

DEVELOPMENT OF HEALTH AND WELLNESS PROGRAMS

Executive Development

Development of Health and Wellness Programs

for Combination Fire Departments

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CERTIFICATION STATEMENT

I herby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

Abstract

The problem was the Fort Lupton Fire Protection District (FLFPD), a combination volunteer and career department, did not have a health and wellness program for either the volunteer or career firefighting staff. The concern was that this led to an increased number of work related illnesses or injuries that resulted in career ending medical conditions, including but not limited to, cardiovascular disease. The purpose of this applied research project was to determine the factors to consider in the development of a health and wellness program that was beneficial to both the volunteer and career firefighters of the FLFPD. Using the descriptive method of research, answers to the following questions were obtained to aid the research:

1. What are the standards set forth by the National Firefighting Organizations for health and wellness in combination departments?
2. What components comprise a qualitative health and wellness examination?
3. What are other combination departments of similar organizational size and structure doing for a health and wellness program?
4. How have other organizations developed participation by firefighters in a health and wellness program?

Information was collected through procedures that included interviews, a general web search, literature research, and both internal and external questionnaires. The results included literature from National Fire Protection Association (NFPA) Standards of 1500, 1582, and 1583, which outlines the guidelines for health and wellness programs in the fire service. These standards described both fitness and medical examination components of the program and summarized the details of each element. The respondents from the internal and external questionnaires provided feedback that indicated the programs other combination fire departments were conducting in

terms of a health and wellness and how organizations utilized incentives for participation. There was one-hundred percent agreement in the questionnaires that a health and wellness program was beneficial to the fire service and ninety-seven percent of the members of the FLFPD would like to see a health and wellness program instituted within the department.

Recommendations made as a result of this research included the formation of a committee that represents a vertical slice of the members of the department to develop the framework, policy, participation guidelines, and incentives for the development and implementation of a health and wellness program. This program would be seamless for both the volunteer and career members of the FLFPD. The committee would use NFPA 1500, 1582, and 1583 guidance documentation in order to create a vision for the committee. The next recommendation would be the development of a health and wellness mission statement for the development of a common goal for all members. Another recommendation was to send a volunteer and career member to the Peer Fitness Trainer Certification Training and explore the development of a partnership with a medical provider or educational institution to provide initial medical evaluations and regular ongoing examinations at a manageable cost specific to the firefighter needs. Lastly, encourage membership input from all levels of the organization to develop ownership and investment in the program.

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Introduction

All occupations in today's society carry with them some sort of personal risk or safety hazard to the employee in the completion of their daily duties. Albeit a taxi cab driver weighs the risk of a possible traffic accident due to extreme traffic volume, a high-rise construction worker risking a possible fall, or a secretary who risks carpal tunnel syndrome from repetitive typing motions. Firefighters are faced with comparatively higher chances of suffering injury or possible death on a regular basis (United States Department of Commerce, 2005). According to the United States Fire Administration (United States Fire Administration [USFA], 2004), statistics show that firefighting continues to be one of the most dangerous occupations in the world. This information is supported by the facts that firefighting fatalities continue a disturbing upward trend, even if the horrible toll of the September 11, 2001, tragedy is set aside momentarily. More firefighters have died on duty in the past several years than would be expected after the decreased number of losses in the 1990's (USFA, 2005). The firefighter death toll exceeds over 100 on a yearly basis. The factor that is surprising under this progressive new era of leadership in the fire service is that cardiovascular health continues to be an ongoing issue in the fire service. In fact, in a 2001 needs assessment of the U.S. fire service, the NFPA (2005) reported that an estimated seventy-three percent of firefighters worked in fire departments that did not have a program to maintain basic firefighter wellness as required in NFPA 1500. In rural communities (under 2,500 population), where there is nearly all volunteer firefighters, eighty-eight percent of the members were affiliated with a department that did not have such a program. The USFA *Firefighter Fatality Retrospective Study: 1990-2000*, concluded that forty-four percent of the 1000-firefighter deaths in the United States during this ten-year period were the result of heart attacks (USFA, 2004). The NFPA *U.S. Firefighter Fatalities Due to Sudden Cardiac Death*,

1995-2004 report identified that of 440 victims of sudden cardiac death, 307 were volunteers and 117 were career firefighters and the remaining either contracted, were in the military, or had some other affiliation (NFPA, 2005). These two studies alone identify noteworthy statistics regarding the importance of firefighter wellness. Because the fire service has identified health and wellness as an issue and yet failed to address this increased risk factor, the number of firefighter health and wellness related deaths continue to occur at an unacceptable rate, which presented a significant issue.

The research problem was that the Fort Lupton Fire Protection District (FLFPD), a combination volunteer and career department, does not have a health and wellness program for either the volunteer or the career firefighting staff. This may lead to an increased number of work related illnesses or injuries, which could result in career ending medical conditions, including but not limited to cardiovascular disease. The purpose of this research was to determine what factors to consider in the development of a health and wellness program that will benefit both the volunteer and career firefighters of the FLFPD. The following questions assisted in the research:

1. What are the standards set forth by the National Firefighting Organizations for health and wellness in combination departments?
2. What components comprise a qualitative health and wellness examination?
3. What are other combination departments of similar organizational size and structure doing for a health and wellness program?
4. How have other organizations developed participation by firefighters in a health and wellness program?

Background and Significance

The FLFPD is a special fire district located in Weld County Colorado approximately 30 miles north of the Denver Metropolitan area. The district covers 100 square miles, which includes several major highways, a large portion of agricultural land, oil and gas production facilities, rural areas, and the City of Fort Lupton. Presently, there are two stations in operation and both have weight room facilities, which include cardiovascular workout equipment.

The department is comprised of 37 volunteers and six career personnel with thirty five percent of the personnel at the age of 40 or above. The volunteer force is divided into two groups, which includes reserves and volunteers. The reserves reside outside of the district boundaries and are required to complete 36 hours of station shift time on a monthly basis. The volunteers live within the district boundaries and respond based upon availability and are not required to complete any station shift duty. The career personnel generally work a 40-hour week Monday through Friday 8:00 A.M. to 5:00 P.M. On average, the department will have about 900 service calls during a year period.

All personnel are required to complete a medical physical after a conditional offer of employment or membership has been made. This physical, which is conducted by licensed physician, includes a general overview of the health history of the applicant, physical examination, vision test, hearing test, blood pressure, pulse rate, urine screen, and pulmonary function test. Once this initial physical has been completed, there is no policy or schedule for annual wellness checkups. Therefore, the possibilities exist that a firefighter may be on the department for an extended period and complete only the initial physical during their career unless there is an injury or possible exposure to a communicable disease through patient contact. There is no mechanism for detection of changes in the health of the firefighters due to the

hazards of exposure to toxic substances, hearing loss, vision loss, poor diet, lack of physical conditioning, changes in medical issues, or maintaining the ability to perform their duties over the course of their career.

The other prevalent issue is although the FLFPD provides the equipment for weight training and cardiovascular exercise, there has not been a policy in place to provide a program that guides or encourages personal wellness. Many days the exercise equipment goes unused. The challenge of this issue is the difficulty in developing a program that is attainable for both the volunteer and career personnel alike.

The well-being of the FLFPD is of extreme importance to personally and the department consistently strives to identify and correct potential safety issues. In this case, not only has the FLFPD identified a potential risk factor, cardiovascular disease, that may result in the death of one of our firefighters but also the fire service as a whole has identified risk and yet it is still the number one cause of firefighter deaths. As the fire chief of this organization and as part of my executive development, I have a responsibility to contribute to lowering the number of debilitating injuries and illnesses in this agency and the fire service. The FLFPD recognized this issue when one of our personnel was stricken by a near career ending heart attack in 2005 and yet another discovered high blood sugar during a fire department initial physical at the beginning of their career as a reserve. Yet we have still failed to effectively respond to the issue and it continues to be a potential life threat. Failure to respond to this will become more critical as the department continues to age and neglects addressing health and wellness issues.

If history repeats itself in 2006, the United States will lose over 44 firefighters to a heart attack in the performance of their duties. This research will aid the FLFPD and the fire service in achieving the USFA goal of reducing firefighter deaths. The data obtained, utilizing the

descriptive method of research, will assist in providing the FLFPD information in the early stages of the development of a health and wellness program. This research will explore the existing types of programs currently in place and any unique ideas that possibly may be adopted by our organization. Although, a health and wellness program cannot eliminate all elements of certain medical conditions or cardiovascular disease, it could provide for education, early detection, and prevention of some aspects of the conditions that affect firefighters of the FLFPD.

