Firefighter Life Safety Initiatives Summit, and subsequently the Everyone Goes Home program, identified the need for national medical and physical fitness standards for all firefighters¹. Summit participants acknowledged the importance of increasing the emphasis on health, wellness and fitness within the fire service and reported that "...the most significant reductions in line of duty deaths are likely to be achieved through increased medical surveillance and physical fitness programs"¹. To demonstrate the scope of the physical fitness issue, the United States Fire Administration estimates that "737,000 firefighters serve in fire departments with no program to maintain basic health, most of them volunteers with less than 5,000 population 2006). The 6th Initiative seeks to increase awareness of the need for medical and physical wellness programs for every firefighter.

Relevant NFPA Guidelines

The National Fire Protection Agency (NFPA) has published two standards that are particularly important with regard to firefighter health: NFPA Standards 1500² and 1582³. The first sets forth standards for Fire Department Occupational Safety and Health programs and the second presents the Standard on Comprehensive Occupational Medical Programs for Fire Departments. Despite the fact that NFPA standards are optional for adoption by fire departments, they provide important and comprehensive guidelines for practices within the fire service.

NFPA 1500² recommends that all fire service personnel who engage in emergency operations be required to meet annual physical performance requirements (10.2.1 and 10.2.3). They recommend that those who are not found to meet requirements not be permitted to work in emergency operation situations (10.2.4). Instead, they recommend that those members be enrolled in a rehabilitation program until such time that they are able to fulfill the expected

occupational requirements (10.2.5). Furthermore, NFPA recommends that all departments implement a wellness program with the intent of preventing health problems and for the enhancement of overall well-being (11.2.1).

Recommendation # 1: *If your department does not currently have copies of relevant NFPA standards relating to firefighter medical standards, obtain them and begin the process of applying the standards to your organization.*

Recommendation # 2: *Standard Operating Procedures (SOPs) must be reviewed regularly to ensure they reflect the organization's policies regarding medical and physical standards, especially as regarding fitness for duty.*

NFPA 1582³ proposes a comprehensive medical evaluation for all candidates (6.1) and annual evaluations for all fire department members (7.1.1). For medical evaluations, the standard suggests comprehensive evaluation of all body systems. Conditions are classified as either Category A or Category B.

Those with Category A conditions are considered to not meet the standard's medical requirements (6.2.2). Those with a Category B designation can meet the standard's medical requirements as long as the condition does not interfere with the individual's ability to perform essential tasks or pose a significant safety or health risk (6.2.3). Examples of Category A conditions are uncontrolled hypertension, chronic vertigo, renal failure, and spinal surgery that resulted in the fusing of vertebrae. Several cardiac conditions also are classified as Category A including: coronary artery disease, cardiomyopathy or congestive heart failure, acute pericarditis, endocarditis or myocarditis, recurrent syncope, or the placement of a pacemaker (6.9.1.1). Where it is allowable by law, tobacco use also is considered a Category A condition (6.22.1.1).

NFPA 1582³ also provides guidance for annual physical fitness assessments. It is suggested that the assessments serve as a baseline measurement of fitness and that subsequent years of assessment be compared against baseline findings and previous year's results rather than against a standard (8.2.1.1). The standard recommends that evaluations consist of body composition measures (waist circumference, plethysmography or hydrostatic weighing, skinfolds, bioelectrical impedance), an assessment of aerobic capacity (step test or treadmill), muscular strength evaluation (grip strength, leg strength and arm strength), an assessment of muscular endurance (push-up evaluations and curl-up evaluations), and an evaluation of flexibility (sit & reach).

According to Fischler⁴, despite requirements by OSHA and recommendations from NFPA, many departments have elected not to require annual physical exams. Overall, 32% of departments do not require exams. Fully career departments are most likely to require exams (77.8%) and fully volunteer departments are least likely (57.8%). Among those departments that require annual exams, the trend is toward requiring all

firefighters who respond to a fire to have exams rather than only those whose duties include using a breathing apparatus.

