EVALUATING A PEER FITNESS TRAINER PROGRAM

Leading Community Risk Reduction

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ABSTRACT

The problem this project examined was the Anchorage Fire Department (AFD) was only the third department in the country to host an International Association of Fire Fighters / International Association of Fire Chiefs Peer Fitness Trainer Certification Workshop and had limited knowledge of the obstacles and challenges involved with implementation of a peer fitness trainer program.

The purpose of this research was to identify and evaluate the challenges, obstacles, and opportunities associated with implementation of a peer fitness trainer program.

Evaluative and historical research methodologies were used to answer the following research questions:

1. To what extent does the Peer Fitness Trainer Certification Workshop enhance the student's ability to conduct individual fitness assessments, design, implement, manage, and administer personal fitness programs?
2. To what extent does the Peer Fitness Trainer Certification Workshop increase the student's knowledge of anatomy, physiology, kinesiology, nutrition, exercise programming, exercise techniques, wellness, and professional responsibilities?
3. To what extent does the Peer Fitness Trainer Certification Workshop develop the student's aptitude for contributing to the improvement of firefighter wellness, health, fitness, safety, and job performance?
4. What actions are now required of the AFD to achieve optimum success of the Peer Fitness Trainer Program?

The procedures involved each candidate's self evaluation of knowledge, skills, and abilities before and after the workshop. This data was used to answer all questions. An extensive literature review provided additional answers to question 4.

Recommendations included: 1) enhancement of AFD's commitment to the "fitness assessment" component of the program, 2) vocal long term commitments by Municipal and AFD leaders, 3) careful refinement of the organizational structure and design of the PFT program, 4) improved member accountability and responsibility, 5) input and feedback from all AFD members, 6) support of creative fitness initiatives, and 7) AFD firefighters serving as role models.

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INTRODUCTION

The Municipality of Anchorage (MOA) and the Anchorage Fire Department (AFD) allocated substantial resources to the safety of fire fighting personnel. As part of this commitment, the department hosted an International Association of Fire Fighters / International Association of Fire Chiefs (IAFF/IAFC) Peer Fitness Trainer Certification Workshop (workshop). This provided 40 hours of classroom and practical training for 30 members of the department. The problem this project examines is AFD was only the third fire department in the country to receive this instruction and has limited knowledge of the obstacles and challenges involved with implementation of a peer fitness trainer program. The purpose of this research is to identify and evaluate the challenges, obstacles, and opportunities associated with the development of a successful program.

Evaluative and historical research methodologies were used to answer the following research questions:

1. To what extent does the Peer Fitness Trainer Certification Workshop enhance the student's ability to conduct individual fitness assessments, design, implement, manage, and administer personal fitness programs?
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4. What actions are now required of the Anchorage Fire Department to achieve optimum success of the Peer Fitness Trainer Program?

BACKGROUND AND SIGNIFICANCE

Background

The Anchorage Fire Department (AFD) has grappled with firefighter fitness issues for decades. “Throughout the history of the fire service the proper implementation of fitness programs in fire departments has been extensively debated” (International Association of Fire Chiefs & International Association of Fire Fighters, 1997, p. 43). AFD has attempted various solutions, but all have failed to achieve acceptable levels of success.

Renewed attention was focused on firefighter fitness in 1996, when the International Association of Fire Fighters and the International Association of Fire Chiefs joined together to work on The Fire Service Joint Labor Management Wellness-Fitness Initiative (the initiative) (International Association of Fire Chiefs & International Association of Fire Fighters, 1997, p. iii). Bellingham (2001) states, “Leaders, by necessity, must recognize, identify and discuss crises and opportunities before, during, and after they occur” (Bellingham, 2001, p. 11). In 2001, the AFD applied for and received a fitness and wellness program grant through ‘Title XVII – Assistance to Firefighters’ (Bruno, 2001, February, p. 16). A portion of this grant was allocated to training and certifying the 30 members as peer fitness trainers (PFTs).

Implementation of a peer fitness trainer (PFT) program involves the Mayor of Anchorage, the Municipal Assembly, and other Municipal leaders. Loy (2002) states, “…city officials need to understand the complexity of the issue and appreciate the effect they can have…” (p. 18). Additionally, it will include the members of the AFD and other “outside”

stakeholders. Lambert (1986), states, "…a training program effort represents a partnership among all concerned – designer, writers, researchers, administrators, facilitators, instructors, and of course, the participants…" (p. XII). Frosdick and Walley (1997) contend, "All personnel…need to be involved and committed to the developing and maintaining the 'safety culture'…" (p. 178).