Literature Review

The literature review focused around the four research questions that were being explored: (1) What are the standards set forth by the National Firefighting Organizations for health and wellness in combination departments? (2) What components comprise a qualitative health and wellness examination? (3) What are other combination departments of similar organizational size and structure doing for a health and wellness program? (4) How have other organizations developed participation by firefighters in a health and wellness program?

- 1) What are the standards set forth by the National Firefighting Organizations for health and wellness in combination departments?

Since there is a significant amount of information about standards for health and wellness programs in the firefighting profession, the research was narrowed to what standards have been set forth by the National Firefighting Organizations. The National Fire Protection Association (NFPA) developed NFPA 1500, a *Standard on Fire Department Occupational Safety and Health Program*, in 1987. NFPA 1500 was revised in 1992, 1997, and the most recent version being 2002, which stands as an American National Standard. The goal of NFPA 1500 was to identify that there must be “a fundamental change in how firefighters and the fire departments address fire service occupational safety” (NFPA 2002, p. 1). The purpose was to specify minimum

requirements for occupational health and safety programs in a fire department and safety requirements for those involved in firefighting related activities. In the initial development of NFPA 1500, the document established the requirement for a physical fitness program although it overlooked explanatory material or reference to fire service occupational safety and health (NFPA, 2000). Primarily, NFPA 1500 addressed respiratory protection, protective clothing, incident operations, and other general safety factors. Further direction and guidelines were needed for direction in this area.

NFPA 1582, a *Standard on Comprehensive Occupational Medical Program for Fire Departments* was developed in 1992, with revisions in 1997, 2000, and the existing version of 2003, as prepared by the Technical Committee on Fire Service Occupational Safety and Health. The standard's scope identifies requirements for comprehensive occupational medical programs for fire departments and employs the purpose of reducing the risk and burden of fire service occupational morbidity and mortality while improving the effectiveness of firefighters in their duties (NFPA, 2003). This was accomplished by using a standard that does not separate volunteer from career firefighters, as the duties remain the same, and assesses the individual compared to the medical requirements of the position. According to NFPA 1582 (2003), fire departments invest a significant amount in preventative maintenance for equipment and apparatus but this proves to be ineffective if there are not medically qualified personnel to respond to emergencies. As a fire department, we must weigh the costs of occupational related illnesses, injuries, and fatalities against the cost of regular medical exams. Thus, a comprehensive medical program as developed in NFPA 1582 can prove to not only be cost effective, but yet a life safety intervention tool.

The medical exam of firefighter candidates prior to participation in departmental activities includes obtaining a medical history, physical examination by a physician, and laboratory test to determine if there is a condition that could adversely affect the candidate's ability to perform the essential tasks of the job. Additionally, this standard identifies the need for annual medical evaluations to assess ongoing health. Specifically, according to NFPA 1582, Chapters 7, 7.3, 7.3.3, and 7.3.4 (2003), all members shall receive a baseline medical evaluation after hiring, after an occupational injury, or illness, exposure, and at least every 12 months (\pm 3 months). These results shall be compared to the baseline results to monitor for applicable clinical changes. The specific components of a medical evaluation will be detailed later in this section.

NFPA 1583 provides the *Standard on Health-Related Fitness Programs for Fire Fighters*. It was originally developed in 1996, subsequently appealed and withdrawn from the NFPA Standards. In 1997, a new technical committee again began work on a comprehensive document for a health and fitness. Other areas of firefighter safety had been addressed but since NFPA statistics show that almost 50 percent of firefighter deaths are heart attacks and almost 50 percent of those who died had heart related problems (NFPA, 2000). With annual medical evaluations as required in NFPA 1582, the technical committee believed that the addition of a health related fitness program could significantly contribute to the reduction of fire fighter fatalities and injuries (NFPA, 2000). NFPA 1583 was approved as the American National Standard in 2000. It set forth the minimum related standards for the development and implementation of a health related fitness program to promote individual members' ability to perform occupational duties with vigor and to demonstrate the capacities associated with a low risk of premature development of injury, morbidity, and mortality (NFPA, 2000).

The fire chief assumes the ultimate responsibility for the fire department's health-related fitness program as identified in NFPA 1500 (NFPA, 2000). According to NFPA 1583 (2000), the fitness program shall include the assignment of a qualified health and fitness coordinator, periodic fitness assessments, an exercise training program that is available to all members, and a process for collecting Health Related Fitness Program (HRFP) data. This program required mandatory participation by all members.

As described in Chapter 3 of NFPA 1583 (2000), the health and fitness coordinator shall be a member of the department or outside agent as assigned by the fire department. The health and fitness coordinator shall have access to the related educational materials and/or possess formal education in the health and fitness. The fitness coordinator shall be the administrator of the components of the program and act as a liaison with the fire chief and department safety officer.

Chapter 4 of NFPA 1583 (2000) summarizes that: All members shall complete an annual health and fitness assessment that includes aerobic capacity, body composition, muscular strength, muscular endurance, and flexibility. If a member is unable to participate in the fitness assessment due to an acute medical condition or a new chronic medical condition then the assessment shall be postponed until they have recovered from the condition and presents this new information to the fire department for review.

Chapter 5 of NFPA 1583 (2000) lists the following program components of a department's exercise and fitness training program:

- An educational program that describes the benefits of the program.
- An individualized exercise regiment based upon the fitness assessment.
- Warm-up and cool-down exercise guidelines.

- Aerobic exercise program.
- Muscular exercise program.
- Flexibility exercise program.
- Healthy back exercise program.
- Safety and injury prevention program.

In Chapter 6 of NFPA 1583 (2000), it is identified that the education program is an integral part of the fitness program, important educational materials shall be made available to the members and encourage ongoing health care from their primary care physician. According to Chapter 8 of NFPA 1583 (2000), it provides that the fire department shall ensure a confidential permanent files regarding the fitness program are formed and maintained. Statistical information can be generated as long as it does not reveal personal information.

2) What components comprise a qualitative health and wellness examination?

Because firefighting is a rather unique profession with exclusive traits, it presents an interesting challenge to evaluate the requirements for an individual's capability of performing the tasks required of an effective firefighter and to continually evaluate the medical condition of members. NFPA 1582 identifies that a medical evaluation is "The analysis of information for the purpose of making a determination of medical certification. Medical evaluation includes a medical examination" (NFPA 2003, p. 5). NFPA 1582 further identifies that a medical examination is "An examination performed or directed by the department physician" (NFPA 2003, p. 5). The frequency of such medical evaluations under the guideline of NFPA 1582 was previously explained in this literature review.

The role of fire department physician is also a rather specialized role that requires knowledge of essential firefighting duties and physical demands of the position. According the

National Volunteer Fire Council (National Volunteer Fire Council [NVFC], n.d.), Texas A&M University reported in a study that firefighters are faced with lengthy periods of sedentary activity separated by intense periods of very strenuous activity and the cardiovascular system is often pushed to the limit when responding to calls. Thus, they are less than optimally fit and prepared for the rigors of their occupation. In 2006, the Phoenix Fire Department provided a new specialized training course for physicians at the *2006 Health, Fitness, and Safety Symposium* specializing in the needs of firefighters. According to the information provided by the Phoenix Fire Department (2006), a fire surgeon course was designed to provide the physician with the basic knowledge of the firefighter occupation. It familiarizes the physician with the unnatural stresses placed on the body, respiratory ailments, firefighting ensemble worn, and orthopedic injuries that firefighters are subject to in the performance of their duties. This information provided physicians with basic insight into the specialized treatment of firefighter injuries and illnesses with the goal of reducing medical expenses and debilitating injuries and diseases.