Recommendation # 3: *Seek resources, support and funding for annual exams for all firefighters.*

Identified Challenges

While several individual departments have been able to implement department level requirements, there remains no national level standard for physical and medical health due to several implementation challenges. In particular, the challenges of mandatory requirements for all types of departments and the “culture” of the fire service as it contributes to negative health habits have been noted. Specific attention needs to be paid to the identified challenges in the development of national standards.

Recommendation # 4: *Recognize that the culture of your department plays an important role in how all aspects of health and wellness initiatives are supported in the organization. Leaders should strive to challenge those aspects of the culture which do not support healthy life style choices. Policies such as no-smoking on fire department premises or in fire department vehicles can support health.*

One challenge of implementing national standards lies in the vast differences among and between different fire departments. While some departments tend to be progressive in their health and wellness initiatives and fully support NFPA 1582³, others are hesitant to implement or offer any health programs. This discrepancy is likely due to factors such as funding and the type of department (career, volunteer, combined). For instance, while the rate of line of duty deaths is currently higher among volunteer firefighters than career firefighters¹, volunteer departments also are least likely to require or offer annual physicals⁴.

Because not all departments will have the means to implement mandatory comprehensive physical exams for their entire departments, it will be necessary to develop a screening program that can serve as a minimum standard that is easily implemented, low cost, and portable while focusing on significant predictors of disease risk and poor health.

Recommendation # 5: *Work to develop and implement low cost screening protocols which can act as indicators. Such protocols could include mandatory monthly blood pressure screening for all employees at the station level.*

Participants of past summits discussing the Everyone Goes Home Life Safety Initiatives have highlighted the difficulties in implementing uniform standards for all firefighters. In particular, they suggest that the relatively new focus on physical fitness and health unfairly disadvantages older firefighters who were not held to such standards in the earlier days of their careers⁵. It has been suggested that, as physical fitness requirements (e.g. CPAT requirements) are implemented

for entry into the fire service, improved health of the fire service in general will naturally follow with both the addition of healthier new members and attrition through retirement of more senior members. However, information available through trade magazines, personal testimony and research⁶ indicates that the culture of the fire service currently is one that encourages poor health behaviors. For instance, researchers from Harvard University⁶ followed a group of firefighters as part of a medical surveillance program for five years. They found a significant increase in the proportion of firefighters who were obese across the observation period (i.e., an increase from 35% to 40%). While their findings indicated that obese firefighters gained an average of 1.9 pounds per year of active duty, they also found that those who were classified as having normal BMIs gained an average of 1.1 pounds per active duty year.

In addition to the above-cited concerns, Coleman⁷ highlighted others identified by several firefighter unions about the consequences of chronically poor health screenings. He stated that while unions are concerned with the health and safety of their members, they will more likely be worried about the perceptions of others (e.g., public, politicians, administration) regarding the health screening outcomes, especially if they are negative. For all firefighters, the intent of medical and fitness standards should be aimed at improving the health of the fire service community rather than solely punishing those who are most in need of intervention.

Recommendation # 6: *Work with labor organizations to promote health within the fire service by utilizing programs such as the IAFC/IAFF Joint Management Wellness-Fitness Initiative specially designed for small and medium-sized fire departments and the National Volunteer Fire Council's Heart Healthy Firefighter Program (see References).*

Suggested Standards

With relation to medical standards, it is recommended that the Category A classifications proposed by NFPA 1582³ be enforced as diseases are identified. The standard's recommendations are comprehensive in identifying those diseases that are most likely to interfere with duty-related activities. Implementing the standards as written and limiting duty activities based on these classifications for diseases that are not modifiable will likely result in a decrease in line of duty deaths.