Lack of knowledge about the challenges, obstacles, and opportunities involved with the PFT program, is stifling the growth and limiting the effectiveness of the AFD program.

If status quo is permitted to persist, the AFD will continue to suffer from a variety of maladies that plague the American fire service. Jacobs (1976) states, "The fault that firefighter and the rest of the population share in regard to physical fitness programs is taking the path of least resistance". He claims, "In a society where physical work must take the form of deliberate exercise (instead of being a necessity of survival), physical activity becomes easy to ignore"(p. 2). "Compared with sedentary male populations, firefighters score significantly higher on the muscular strength tests but not significantly better on aerobic capacity tests" (Crouse, Green, & Womack, 2000, October, p. 544). Curtis and Davis (1983) contend, "There is a considerable need for increased levels of physical fitness as insurance against fatigue and heart disease" (p. 5). Stefano (2000) states, "The leading cause of line-of-duty deaths across the country is heart attack" (p. 2). Scully (2000) laments about younger department members suffering heart attacks (p. 30).

If changes are not made, potential improvements in job performance will not be realized. Loy (2001) argues, "Obesity-hindered performance saturates fire service (p. 20). Hayford states, "…since fitness is a critical component of firefighter health and safety, it is part of the job" (p. 18). Shelley (2001) quotes Indianapolis' Pike Township Fire Department Deputy Chief Dawn

Smith concerning fitness as an integral part of a firefighters job performance, “Nobody wants a slug backing them up on the line” (p. 46). Davis (1997) states, “The overarching reason for the existence of the fire department in the first place is to protect and serve the community. This mission cannot be accomplished with an unfit work force” (p. 25).

Failure to act will permit poor habits to persist uncontested. Perry (2000) states, “The dark side to our chosen occupation involves a fate of which we have nearly total control. The fate to which I am referring is our ‘buy in’ to the firefighter culture” (p. 64). Coon (1996) states, “Hiring procedures require that applicants meet a minimum level of physical fitness before they will be considered for a job. Once hired, however, few fire departments have programs to help maintain that fitness level (p. 25). In a study of New York City firefighters, the Bureau of Health Services documented that, “the average weight gain of firefighters in their first year on the job was nearly 15 pounds” (Kelly & Prezant, 2001, p. 18). Perry (2000) contends, “…the health habits many of us practice in the fire station are self-destructive” (p. 65). Davis (1997) pleads “…even more distressing is the overt hostility that sometimes exists in the fire service toward adhering to a regular program of physical activity” (Davis, 1997, March, p. 26). Bellingham (2001) argues, “…unless radical changes are made, the end result will be denial…until doom strikes” (p. 11).

If the problem is not addressed, injury rates will remain high. “According to the U. S. Bureau of Labor Statistics, firefighters suffer a greater incidence of service-connected injuries/illnesses than any occupation in the United States. Line-of-duty fatality rates are surpassed only by miners and agricultural workers” (Kelly & Prezant, 2001, p. 18). Davis (2000) states, “The data show that the poor-fit employee will cost you twice the workers comp price of the average-fit employee, who will again cost twice the price of the high-fit employee (p. 29).

Concerning sick leave usage, Aldana & Pronk (2001) state, "…failure of employees to participant in fitness and health promotion programs is associated with high rates of employee absenteeism (p. 36).

Solving this problem will provide the Municipality of Anchorage and the AFD an improved chance of enjoying the benefits of physically fit firefighters. If a fire department wishes to run at peak efficiency Coon (1996) advises ,"fit firefighters are an absolute necessity" (p. 25). Curtis and Davis (1983) state, "…fit firefighters took half the time to complete a series of simulated fire ground tasks as did their less-fit counterparts". They continue by stressing how critical physical performance is, "…consider the importance of fitness in extreme situations, such as having to suddenly free yourself from a backdraft condition, or having to rescue a victim after carrying a hose up four flights of stairs" (Curtis & Davis, 1983, p. 5). Powell (1990) contends that a fitness program, "can instill motivation and higher morale" (p. 15).