The components of the initial medical evaluation are described in Chapter 6 of NFPA 1582 (2003). It is completed prior to any emergency related activities and includes:

- Medical History
- Head and Neck
- Eyes and vision
- Ears and Hearing
- Dental
- Nose, Oropharynx, Trachea, Esophagus, and Larynx
- Lungs and Chest Wall
- Heart and Vascular System

- Abdominal Organ and Gastrointestinal System
- Reproductive System
- Urinary System
- Spine and Axial System
- Upper and Lower Extremities
- Neurological Disorders
- Skin
- Blood and Blood-Forming Organs
- Endocrine and Metabolic Disorders
- Systemic Diseases and Miscellaneous Conditions
- Tumors and Malignant Diseases
- Psychiatric Conditions
- Chemicals, Drugs and Medications (includes tobacco use)

The recurring medical evaluations are to be completed on an annual basis to assess ongoing health. These results shall be compared to the baseline results to monitor for applicable clinical changes. According to NFPA 1582 (2003), the annual occupational medical evaluation shall include the following components:

- Medical History
- Physical Examination
- Blood Testing
- Urine Laboratory Tests
- Audiology
- Spirometry

- Chest Radiographs
- Electrocardiograms (EKG)
- Mammography
- Immunizations and Infectious Disease Screening
- Heavy Metal Evaluation
- Body Weight and Composition

Additionally, the USFA (2004) states that with the risks that confront firefighters, this alone necessitates regular medical evaluations and recommends annual medical examinations for all firefighter over the age of 40, every two years for those 30 to 39, and every three years for those under the age of 29.

Comparatively, according to Harper (2006), Highsmith, a Wisconsin based marketer of supplies and equipment for schools and libraries, instituted a wellness program that included annual at-work health screening for blood pressure, cholesterol, pulmonary function, and mental health. Follow-up exams with a physician are required based upon age and gender of the employee. To encourage participation, the company will pay 75 percent of the employee's health insurance premium and if they do not participate then it drops to 60 percent. IBM (2005) incorporates a Well Being Management System (WBMS) to the holistic approach of managing the health and safety of the work force. They take a building block approach that assessing your personal health, developing a plan for lifestyle enhancement, with the last step being an action plan. According to IBM (2005), they offer clinical screenings, diagnosis and disease prevention, physical fitness activities, immunizations, nutrition, weight counseling, and stress management. A successful program really needs to secure the support of the executive management and driven by the middle level managers and participants. This will influence the employees' ability to

complete their job duties with a sense of positive well-being reflecting in the quality of work they provide.

- 3) What are other combination departments of similar organizational size and structure doing for a health and wellness program?

The combination fire department presents an interesting challenge. As a manager, the fire chief is addressing both career employees and volunteers. Logically the career employee is easier to manage as they have the incentive of their employment at stake and are available to participate in a health and wellness program during working hours. In many agencies the volunteer receives little to no benefits and when mandated participation outside of the required training, work, or other departmental commitments it becomes a burden too enormous to maintain. Therefore, the question must be investigated what other combination departments have instituted for a health and wellness program for both the volunteers and the career personnel.

According to USFA (2004), the National Volunteer Fire Council (NVFC), identified 16 volunteer and combination fire departments with experience in health and wellness that began in the 1990's. It was reported in the *Health and Wellness Guide for the Volunteer Fire Service* (USFA, 2004), that 44 percent of the departments reported a positive reception to a health and wellness program and 63 percent identified the fire service culture as an impediment to the program. The challenges that they reported were a lack of funding, lack of well-defined requirements, and the inability to keep the membership motivated. A majority of the health and wellness programs, 56 percent, were customized based upon injury reports to meet the individual needs of the departments although active participation in the health and wellness program was quite low (USFA, 2004).

The following figures were provided in Chapter IV of the *Health and Wellness Guide for the Volunteer Fire Service* (USFA, 2004): Seventy-five percent of the departments provide immunizations for Hepatitis B, Tetanus, and annual flu shots. Sixty-three percent of the departments provide a complete medical examination and laboratory blood screening with only thirty-one percent testing body fat with a reduction plan. Sixty-three percent of the departments have exercise facilities at each station with fifty percent having treadmills, universal weight, and cross training machines. Seventy-five percent of the departments fund the entire cost of the health and wellness program while the remainder of departments secured funds through fundraising, employee contributions, or worker's compensation.

The Red, White, and Blue Fire Department, located in Breckenridge, Colorado took an innovative approach after the sudden death of a 56-year-old physically fit firefighter due to coronary arterial blockage. At a State Fire Chiefs' meeting, leaders exchanged information regarding a partnership, which the Poudre Fire Authority of Fort Collins, Colorado, shared with Colorado State University (CSU). Specifically, the medical professionals at the CSU Clinical Research Laboratory could provide an enhanced physical evaluation for the Red, White, and Blue Fire Department (Willing, 2006). There were two options to choose from, a very thorough full body scan and a less costly stress test with physicals. They took the approach to screen individuals at a lesser cost to identify them for further testing due to the \$1000.00 per firefighter cost for of a full body scan. CSU developed a program for the firefighters that includes body fat analysis, blood work, strength testing, nutrition, exercise, and lifestyle changes that could lead to a healthier life (Willing, 2006). Their goal was to develop a baseline for follow up testing the following year and deemed the program worth the costs.

Another example was the Los Angeles County Fire Department (Los Angeles County Fire Department [LACoFD], n.d.), they were one of the nation's ten founding fire departments to participate in the International Association of Fire Fighters (IAFF) and International Association of Fire Chief's (IAFC) *Wellness Fitness Initiative*. This initiative was formed to improve the health, safety and longevity of uniformed personnel through a comprehensive, individualized, non-punitive wellness program. The LACoFD started annual medical screening in March of 2000 and discovered numerous undetected medical conditions that were treated prior to progression to a harmful stage (LACoFD, n.d.). This included cardiology consultation and follow up for twenty-four of mild to severe cases of coronary heart disease in which the rapid detection and intervention permitted employee to return to duty and thus avoiding costs up to an estimated \$400,000.00 in medical expenses.

They have also included what the LACoFD deems as one of the most important components of the wellness fitness program, the certified peer fitness trainer (LACoFD, n.d.). The peer fitness trainers are capable of providing firefighter specific information related to effective exercises and information related to the profession. The Peer Fitness Trainer Certification Program will identify firefighters who have demonstrated the knowledge and skills to design and implement fitness programs, improve the wellness and fitness of their departments, assist in the physical training of potential firefighters, and assist the community through outreach in achieving wellness (USFA, 2004). The peer fitness trainers are the individuals who will lead this change within your agency.

- 4) How have other organizations developed participation by firefighters in a health and wellness program?

The career firefighter can incorporate a health and wellness program into their daily routine and may have requirements of their employment. More specifically we must ask ourselves the question that how can a volunteer devote more time to the fire service beyond the calls, training, and other departmental related activities. The USFA (2004) identified one of the reasons for the failure of health and wellness programs for volunteers is that there is a lack of time to dedicate to the program due to the number of hours already given to the agency.

Although Stephen Covey (1989) in his book, *The Seven Habits of Highly Effective People*, noted that most of us do not think we have enough time to exercise, and how this is a distorted paradigm. In reality, we do not have time not to work out. Covey (1989) goes onto state that since exercise is not urgent we do not engage it consistently and as a result, we fall backwards and end up dealing with health and crises from our neglect. A good workout can be done right at home in thirty minutes or less, requires little to no equipment, and increases endurance, flexibility, and strength (Covey 1989). According to Covey (1989), in order to remain balanced in all areas of our life, we must have synergy in our physical, social/emotional, spiritual, and mental dimensions. Covey (1989) refers the importance of exercising all four dimensions and being effective to keep the balance to enhance performance as “sharpen the saw” (p. 288, 289). In other words, take the time to ensure your tools are in top shape to perform efficiently. Address issues before they become a crisis and keep the entire state in a sense of equilibrium. What strategies have other organizations used to enhance this participation?

According to USFA (2004), participation rates in health and wellness programs are largely dependant on the specific programs implemented and the incentives involved. The more reasons that a member has to participate the more likely they will engage at a higher level. Some examples of the incentives offered were cash or gift drawings, scheduling priority, choice of

firehouse duties, public recognition, and financial rewards for completion of the program. The leaders at Highsmith, the Wisconsin based marketer, took the incentive financial based approach by covering 75 percent of the employee's health insurance premium if they participated in the wellness program which dropped to 60 percent if the employee did not participate (Harper, 2006). They also made it more convenient by adding showers and walking trails right at their facilities.

IBM offers cash incentives of \$150.00 per employees who certify that they do not smoke or if they do, that they are willing to participate in the smoking cessation program and an additional \$150.00 cash incentive was offered for those regularly work out and log their performance online through a Virtual Fitness Center (IBM, 2005). IBM extended the smoking cessation program to involve the spouse/domestic partners of the employees and have recorded impressive success rates higher than the national average for other similar programs.