While the standards for physical fitness evaluations suggested by NFPA 1582³ and NFPA 1583⁸ provide guidelines for comprehensive measures of physical fitness, they do not appear to be sufficient for reaching the goal of decreasing firefighter mortality by 50%. One of the primary deficits of the suggested programs is that they are so in-depth that they are difficult for all departments to implement. Throughout the protocols, the standard calls for clinical decisions to be made by the "department physician" and goes so far as to outline methods for selecting a department physician. The hiring of a department

physician is ideal and, for those departments that are able to do so, is highly recommended as the preferred method for assessment and ongoing observation of fire member health. However, findings from department surveys indicate that even the most basic annual physical assessments are not completed uniformly and, in particular, are not being completed by those departments with fewer resources⁴. The proposed methods for physical fitness assessment, as put forth by NFPA 1582³, NFPA 1583⁸ and the Fire Service Joint Labor-Management Wellness-Fitness Initiative⁹ are well validated and thorough. The challenge for many departments is that the assessments require expensive equipment and extensive time commitments by both the fire service member charged with overseeing the evaluations and the fire service members required to complete the evaluations. Again, while the standards should be highly regarded as the “gold standard” of evaluations, the fact that they are not uniformly or universally implemented is evidence that there are significant roadblocks to executing the standards across departments. Therefore, it is suggested that, in order to meet the 6th initiative of the Everyone Goes Home Program, a program be adopted that can be used as a *minimal* standard across the fire service. To that end, it is necessary that the assessments be as inexpensive and easy to implement as possible while maximizing the ability of the test to identify significant health concerns.

Recommendation # 7: *If your department does not employ or have the services of a local physician due to cost, seek out the advice of a local hospital or other health organization to support your efforts to adopt national recognized medical and physical standards.*

One suggestion of the participants in the Life Safety Initiatives Summit¹ was to look for models outside of the fire service that have been effectively implemented in similar settings. In line with that suggestion, it is recommended that fire service leaders consider using the physical fitness standards of the United States Air Force (USAF) which has been successfully implemented¹⁰. Their standards are based on scientific research which provides results concerning levels of risk for both disease (morbidity) and death (mortality) and all active duty USAF personnel are successfully evaluated on an annual basis at a minimum. The physical fitness assessments and associated standards for the USAF are outlined below:

Body Composition Assessments are based on two measures. First, Body Mass Index (BMI) is calculated based on height and weight. BMI is calculated as weight in pounds divided by height in inches squared multiplied by 703 ((lbs/inches²)x703) Current cut-offs for underweight, normal weight, overweight and obese are provided by the World Health Organization¹¹. Second, body composition is assessed by abdominal circumference. Age and gender appropriate waist circumference measures also are available from the National Institutes of Health¹² (Appendix A).

Aerobic Fitness Assessments are made based on result times of a 1.5

mile run. For those who are medically exempted from the run, the USAF allows for the use of a cycle ergometry test (Appendix B and Appendix C).

Muscular Fitness Assessments are based on two measures. First, there is a one minute timed push up test to assess upper body strength/endurance. Abdominal strength/endurance is measured using a one minute timed crunch test (Appendix D).

Recommendation # 8: *Work with allied or “like” organizations for other models of health assessment which might be incorporated into your program.*

Prior to completing the physical fitness assessment, all participants are required to complete a Pre-assessment Screening Questionnaire (Appendix E). For those with a positive screening, additional clearance is required from the participant’s physician. Physicians can indicate an exemption from any of the tests. Composite scores are calculated taking into account the exempted tests. Composite scores are based on measures of aerobic fitness, muscular strength, and body composition. Participants are scored on a scale of 0 to 100 with maximum allowable points for aerobic fitness (max 50 points), body composition (max 30 points), push-ups (max 10 points), and crunches (max 10 points). Once measures are completed, age and gender specific scores are calculated based on pre-identified standards. Fitness levels are based on composite scores (Appendix F). Those with a score of 90 or greater are classified as having *Excellent* health. Those between 75 and 89.99 points are considered to have *Good* health. Scores between 70 and 74.99 points are classified as having *Marginal* health. Those with a score under 70 are considered to have *Poor* health. While NFPA 1582³ recommends that the results of fitness evaluations be used solely for the personal comparisons to previous year’s outcomes, providing the information to fire service members solely for their own information will likely not result in any significant changes in firefighter health on a national level. It is well known that simply providing health information is not sufficient for creating a change in behaviors, particularly major lifestyle changes. The model used by the USAF¹⁰ is that outcomes of the assessments are used to monitor future health and schedule future assessments (Appendix G). The USAF requires that those with *Excellent* or *Good* scores be re-assessed at 12 months and those with *Marginal* or *Poor* health be reevaluated between 45 and 90 days after their initial screening. The 45 day minimum assessment time is set in order to allow time for changes in lifestyle activity.