Solving this problem will help reduce injuries. "A fitness program can be the single biggest factor in reducing on-the-job injuries" (Davis, 1997, July, p. 25). Peters (1990) argues education and prevention will eliminate many injuries (p. 3). Cooper (1982) adds, "workers who are in shape are less likely to be careless on the job, and that means fewer industrial accidents" (Cooper, 1982, p. 210). Eller (1995) found fitness programs decreased and reduced the severity of back injuries (p. 14). Davis (1996) reports the outstanding success of the Canton (Ohio) Fire Department in reducing injury leave hours take because of the department's fitness program (p. 26). Peacock contends an effective fitness program, "should realize significant cost savings in lost work time, workers compensation, and disability" (p.17).

Significance

This applied research paper is linked to the National Fire Academy's Community Risk Reduction curriculum. In Unit 6 of the student manual students are asked to evaluate the results of a risk reduction program. The results gained from this project will be used to improve performance by modifying components of the program (National Fire Academy, 2002, p. 6-1). This project relates to one of the United States Fire Administration (USFA) operational objectives, which is to "reduce the loss of life from fire of firefighters" (United States Fire Administration, 2001, p. II-2).

LITERATURE REVIEW

A literature review was conducted to analyze the existing body of knowledge on firefighter fitness. Various job performance and injury studies were examined. The literature review included a search of fire service and scientific journals, textbooks, and the Internet. This literature review added considerable support to understanding the challenges, obstacles, and opportunities associated with implementation of a firefighter peer fitness trainer program. This section will discuss critical findings in the areas of:

Industry standards
Physical demands of the job
Call to action
Barriers to achieving fitness
Reasons to achieve fitness
Recruits
Fitness programs
Fitness assessment
Individualized exercise prescriptions
Motivation
Efficient training
Nutrition

Stress
Overfat
Injury
Workers Compensation
Data collection and analysis
Mandatory
Leadership
Politics

Industry standards

"A fire service fitness program is mandated by National Fire Protection Association (NFPA) 1500, *Standard on Fire Department Occupational Safety and Health Program*", states Jacobs (1990). He continues by quoting paragraph 8-5.1 of the standard, "The fire department shall provide and require the structured participation of all members in a program to develop and maintain appropriate levels of physical fitness" (p. 43).

"In some cases, the local fire department has already adopted NFPA standards through some process, making them formal mandates" (Wallace, 1998, p. 69). AFD has accomplished this through AFD Policy 901, Safety and Health Program under the authority of Anchorage Municipal Code 3.30.012-A and dated May 8, 2000 which reads, "It is the policy of the Anchorage Fire Department to strive to establish and maintain a safe and healthful work environment for its employees. *The Department will comply with all applicable State Occupational Safety & Health Regulations and National Fire Protection (NFPA) Standards"* [italics added] (Withers, 2000 p. 1).

The physical demands of the job

"In firefighting, you must meet the demands imposed by various emergency situations. You have the responsibility of servicing the public with a level of physical fitness that enables

you to respond to a host of unforeseen emergencies" (United States Fire Administration, 1990 p. 1). "Firefighters do not control the physical requirements of their work environment, but rather must react to ever-changing emergency conditions (Johnson, 1995 p. 14). "Firefighting differs from traditional industries where the job is often designed to the physical performance capabilities of the worker" (United States Fire Administration, 1990 p. 1). LeCuyer (2000) states, "…work…is characterized by hundreds of different tasks performed in a changing environment" (p. 233).

Stefano (2000) states, "…the physical and psychological demands of being a firefighter are quite high. Being fit and strong are not an option but a prerequisite to performing the job" (p. X). Davis (2000) discusses how metabolically demanding the use of axes and sledgehammers can be with energy requirements approaching 14 mets while resting metabolism is one met (p. 28).

Gladdin (1992) argues firefighters must be able to perform their job, but must also have a fitness reserve to respond to "unforeseen emergencies". (p. 6). "Firefighters are bound to the same physical laws of nature as the general population: however, the demands of our profession take an excessive toll"(Perry, 2000, September, p. 65).

Perry (2000) states, "We work a strange schedule complete with 911-involved insomnia" (p. 64). "There is nothing more stressful than having to make a transition from rest or sleep to maximal effort at a moment's notice, day or night, rain or shine. Unless we prepare for that transition through exercise, we will be unprepared to make such physical adjustments without a greater risk of injury" (LeCuyer, 2000, p. 13). "…protective equipment…can decrease work efficiency by as much as 27 percent" (Crouse et al., 2000, October, p. 544).