According to Fire Chief Oran D. True (2005), of the City of Martin Fire Department in Tennessee, he proposed a five-year plan to the city leaders for health and wellness. That plan included incentive pay for goal achievement, on-duty work out times, participation in annual abroad health seminars, member involvement, and feedback regarding the program, and annual memberships at local fitness centers to enhance participation. All are excellent incentives for program participation. The Bernalillo County Combination Fire Department in New Mexico, which participated in the IAFC funded health and wellness program, adopted a mandatory 30-minute aerobic activity for both career and volunteer employees on each duty day (USFA, 2004). In contrast, the Hartford, Vermont combination Fire Department made their program entirely voluntary but did request all members to work out three times per week at thirty minutes intervals and document the session (USFA, 2004). Due to many barriers such as cost and

equipment availability, departments have to be innovative in their approaches to health and wellness participation. They must enter into partnerships and create visions to overcome the obstacles in implementing a health and wellness program (USFA, 2004).

In summary, all of the sources agreed on the importance of a comprehensive health and wellness program for firefighters no matter the size, structure, or location of the department. The statistics reflect that although a silent killer, cardiovascular disease remains to be the leading cause of sudden firefighter deaths. However, in many cases early detection and treatment is possible. The NFPA has compiled three specific standards in NFPA 1500 *Fire Department Occupational Safety and Health Programs*, 1582 *Comprehensive Occupational Medical Program for Fire Departments*, and 1583 *Health-Related Fitness Programs for Firefighters* to address the areas of firefighter health. These guidelines outline the parameters for a health and wellness program. The components of a qualitative examination, although costly, were identified along with alternatives. The sources indicate that a health and wellness program may not have 100 percent participation or support by the membership but can be implemented in a combination or largely volunteer organization, successfully. In many cases, participation was linked to some sort of incentive. Bottom line is that health and wellness at all levels is a personal choice that each individual formulates on a daily basis. The rigors of the firefighting profession coupled with poor health make it a perilous combination. With a comprehensive health and wellness program, it is quite clear that unnecessary deaths can be avoided and illnesses can be detected in an early stage and addressed before they progress to a significant state.

Procedures

The purpose of this research paper was to determine what factors to consider in the development of health and wellness program that will benefit the volunteer and career

firefighters of the FLFPD. The descriptive method of research was used in the collection of data of what is present practice and to provide the information for a future course of action in the development of a health and wellness program.

In collecting information for this subject a search of materials at the Learning Resource Center (LRC) located at the National Fire Academy (NFA) in Emmitsburg, Maryland was completed both in person and via the internet. The LRC offers the most comprehensive number of books, reports, magazines, and other sources of information related to emergency services. The search was completed using the catalog computer search services of the LRC utilizing the key words of firefighter health and wellness. While at the NFA, several publications were located at the USFA Publications Center, which proved to be valuable.

In order to research information regarding the national standards for the area of health and wellness programs, the internal resources of the Fort Lupton Fire Protection District of NFPA standards were used. This revealed NFPA 1500, 1582, and 1583 as the standards specifically relating to firefighter occupational safety and health. The information provided in these standards proved to be valuable in forming a direction for a qualitative health and wellness program although idealistic for smaller agencies. The NFPA standards helped to provide the framework of my research regarding health and wellness programs for the fire service.

The FLFPD receives many journals, periodicals, fire service magazines, and other correspondence such as brochures. Several related articles to firefighter health and wellness were located in Fire Chief, Fire Rescue, and Fire Engineering magazines.

The local public libraries as well as the library at the University of Northern Colorado were searched for additional literature on firefighter health and wellness. These locations

revealed several sources and some duplicate references to the government publications that were obtained at the NFA.

A search of the World Wide Web was also completed via the internet and several search engines using the keywords of health and wellness, firefighter, and corporate. This resource seemed to provide the most diverse and largest number of references. Corporate information was gathered from the IBM and Microsoft web sites.

A health and wellness internal questionnaire was developed and distributed to the career, volunteer, and reserve members of the FLFPD. They were distributed on May 2, 2006 with a return date of no later than June 5, 2006. The rationale of this questionnaire was to develop the internal attitudes and awareness regarding the existing norms of health and wellness and the impact of a program on the FLFPD. The internal questionnaire is included in Appendix A.

A second health and wellness questionnaire was also developed which focused on external sources. These external sources were the identified as fire service and emergency medical managers in Weld County. This questionnaire was sent via the mail on May 2, 2006 to twenty-six agencies in the Weld County Fire Chief's Association and had a return date of June 2, 2006. The basis for this questionnaire was to determine what other local agencies of similar makeup, combination or majority volunteer, have as far as a health and wellness program and how they encourage participation in the program. The external sources that received the questionnaire are listed in Appendix C and the external questionnaire is included in Appendix D.

Lastly, on two occasions, appointments were scheduled with a Physician at a local university in order to conduct a personal interview regarding his studies of fire service related physical fitness. This physician specializes in firefighter fitness and provides direction to local

agencies regarding their programs. Unfortunately, on both occasions the physician cancelled the appointments due to family commitments.

Several limitations were identified while working towards the completion of this project. The six-month time frame for the completion of the project did present some hurdles regarding the vast amount of information in the area of firefighter health and wellness. This was evident when the physician interviews were unable to be completed due to their unforeseen commitments even after giving significant notice for the interviews. This also presented a sense of frustration.

Another limitation that may be considered intentional is of the lack of diversity of the sample for the external questionnaire. The sample collected was from a localized group of leaders from Weld County in Colorado. However, the author knowingly requested the information from this group because this research was specific to FLFPD and the information had not been evaluated and that it would be valuable not only in my research and unique in its own way.

A limitation that was identified was that of the external questionnaire. The term physical exam was implied as a medical evaluation. However, upon reviewing the results, a medical evaluation could include various levels of involvement by the member from the simplest being a non-intrusive physical to the more complicated full-scale evaluation. This was not defined clearly and left to the questionnaire respondent's own interpretation of what the definition of a physical exam included.

Definition of Terms

Combination Fire Department- A fire department that is comprised of both volunteer and career members.

Health and Fitness Coordinator- The person who, under the supervision of the fire department physician, has been designated by the department to coordinate and be responsible for the health and fitness programs of the department (NFPA 1583, 2000).

Health-Related Fitness Program (HRFP)- A comprehensive program designed to promote the member's ability to perform occupational activities with vigor, and to assist the member in the attainment and maintenance of the premature traits or capacities normally associated with premature development of injury, morbidity, and mortality ((NFPA 1583, 2000).

Medical Evaluation- The analysis of information for the purpose of making a determination of medical certification. Medical evaluation includes a medical examination (NFPA 1582, 2003).

Medical Examination- An examination performed or directed by the fire department physician (NFPA 1582, 2003).

Results

Research Question 1. What are the standards set forth by the National Firefighting Organizations for health and wellness in combination departments?

During the review of the existing standards for health and fitness programs for firefighters, there were three NFPA standards that specifically related to occupational safety, health, medical, and fitness related programs for the occupation. They were NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program*, NFPA 1582 *Standard on Comprehensive Occupational Medical Program for Fire Departments*, and NFPA 1583 *Standard on Health Related Fitness Programs for Firefighters*.

According to NFPA 1500 (2002), it states that candidates shall be medically evaluated and certified by the fire department physician in consideration of the risks and functions

associated with the duties and responsibilities. Any candidate who will engage in suppression operations shall meet the medical requirements of NFPA 1582 prior to being medically certified for duty by the department physician (NFPA, 2002). The fire department shall develop performance requirements for those members who engage in emergency operations and have those evaluated yearly along with an annual certification for the use of respiratory protection use (NFPA, 2002). NFPA 1500 (2002), also identifies that the fire department shall provide a health and fitness program meeting the requirements of NFPA 1583 in order to enable the member to develop and maintain the appropriate level of fitness to safely perform the tasks of the job and shall be based on the standards developed by the fire department physician. NFPA 1582 and 1583 give further detail to this area.

Specifically, NFPA 1582 (2003), identifies the requirements for a comprehensive annual medical evaluation for both the career and volunteer firefighter. The standard does not distinguish between the two categories as the job duties remain the same for each to reduce the risk of morbidity and mortality while improving the effectiveness of members in their duties. The frequency of such exams shall include a baseline at the time of hire, after an occupational injury, illness, exposure and at least every 12 months (\pm 3 months). The results of the annual evaluation shall be compared to the baseline for clinical changes. The components of the medical evaluation and examination are detailed later under a subsequent research question.