Changes in lifestyle are facilitated by involvement in health and wellness programs such as smoking cessation or weight loss plans. Some examples of such programs could include those made available to the fire service by the Fire Service Joint Labor-Management Wellness-Fitness Initiative⁹ or the programs available from the National Volunteer Fire Council’s Heart Healthy Firefighters Program¹³ or those recommended by NFPA 1582³ and NFPA 1583⁸. In the USAF, improvement is consistently monitored across time and active involvements in

changing health practices and reaching minimal physical fitness standards is mandated as a condition of maintaining employment.

There are several benefits associated with the proposed physical fitness assessments as follows: (1) the standards require a limited amount of materials which reduces costs and makes the assessments more feasible for departments with fewer resources; (2) they are easy to administer making compliance with physical standards possible for all departments regardless of their make-up (e.g. career, career/volunteer, volunteer); (3) the proposed standards are based on scientific studies of risk.

In the absence of more extensive testing, when it is not feasible, assessment measures can identify those most at risk for later health problems; (4) annual physical fitness assessments can provide an important gauge of a department's health and; (5) the standards can be used as a *minimal* suggestion for assessment. While there are obvious challenges to implementing these types of standards and subsequent requirements for those who do not meet standards, drastic measures are necessary if the fire service is serious about making a difference in firefighter mortality.

Recommendation # 9: *Help create a culture where there is mutual support among members to implement physical and behavior wellness.*

Conclusion

Standards such as NFPA 1582³ and NFPA 1500² have been available since the late 1980s, yet no significant reduction in cardiac-related deaths has been observed. It appears as though the current actions and standards are not producing enough of an effect to reach the goals of the Everyone Goes Home Initiatives. As the safety of the entire crew of firefighters rests on the wellness of each member, it is highly recommended that the fire service as a whole work toward a healthier workforce. The ultimate goal of this initiative should not be to force people from their positions, but rather to help them move toward improved health.

Recommendations

Recommendation # 1: If your department does not currently have copies of relevant NFPA standards relating to firefighter medical standards, obtain them and begin the process of applying the standards to your organization.

Recommendation # 2: Standard Operating Procedures (SOPs) must be reviewed regularly to ensure they reflect the organization's policies regarding medical and physical standards, especially as regarding fitness for duty.

Recommendation # 3: Seek resources, support and funding for annual exams for all firefighters.

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Recommendation # 5: Work to develop and implement low cost screening protocols which can act as indicators. Such protocols could include mandatory monthly blood pressure screening for all employees at the station level.

Recommendation # 6: Work with labor organizations to promote health within the fire service by utilizing programs such as the IAFC/IAFF Joint Management Wellness-Fitness Initiative specially designed for small and medium-sized fire departments and the National Volunteer Fire Council's Heart Healthy Firefighter Program (see References).

Recommendation # 7: If your department does not employ or have the services of a local physician due to cost, seek out the advice of a local hospital or other health organization to support your efforts to adopt national recognized medical and physical standards.

Recommendation # 8: Work with allied or "like" organizations for other models of health assessment which might be incorporated into your program.

Recommendation # 9: Help create a culture where there is mutual support among members to implement physical and behavior wellness.

References

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Appendix A: Guidelines for Body Composition Assessment

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Appendix B: Guidelines for 1.5 Mile Run

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Appendix C: Cycle Ergometry Assessment

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Appendix D: Strength Assessment

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Appendix E: Physical Fitness Screening Questionnaire from USAF Fitness Evaluation

Appendix F: Fitness Assessment Score Charts

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Appendix G: Administrative Actions for Failing to Attain Standards

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