Call to action

Ball (1999) states, “The growing public perception is that all firefighters should be highly fit individuals” (p. 60). Fisher (1991) contends that fit firefighters serve the public more effectively (p. 17). Dore (1991) asserts a physically fit firefighter conveys a much better public image (p. 15). Graeve (1991) states, “in order to offer quality service to the public, their personnel must be physically able to expediently perform their expected duties” (p. 2).

Davis (1997) advises, “We are never going to get with the program until we are mature enough to accept that fitness is an integral and unconditional component of the job” (p. 26). “Regular participation in a physical fitness program is essential to a proper maintenance routine (United States Fire Administration, 1990 p. 1). “Increased stamina has been found to delay the onset of exhaustion and fatigue under adverse environmental conditions, and could possibly spell the difference between success or failure in rescuing a victim, fellow firefighter, or yourself” (Curtis & Davis, 1983, p. 5).

Andersson (2001) advises that wildland fire job performance examinations are demanded by firefighters. He says the firefighters complained bitterly to the health and safety people that some members had no business being in the field because they were not physically fit (p. 10). Streger (2000) states, “…it is time for us to set minimum standards for physical capabilities to perform pre-hospital medical care, and for us to make every effort to condition the people who currently provide EMS to prevent injuries” (p. 32).

NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program* states, “there must be a fundamental behavior change in how firefighters and fire departments address fire service occupational safety” (National Fire Protection Association, 2002, p. 1). Reid (2002) claims, that the only way to prevent injuries and death in the workplace is by “modifying employee behavior” (p. 108). “The challenge we face is summoning the courage and motivation

to break old patterns"(Perry, 2000, September, p. 65). Kletz (1994) warns that safety advisors are often told, "It must be safe as we have been doing it this way for twenty years without an accident." His suggested response is, "the fact that no one has been killed in twenty years is relevant only if a fatality in the 21st year is acceptable" (p. 209).

Barriers to achieving fitness

Davis (2000) discusses the strange message we send to children when we use exercise as a form of punishment by making them do push-ups or running laps (p. 29).

Jacobs (1990) lists five "counterproductive fears" typically associated with the attempt to maintain or improve health and fitness: "a) the fear of age discrimination, b) the fear of embarrassment, 3) the fear of showing a lack of willpower, 4) the fear of a loss of freedom, and 5) the fear of too many authority figures. He contends these fears are common in the fire service and create, "unique motivational problems" (p. 107). Davis (2000) describes a common stigma associated with exercise. He states, "Exercise is associated with…a reaction to their own inadequacies, or perceived inadequacies, of physical prowess. In other words, because of cultural expectations for athleticism in fit people, they shrink from exercise" (p. 33).

"Firefighters experiencing high levels of stress frequently report a lack of energy or desire to work-out. They often report that when they feel better they will begin to exercise. However, the problem becomes one of the chicken and the egg" (Fishkin, 1989, p. 52). There is not a high demand for brawn in today's society. Some view exercise as irrelevant and just another needless intrusion into an already cluttered life (Davis, 2000, November, p. 33).

Davis (2000) laments about unrealistic expectations of firefighters and the Adonis factor. He states, “Fitness is not about what you look like, it is about the patency of your coronary arteries. It is about your resistance to fatigue and a lot of other neat physiological stuff” (p. 33).

Powers (2000) states, “Time is the number one reason people give for not exercising and staying fit” (p. 66). “The core of successful planning and time management is reestablishing your priorities. For many of us, health and fitness aren’t even on the list” (Perry, 2000, September, p. 64). “It is usually not the amount of time one has to exercise, but how that time is used that determines whether or not one stays fit” (Powers, 2000, August, p. 66). Perry (2000) argues, “Achieving optimal fitness should not dominate your day or week: if it does, you probably won’t stick with it very long” (p. 64).

Loy (2001) laments about firefighters in denial, “It seems the prevailing health theory among firefighters is, ‘If I don’t know anything is wrong, then I’m healthy – I am immortal’ ”(p. 29). Some members may be in denial and have the big sky – little bullet theory about fitness (Davis, 2000, November, p. 33). Liebeck (2001) describes his personal experience of being on the customer end of a defibrillator by outlining his state of denial. He ignored his doctor’s advice about controlling high cholesterol levels because his mother and aunt lived long lives with heart disease. He states, “I thought I was fit enough. I passed FDNY’s entrance physical and thought I had 20 years before retirement and nothing to worry about. Nothing would happen to me. I’m a captain in the FDNY”. He ignored the results of his department physical exams and said, “I wasn’t going to be concerned about it. I kept right on eating those fire station meals”. After having a stent installed in his left descending artery that had been 100 percent blocked, he stated, “I got slapped in the face; there is no need to hit me again”, He goes on to advise, “The job is so much more physical today. You really have to take care of yourself…” (p. 68).