NFPA 1583 (2000), is a comprehensive document that focuses on occupational health and fitness as opposed to a safety only document. According to NFPA (2000), 50 percent of firefighter deaths are heart attacks and almost 50 percent of those who died had heart related problems this standard was long overdue and could effectively reduce the number of firefighter fatalities and injuries. NFPA 1583 (2000) sets forth the minimum standard for the

implementation of a health related fitness program to promote the individual members' ability to perform occupational duties with vigor and to demonstrate the capacities associated with a low risk of premature development of injury, morbidity, and mortality. According to NFPA 1583 (2000), the fitness program shall include the assignment of a qualified health and fitness coordinator, periodic fitness assessments (to determine the individual's level of fitness), an exercise training program that is available to all members, and a process for collecting Health Related Fitness Program (HRFP) data. This program was to include mandatory participation by all members and shall consist of:

- An educational program that describes the benefits of the program.
- An individualized exercise regiment based upon the fitness assessment.
- Warm-up and cool-down exercise guidelines.
- Aerobic exercise program.
- Muscular exercise program.
- Flexibility exercise program.
- Healthy back exercise program.
- Safety and injury prevention program.

Based upon the information collected regarding the three standards for health and wellness, NFPA 1500 concentrates on the occupational safety, while NFPA 1582 addresses the medical evaluation for duty and ongoing wellness, and NFPA 1583 relates to the actual health related fitness programming. These standards provide a well-encompassed set of guidelines for the development of a balanced program under ideal situations.

Research Question 2. What components comprise a qualitative health and wellness examination?

With firefighting being a rather unique and physically demanding type of position that includes exposures to communicable diseases, hazardous materials, and other inherent dangers on a regular basis, what type of health and wellness examination is qualitative for both the individual and the agency? For the purpose of clarification in this research project, the term health and wellness examination, physical examination, and medical examination were used as interchangeable by the author. The term medical evaluation includes a medical examination. The literary review provided NFPA 1582, which outlines the medical examination in detailed form. According to NFPA 1582 (2003), the initial medical examination is performed or directed by the department physician prior to engaging in emergency activities and consists of the following components:

- Medical History
- Head and Neck
- Eyes and vision
- Ears and Hearing
- Dental
- Nose, Oropharynx, Trachea, Esophagus, and Larynx
- Lungs and Chest Wall
- Heart and Vascular System
- Abdominal Organ and Gastrointestinal System
- Reproductive System
- Urinary System
- Spine and Axial System
- Upper and Lower Extremities

- Neurological Disorders
- Skin
- Blood and Blood-Forming Organs
- Endocrine and Metabolic Disorders
- Systemic Diseases and Miscellaneous Conditions
- Tumors and Malignant Diseases
- Psychiatric Conditions
- Chemicals, Drugs and Medications (includes tobacco use)

A recurring annual medical evaluation shall be used to assess ongoing health and compared to the initial physical. According to NFPA 1582 (2003), the components of the annual medical evaluation include:

- Medical History
- Physical Examination
- Blood Testing
- Urine Laboratory Tests
- Audiology
- Spirometry
- Chest Radiographs
- Electrocardiograms (EKG)
- Mammography
- Immunizations and Infectious Disease Screening
- Heavy Metal Evaluation
- Body Weight and Composition

The research has shown that a group of professionals representing all areas of the involved fields developed what they agreed upon as the most important aspects for the determination of initial firefighter medical evaluation and then regular benchmark medical evaluations in the development of NFPA 1582. The research provided very detailed and all encompassing medical evaluations to evaluate ongoing firefighter health. According to the USFA (2004), NFPA 1582 recommends annual medical examinations for all firefighter over the age of 40, every two years for those ages 30 to 39, and every three years for those under the age of 29.

An internal questionnaire was used to determine what the members of the FLFPD perceive as the components of the medical evaluation or physical exam. There were thirty-six questionnaires distributed and thirty-five returned. The physical exam for new members of the FLFPD were completed by a licensed physician includes a general overview of the health history of the applicant, physical examination, vision test, hearing test, blood pressure, pulse rate, urine screen, and pulmonary function test. Eighty percent of the respondents felt that these eight components were important in a health and wellness examination. Sixty percent of the respondents felt that regular blood testing should be included and less than one percent felt that both nutrition and drug testing should be included in the medical evaluation.

An external questionnaire was used to determine what other emergency response agencies in Weld County Colorado perceive as the components of the medical evaluation or physical examination. There were twenty-six questionnaires sent out to fire and medical emergency medical response agencies and fourteen questionnaires were returned. Out of the respondents, sixty four percent identified that a regular physical exam, at some level, was a component of there health and wellness program and fifty percent had regular blood testing.

It is clear that there are certain guidelines for the appropriate qualitative medical evaluation of firefighters and what frequency should be included based upon the identified risk factors and age. The components of the medical evaluation can be modified to meet the needs and the budgets of agencies of all sizes and structure as discovered by the Red, White, and Blue Fire Department. They entered into a partnership with CSU and developed two options for the physical evaluations. According to Willing (2006), there was a full body scan for \$1000.00 and a less costly screening that included a stress test with a physical. The Red, White, and Blue Fire Department chose to screen members at the lesser costs and let the procedure identify those who need the more thorough full body scan. The program included body fat analysis, blood work, strength testing, nutrition, exercise, and lifestyle changes that could lead to a healthier life (Willing, 2006). The more comprehensive that the medical evaluation is increases the possibilities that a potential life threat can be detected and addressed prior to complications. However, it would appear some level of medical evaluation or examination can be more beneficial than no program whatsoever. The obvious limitations include the budgetary constraints on the agency and least amount of time commitment impact on the volunteer firefighters.

Research Question 3. What are other combination departments of similar organization size and structure doing for a health and wellness program?

In order to evaluate what other combination departments have established as a health and wellness program an external survey was sent to twenty-six agencies affiliated with the Weld County Fire Chief's Association. Fourteen of the questionnaires were returned by in the prescribed period. It was discovered that forty three percent (six) of the agencies that received the questionnaires do not have a health and wellness program. One-hundred percent (fourteen) of

these responding agencies stated that they would like to see some sort of program implemented within their departments and as well.

Another key question was to identify the components of their department's health and wellness program. The following is a list of the identified components of the health and wellness programs for the participating agencies:

- Regular Physical Examinations (9)
- Weight Training (9)
- Cardiovascular Training (9)
- Regular Blood Tests (7)
- Annual Agility Testing (5)
- Wellness Committee (1)

If the agency did not have an existing health and wellness program, they were asked to identify what they believed to be the primary reason. The following lists of reasons were identified in the questionnaires:

- Idea Never Presented (2)
- Volunteer Status Participation (2)
- Cost (1)
- Governing District Board Support (1)
- No Response Given (1)

The final question was whether the agency participating in the questionnaire felt that a health and wellness program was beneficial to the fire service as a whole. The same question was also asked in the internal survey of the current members of the FLFPD. It was very clear that in both

the external and the internal questionnaires, that one hundred percent (49) of the participants felt that a health and wellness program is beneficial to the fire service.

According to the USFA (2004), the model elements and core components that should be implemented in a health and wellness include:

- Regular fitness screening and medical assessments
- Fitness program (cardiovascular, strength, and flexibility training)
- Behavioral modification (smoking, hypertension, diet, cholesterol, and diabetes)
- Volunteer education
- Screening volunteer applicants

Not all of these components may be able to be implemented at one time due to budget or other agency limitations. Individual components can benefit agencies and it is recommended that a portion of the program that works be used if the agency is unable to implement an entire program. A well organized and thought out plan must provide guidance for the participants in the program to be successful. It was reported in the *Health and Wellness Guide for the Volunteer Fire Service* (USFA, 2004), that 44 percent of the departments that they surveyed reported a positive reception to a health and wellness program and 63 percent identified the fire service culture as an impediment to the program. In order to change this fire service culture, the leaders of the agency must support and direct the change in coordination with the health and fitness coordinators not only in words but also in their actions as well (USFA, 2004). Developing effective health and wellness programs must be a priority for the volunteer agencies to preserve the long-standing tradition of service to their community.

Research Question 4. How have other organizations developed participation by firefighters in a health and wellness program?

The results of the literary review provided information in the research that revealed that it does not really matter what the structure of the department is or what the program is but rather the means to deliver the product. By this, the author means that cardiovascular disease does not discriminate by affiliation of volunteer or career and that all firefighters are susceptible to health issues. The issue truly becomes how to encourage the volunteer to participate in a health and wellness program comparable to the level that the career firefighter is expected to participate at due to the time commitment for the volunteer outside of normal working hours. What does seem to be the driving force for success of the program is that there needs to be some sort of incentive or reward for participation in the program.

In order to evaluate the development of participation in the health and wellness program this subject was addressed in both the internal and external questionnaires. The internal questionnaire asked the question rather the program should be required or voluntary. From the thirty-six questionnaires sent out thirty-five were returned. There were thirty-one volunteers and four career members in the sample. For the volunteer firefighter position there was fifty one percent (18) that stated that participation should be required and forty-nine percent (17) that felt participation should be voluntary. For the career firefighter position, there were eighty-six percent (30) that stated that participation should be required and nine percent (3) felt that participation should be voluntary. There were two respondents (six percent) that did not provide a response. It was asked of the internal participants what would encourage members to participate in the health and wellness program. The following incentives were identified:

- Personal health (6)
- Clothing incentive (5)
- Formal organized program (5)

- Mandatory participation (4)
- Education about health and wellness (3)
- Training credit (2)
- Fun program (2)
- Competition (2)
- Worker's compensation training (1)
- No response (4)

The external questionnaire was sent to twenty-six agencies with the Weld County Fire Chief's Association exploring the current trends for participation in a health and wellness program. There were fourteen questionnaires returned. Forty-three percent of the participating agencies do not have an existing health and wellness program. The external questionnaire asked the question that if you have a program is participation in the program was voluntary or required. For the volunteer firefighter position, five respondents stated that participation in the program is mandatory, two stated that participation is voluntary, six agencies do not have a program, and one agency did not provide a response. For the career firefighter position, there were seven respondents that stated that participation in the program is mandatory, one respondent that stated that participation is voluntary. Again, six agencies do not have a program. It was asked of the external participants what would encourage members to participate in the health and wellness program. The following points were identified:

- Employee mandated programs (4)
- Workout equipment available on site (3)
- Pay stub mailers (1)
- Annual physicals (1)

- Health insurance discounts (1)
- Peer support (1)
- Health and wellness classes (1)

As previously stated in the literature review, the combination fire department presents an interesting challenge. As a manager, the fire chief is addressing both career employees and volunteers. The expectation, as far as service that is placed on each sees no boundary nor do health issues that plague each group. According to the National Volunteer Fire Council (NVFC, n.d.) there are nearly 800,000 volunteer firefighters across the country and most have regular full time jobs that are less physically demanding than being a firefighter. This presents a difficulty for the volunteer to use their personal time commit for physical activity. In contrast, the career firefighter has lengthy periods between calls and can use this inactivity for personal fitness.

The external questionnaire also asked the question of the fourteen respondents if an initial health and wellness examination (medical examination) was provided at the start of employment or membership. There were twelve agencies that have volunteer firefighters and eighty-three percent (10) of these agencies provide an initial health and wellness examination. There were twelve agencies that have career firefighters and one-hundred percent of these agencies provide an initial health and wellness examination. There were six agencies out of the fourteen respondents that did not have a health and wellness program. One-hundred percent of the agencies that did not have an existing program would like to see one implemented.

The internal questionnaire addressed the level of health required to be a member of the FLFPD and the possible reduction of work related injuries, illnesses, or the discovery of hidden medical conditions that could be detected or prevented with a health and wellness program. The results for each question was one-hundred percent in support that health is a important

consideration to perform their duties as a member of the FLFPD and that work related injuries could be reduced.

When the thirty-five internal respondents were asked if they would like to see a health and wellness program implemented at the FLFPD, ninety-seven percent (34) identified that they would like to see a program implemented.

Discussion

The results of this study indicate that there is a need as well as an aspiration to develop and implement a health and wellness program tailored to the needs of the FLFPD. Although, the data and facts are rather clear regarding the risk factors for firefighters and cardiovascular disease, it was apparent that the agency was naïve to addressing the reality of these issues. It would appear that by the information collected in this research that there is a sense of apathy in the fire service regarding health and wellness regardless of the staggering number of cardiovascular issues that resulted in heart attacks due to the rigors of firefighting. Firefighters continue to perish at an alarming rate and the most significant and leading cause of this mortality rate, forty-four percent, is heart attack related to cardiovascular disease (USFA, 2004). Firefighters have enough challenges in the unpredictable firefighting realm that when something can be recognized such as the issue of firefighter health and it is not addressed the situation becomes rather alarming. The USFA *Firefighter Fatality Retrospective Study: 1990-2000*, concluded that forty four percent of the 1000-firefighter deaths in the United States during this ten-year period were the result of heart attacks (USFA, 2004). Volunteer firefighter fatalities accounted for fifty-six percent of these deaths (USFA, 2004). Firefighting deaths should be on a downward trend yet they continue to hover around the one-hundred fatalities per year. Individuals tend to take for granted the health of the firefighting force in the “not me” syndrome

and rely on the odds that no one within the agency will be stricken with a life threatening health issue. Agencies invest thousands of dollars each year in the preventative maintenance of the very expensive pieces of apparatus that departments operate. Without the apparatus, the firefighters cannot put out the fire. The research has reversed this role for the author and made a clear statement. Without the firefighters, which the departments have put thousands of dollars into training and ignored ongoing health and wellness issues, the apparatus does not have anyone to drive to or operate them at fire. The agency fails the firefighter if they are not willing to invest in their health and wellness. On the other hand, the firefighter must make every effort and commitment to take care of themselves to minimize their risk on the fire ground and be the most efficient firefighter they can be for the community.

The research has revealed that NFPA 1500, 1582, and 1583 present a large-scale model for the development of all aspects of a comprehensive health and wellness program. There were no real surprises in this area as the NFPA standards cover and include every possible angle and aspect of firefighter health and wellness. The reality is that not every agency is able implement all of the guidelines in such detail at one given time or over an extended period due to financial limitations or other internal issues. The process of change cannot be forced or rushed. It must be accomplished in a slow methodical pace. NFPA 1500 identifies that there must be “a fundamental change in how firefighters and fire departments address fire service occupational safety” (NFPA 2002, p. 1). This is possibly the largest hurdle any agency, especially volunteer, will face. To gain common ground acceptance of the program from the governing board or council including the newest probationary firefighter is essential to the success of the program. Surprisingly, from the results provided by the internal questionnaire it was apparent that the majority of the members of the FLFPD support the development of a health and wellness

program not only within our agency but also for the fire service as a whole. It is important for the individual agency to tailor the program and the components to their needs and have a vision for the program. Based upon the research data provided from the NFPA standards and the questionnaires the FLFPD would benefit from a program that encompasses several areas. Each member is required to complete an initial medical evaluation, but there are no further benchmark medical evaluations unless there is an exposure, injury, or illness. Information identifies that there needs to be regular medical evaluations at different intervals according to the members age (USFA, 2004). The risk of health related issues tends to increase with age especially cardiovascular disease (USFA, 2004). Based upon the information provided by the NFPA standards the health and wellness program for the FLFPD should also include nutrition and wellness education and a fitness element with the utilizing a peer fitness coordinator.

One of the areas that presents the concern and is what the author found as the most limited amount of information in research was the level of participation by the individual member. How does an agency comprised of both the career and volunteer members develop participation equally? The answer that was presented in the literary review was incentives. Incentives mean different things to different people. The incentive for the career firefighter is that for one hour per day they get to physically workout on the job. If they maintain an acceptable level of fitness then they get to keep their job. This provides a rather significant motivation. For the volunteer it is a much different challenge. They are not paid to workout and the opportunity generally comes during time that that would normally be spending with the family, relaxing, or taking care of the “to do” list at home. What incentive do they have when in some instances they are already giving close to sixty hours a month? Stephen Covey (1989) states that staying physically healthy gives you synergy in the remainder of your life and this

balance depends on you remaining centered in all areas. When we fail to maintain this balance, then we deal in crises mode and react to the issues as they arise. Most people do not do well in crises mode. The fire service as a whole has generally been reactive in its approach to issues. It would seem that we generally wait for the issue to happen and then try to resolve it. The fire service needs to change its form of thinking and realize that we cannot afford to be unprepared and unbalanced. The motivation or incentive for everyone is personal health and the enjoyment of living our life to the fullest extent possible after a successful firefighting career. According to Harper (2006), the leaders at Highsmith, a Wisconsin based marketer, they tied employee benefits at a reduced rate to the employee if they participated in the company health and wellness program. They also made fitness more accessible by adding walking trails and shower facilities. Cash incentives seem to be popular and IBM offered cash incentives of up to \$150.00 if an employee did not smoke or if they do, they participate in smoking cessation program and an additional \$150.00 cash incentive for those who regularly work out and track the information on the Virtual Fitness Center (IBM, 2005). IBM reported higher than national averages for success in this program.

Motivation becomes a rather significant issue and determining what does motivate people. As the author discovered in this research project the information provided in the internal questionnaire regarding participation in the program there are different levels of motivators for the members of the FLFPD. According to Covey (1989), next to physical survival, the greatest need for human beings is psychological survival, this includes to be understood, affirmed, validated, or appreciated. Part of the success in any area includes this recognition for your accomplishments. In order for a fitness component to be successful, it almost must be habit forming. Covey (1989) defines a habit as the intersection of knowledge, skill, and desire. He

states that knowledge is what to do and why. The skill is how to do it and desire is the motivation of wanting to do something. The members of the FLFPD included by order of most to least significant motivators; personal health, clothing incentive, formal program, mandatory participation, educational program, fun program, training hours credit, or workmen's compensation training. Monetary incentive was not a factor for the members of the FLFPD but rather it was the personal health gain as the most significant reason. For the terms of the research, the author must question if the subjects of the questionnaire even were aware that money could even be a consideration as a motivator. This result would differ from what both IBM and Harper found in their programs as they both identified monetary incentives for the success of the health and wellness programs as previously described.

Unlike much of the research information for other agencies, the FLFPD is not faced with a budget issue regarding a health and wellness program and the governing District Board of Directors is committed to the health and safety of the firefighters. The fire department provides two fully equipped workout rooms at each station and the funds are available for medical examinations for current members. From the information provided in the internal survey during this research is that the members are fully willing to participate in a program that is well organized for them by a knowledgeable person. A peer fitness trainer can provide education in the area of nutrition, health, and physical fitness. They can set up a workout plan to aid in a beneficial program and answer questions with confidence. Records can be maintained to show progress and tracks changes. The members some form of group or individual recognition and a beneficial outcome.

Recommendations

The problem was that the FLFPD, a combination volunteer and career department, does not have ongoing health and wellness program for either the volunteer or career firefighting staff. This may lead to an increased number of work related illnesses or injuries which could result in career ending medical conditions, including but not limited to cardiovascular disease. The purpose of this applied research project was to determine what factors to consider in the development of an effective health and wellness program that will benefit both the volunteer and career firefighters of the FLFPD.

The information provided in this research project supports the implementation of a health and wellness program for volunteer and career members of the FLFPD. Based upon these cumulative results the governing District Board of Directors needs to be informed of this area of deficiency, its significance, and that improvement is a necessity. This will help to achieve the short and long-term support both fiscally and in policy development. The fire district is currently in the budget process so additional funds have been established in the medical expense line item to develop a program suited to the needs of the FLFPD. All current volunteer and paid members must be educated about the seriousness of this health and wellness issues and unnecessary firefighter deaths due to undetected cardiovascular disease and heart attacks from extreme physical exertion on the fire ground. The number one documented cause of death for firefighters. Based upon the research the following changes would be recommended:

- Form a committee that represents a vertical slice of the members of the department to develop the framework, policy, participation guidelines, and incentives for the development and implementation of a health and wellness program for the volunteer and career members of the FLFPD.

- Utilize NFPA 1500, 1582, and 1583 as the guiding documentation for the committee to give them a vision.
- Send a volunteer and career member to the Peer Fitness Coordinator certification training.
- Explore the development of a partnership with a medical provider or educational institution to provide initial medical evaluations and regular ongoing examinations at a manageable cost specific to the firefighter needs.
- Develop a health and wellness mission statement.
- Offer nutrition, health, and cardiovascular information to educate the members by way of flyers.
- Encourage input from all levels of the organization to develop ownership and investment in the program.

This process would be beneficial in that it would get a large portion of the department involved in this new program. Change is a process and not an event, which takes time and would be most effective in a phase in process. The development of a plan would give the FLFPD a period of time to evolve and accept the program. Involving members from the volunteer and career side would give them a sense of value in the process and not just something that is forced upon them. Losses incurred could be reduced due to impact workmen's compensation claims and decrease lost time. The two most important areas of this health and wellness program would be the ongoing medical examination for those tenured members and the fitness segment. The most significant benefit may never be realized if a health and wellness program prevents a medical issue or heart attack. A medical examination can most definitely predict the onset cardiovascular difficulties and can save thousands of dollars in lost wages or insurance claims. More

importantly, it could save the life not only of a firefighter, but that of a mother, father, or family member.

The research in this project was thorough, although I was hoping to interview a physician who specializes in researching firefighter fitness and health. Unfortunately, he cancelled the appointment on two occasions. A phone interview was not conducted due to concerns with the effectiveness and validity. The literary information was able to provide the needed data for the research in conjunction with the questionnaires.

As with any problem, it is essential to logically follow the steps to correct the identified issue. Once the changes have been implemented I believe that revisiting the issue to determine if there has been any change or impact is instrumental in the developing an effectual resolution. Record keeping will identify long-term impact and immediate feedback could be received if a medical problem is avoided or discovered through the implementation of this program. However, the fire service cannot work based upon results alone. It is clearly documented that a health and wellness program at any level is beneficial to the participants. Hopefully, the FLFPD will never have the experience the loss of a firefighter to a health related injury or death, but the statistics strongly oppose this way of thinking. It is more of a question of when it will happen rather than if it will.

In conclusion, it is recommended that the fire service leaders and professionals continue to research this unique area of firefighter health and wellness. Countless lives of decorated and dedicated individuals who just happen to be firefighters are becoming statistics before they are able to enjoy their life beyond firefighting. The answers to the research questions are there and they just need to be established and acted upon. For many agencies such as the FLFPD, the answer

is clear, invest in your most precious resource, the firefighters and develop a health and wellness program.

References

- Covey, S. R. (1989). *The seven habits of highly effective people*. New York: Simon and Schuster.
- Harper, P. (2006). *Shape up your company with a wellness program*. Retrieved June 21, 2006, from http://www.microsoft.com/smallbusiness/resources/management/recruiting_staffing/shape_up_your_company_with_a_wellness_program.aspx?pf=true
- IBM (2005, May). *IBM corporate responsibility report: employee well-being*. Retrieved June 21, 2006, from http://www.ibm.com/ibm/responsibility/pdfs/ibm_crr_emp_wellbeing_050305.pdf
- International Association of Fire Chiefs (2004). *Guide to implementing the IAFF/IAFC fire service joint labor management wellness/fitness initiative*. Retrieved June 21, 2006, from http://www.iafc.org/associations/4685/files/wellness_fitness_smfd.pdf
- Los Angeles County Fire Department. (n.d.). *Administrative services wellness fitness program*. Retrieved June 21, 2006 from <http://www.lacofd.org/Behind/HealthWellnessFitness.asp>
- National Fire Protection Association. (2000). *NFPA 1583 Standard on health related fitness programs for firefighters, 2000 edition*. Quincy, MA: National Fire Protection Association.
- National Fire Protection Association. (2002). *NFPA 1500 Standard on fire department occupational safety and health program, 2002 edition*. Quincy, MA: National Fire Protection Association.
- National Fire Protection Association. (2003). *NFPA 1582 Standard on comprehensive occupational medical programs for fire departments, 2003 edition*. Quincy, MA: National Fire Protection Association.

National Fire Protection Association. (2005). *U.S. firefighter fatalities due to sudden cardiac death, 1995-2004*. Quincy, MA: National Fire Protection Association.

National Volunteer Fire Council (n.d.). *Healthy heart firefighter program: firefighters & heart attacks: our nation's first responders at risk*. Retrieved August 23, 2006, from <http://healthy-firefighter.org/risk-factors.html>

Phoenix Fire Department. (2006). *Health, fitness, & safety symposium*. [Brochure]. Phoenix, AZ: Phoenix Fire Department.

True, O. (2005). *Firefighter fitness should dominate the landscape*. Retrieved August 23, 2006, from <http://firechief.com/readers/firefighter-fitness-dominate8763/>

United States Department of Commerce, Building and Fire Research Laboratory, National Institute of Standards and Technology. (2004). *The economic consequences of firefighter injuries and their prevention. Final report* (TriData Corporation Publication No. 05-874). Arlington, VA.

United States Fire Administration. (2004). *Health and wellness guide for the volunteer fire service*. (FEMA Publication No. FA-267). Washington, DC: U.S. Government Printing Office.

United States Fire Administration. (2005). *Firefighter fatalities in the United States in 2004*. (FEMA Publication No. FA-299). Washington, DC: U.S. Government Printing Office.

Willing, L. (2006, May). *Stress tests*. *Fire Chief*, Vol. 50, 86-89.

Appendix A

National Fire Academy Research
Health and Wellness Internal Questionnaire (Fort Lupton, CO)

Please answer the following questions based upon your understanding of a health and wellness program as it relates to the Fort Lupton Fire Protection District and to you as a volunteer or career member for this agency.

- 1. Do you feel that being healthy is important consideration for individuals to perform their duties as a member of the Fort Lupton Fire Protection District?

YES _____ NO _____

- 2. Do you think that a health and wellness program could reduce work related injuries, illnesses, or discover other hidden medical conditions for members of the Fort Lupton Fire Protection District?

YES _____ NO _____

- 3. What components do you feel should be included in a health and wellness program for the Fort Lupton Fire Protection District? (Please check all that apply)

Regular Physical Exams _____ Cardiovascular Training _____
Weight Training _____ Regular Blood Testing _____
Professional Trainer _____ Annual Agility Testing _____
Other: (please specify) _____

- 4. Should member participation in the program be required or voluntary?

Volunteer Firefighters Required _____ Voluntary _____
Career Firefighters Required _____ Voluntary _____

- 5. Would you like to see a health and wellness program implemented in the Fort Lupton Fire Department?

YES _____ NO _____

- 6. What do you feel would encourage members to participate in a health and wellness program?

- 7. Do you feel that a health and wellness program is beneficial to the fire service as a whole?

YES _____ NO _____

Appendix A

National Fire Academy Research
Health and Wellness Internal Questionnaire (Fort Lupton, CO)

8. Check your appropriate description of your membership in the Fort Lupton Fire Protection District. Volunteer _____ Career _____

Appendix B

National Fire Academy Research Health and Wellness Internal Questionnaire (Fort Lupton, CO)

36 Surveys Sent Out – 35 Completed Surveys Returned

Please answer the following questions based upon your understanding of a health and wellness program as it relates to the Fort Lupton Fire Protection District and to you as a volunteer or career member for this agency.

1. Do you feel that being healthy is important consideration for individuals to perform their duties as a member of the Fort Lupton Fire Protection District?

YES (35) NO (0)

2. Do you think that a health and wellness program could reduce work related injuries, illnesses, or discover other hidden medical conditions for members of the Fort Lupton Fire Protection District?

YES (35) NO (0)

3. What components do you feel should be included in a health and wellness program for the Fort Lupton Fire Protection District? (Please check all that apply)

Regular Physical Exams (28)	Cardiovascular Training (32)
Weight Training (31)	Regular Blood Testing (21)
Professional Trainer (8)	Annual Agility Testing (23)
Other: (please specify)	Annual Drug Testing (2)
	Nutrition Education (2)
	Stretching/Flexibility (1)
	Goal Setting (1)

4. Should member participation in the program be required or voluntary?

Volunteer Firefighters	Required (18)	Voluntary (17)
Career Firefighters	Required (30)	Voluntary (3)

Appendix B

National Fire Academy Research
Health and Wellness Internal Questionnaire (Fort Lupton, CO)

5. Would you like to see a health and wellness program implemented in the Fort Lupton Fire Department?
- YES (34) NO (1)
6. What do you feel would encourage members to participate in a health and wellness program?
- | | |
|--|-----|
| Individual Personal Health (feel better) | (6) |
| Clothing Incentive | (5) |
| Organized Program | (5) |
| Mandatory Participation | (4) |
| Competition Between Groups/New Ideas | (4) |
| Education About Health and Wellness | (3) |
| Training Credit | (2) |
| Workmen's Compensation Training | (1) |
| No Response | (5) |
7. Do you feel that a health and wellness program is beneficial to the fire service as a whole?
- YES (35) NO (0)
8. Check your appropriate description of your membership in the Fort Lupton Fire Protection District. Volunteer (31) Career (4)

Appendix C

The following is a list of the Weld County Colorado Fire Agencies that received External Questionnaires.

Ault-Pierce Fire Department
Berthoud Fire Department
Briggsdale Fire Protection District
Greater Brighton Fire Protection District
Eaton Fire Protection District
Evans Fire Department
Frederick-Firestone Fire Protection District
Galeton Fire Protection District
Hudson Fire Protection District
Johnstown Fire Department
LaSalle Fire Protection District
Loveland Fire and Rescue
Milliken Fire Protection District
Mountain View Fire Protection District
New Raymer-Stoneham Fire Protection District
Nunn Fire Protection District
Pawnee Fire Department
Platte Valley Fire Protection District
Platteville-Gilcrest Fire Protection District
Kennesburg Fire Protection District
Roggen Fire Protection District
Union Colony Fire Rescue Authority
Windsor-Severance Fire Protection District

Appendix D

National Fire Academy Research
 Health and Wellness External Questionnaire (Weld County, Colorado)

1. Does your organization provide an initial health and wellness exam at the start of employment/membership for either of the following? If you do not have career firefighters, please check N/A in this category.

Volunteer Firefighters	YES _____	NO _____	
Career Firefighters	YES _____	NO _____	N/A _____

2. Does your organization provide a health and wellness program for either of the following? If you do not have career firefighters, please check N/A in this category. ***If your organization does not presently have a health and wellness program, please skip to question #6 after responding to this question.

Volunteer Firefighters	YES _____	NO _____	
Career Firefighters	YES _____	NO _____	N/A _____

3. Is participation in the program required or voluntary?

Volunteer Firefighters	Required _____	Voluntary _____
Career Firefighters	Required _____	Voluntary _____

4. How does your organization encourage participation in the health and wellness program?

5. What are the components of your health and wellness program?

Regular Physical Exams _____	Cardiovascular Training _____
Weight Training _____	Regular Blood Testing _____
Professional Trainer _____	Annual Agility Testing _____
Other: (please specify) _____	

6. If you do not have an existing health and wellness program within your organization, would you like to see one implemented?

YES _____ NO _____

Appendix D

7. If you do not have an existing health and wellness program within your organization, what do you believe to be the primary reason?

8. Do you feel that a health and wellness program is beneficial to the fire service as a whole?

YES _____ NO _____

Appendix E

National Fire Academy Research
 Health and Wellness External Questionnaire (Weld County, Colorado)

26 Surveys Sent Out – 14 Completed Surveys Returned

Please answer the following questions based upon your understanding of a health and wellness as it relates to your organization and to you as a volunteer member or career firefighter.

1. Does your organization provide an initial health and wellness exam at the start of employment/membership for either of the following? If you do not have career firefighters, please check N/A in this category.

Volunteer Firefighters	YES (10)	NO (2)	N/A (2)
Career Firefighters	YES (12)	NO (0)	N/A (2)

2. Does your organization provide a health and wellness program for either of the following? If you do not have career firefighters, please check N/A in this category. ***If your organization does not presently have a health and wellness program, please skip to question #6 after responding to this question.

Volunteer Firefighters	YES (6)	NO (4)	N/A (2)
Career Firefighters	YES (9)	NO (3)	N/A (2)

3. Is participation in the program required or voluntary?

Volunteer Firefighters	Required (5)	Voluntary (2)	N/A (2)
Career Firefighters	Required (7)	Voluntary (1)	N/A (1)

4. How does your organization encourage participation in the health and wellness program?

- Mandatory Participation (4)
- Equipment Available (3)
- Mandatory Annual Physicals (2)
- Pay stub Reminders (1)
- Peer Support (1)
- Health and Wellness Classes (1)
- Health Insurance (1)

Appendix E

National Fire Academy Research
Health and Wellness External Questionnaire (Weld County, Colorado)

5. What are the components of your health and wellness program?

Regular Physical Exams (9)	Cardiovascular Training (9)
Weight Training (9)	Regular Blood Testing (7)
Professional Trainer (3)	Annual Agility Testing (5)
Other: (please specify) Wellness Committee (1)	

6. If you do not have an existing health and wellness program within your organization, would you like to see one implemented?

YES (6) NO (0) N/A (8)

7. If you do not have an existing health and wellness program within your organization, what do you believe to be the primary reason?

No Program (9)
Difficulty with Participation Due to All Volunteer Agency (2)
Never Considered a Program (2)
No Support of District Board (1)

8. Do you feel that a health and wellness program is beneficial to the fire service as a whole?

YES (14) NO (0)