Reasons to achieve fitness

Simmons (1994) presents the Webster definition of fitness "…sound, physically and mentally, healthy; fitness stressed adaptability and sometimes special readiness for use or action, implies an answering to requirements or demands" (p. 2). Davis (1997) states, "In the fire service, other people's lives depend on your fitness. I can not think of another profession where the out come of the job is so dependent on physical abilities" (p. 26). Additionally, Ulrich (1997) states, "employees are continually being asked to do more" and describes how this additional workload demands improved fitness conditioning (p. 125).

Davis (2000) contends, "either you are coasting (and you can only coast in one direction – downhill), or you are proactively trying to stem the tide of the long slow slide toward taking a dirt nap" (p. 32). Loy (2001) states, "…we reach our peak physiological function at about 30 years of age with a gradual decline of about 0.75 to 1 percent per year" (p. 22). Stefano comments, "…exercise physiologists estimate they can slash 10 to 20 years from a physically fit person's chronological age when determining his or her biological age" (Stefano, 2000, p. XI). Cooper (1982) advises, "We cannot control our age, sex, or heredity; our most effective course of action, then, should be to reduce those factors which are in our control" (p. 8).

Jacobs (1990) states, Physically fit employees are directly related to higher production, positive problem solving, cooperation, creative thinking, and reduced absenteeism" (p. 42). Curtis and Davis (1983) agree, "There is a cause-and-effect relationship between the completion of firefighting tasks and the firefighter's level of fitness" (p. 4). Cooper (1982) comments, "…a higher level of fitness…and improved self-image can put you in a better position to get a promotion" (Cooper, 1982, p. 211).

Gregory (2002) argues the importance of healthy bodies to mental well being (p. 7). Formichelli (2001) states, “exercise produces feelings of well-being by causing the release of endorphins in the body” (p. 35).

Davis (2000) states, “exercisers also have heart attacks, just not as often, and their survival is five times likelier” (p. 29). Concerning fitness, he states,“…even if it does not add years to your life, it will add life to your years” (Davis, 1998, June, p. 32).

Recruits

“Recruiting unfit applicants for this demanding occupation is a betrayal of the public trust” (Davis, 2000, May, p. 36). “Piskura (2001) explains the candidate physical ability test, “examines the anaerobic and aerobic capacity of individuals exerting effort towards simulated firefighting tasks” (p. 9). “The entry level test should be as stringent as possible to be legally defended”, states Davis (2000) about firefighter candidate testing. He continues, “No one is doing anyone a favor by pretending that passing some Mickey Mouse test in indicative of future success, The consequence of this kind of myopic thinking is setting people up for failure” (p. 36).

“We must dispel the notion that the occupation of firefighter is for everyone. There is in some quarters, the mindset that ‘All we need to do is work with people and eventually they will be capable of performing the job’ ” (Davis, 2000, May, p. 36). Elliot (2001) describes how in an effort to increase minority hiring some fire departments lowered physical fitness standards for new hires. He quotes Rich Duffy, “Unfortunately, what we found in many cases was that by lowering standard, more white, male candidates – of lesser physical ability – came to get the job” (p. 53). “Creating life-changing injury by subjecting the unfit to the rigorous demands of the job is the likely outcome of mismatching the person to the job” (Davis, 2000, May, p. 36).

Concerning female firefighters, Johnson (1995) states, “What the fire service community expects for all applicants and all permanent employees is a set of minimum standards” (p. 38). Jill Young, a 10-year veteran firefighter with the Fairfax County Fire & Rescue Department, states, “First, you’ve got to have the physical ability, and second, you’ve got to have the mental ability to push yourself” (Elliott, 2001, May, p. 52). Davis (2000) states, “In a job where physical prowess can make the difference between life and death, hiring those people who demonstrate the greatest probability of longevity is a sane, cost-effective approach to saving lives” (p. 29).

Regarding firefighter recruit training academies Davis (2000) states, “There’s too much to do and too little time to waste on remediation of poorly fit candidates.” Further, he states, “It is an unreasonable expectation to task training officers with rehabilitation efforts.” Instead, he proposes, “This is the time to weed out the unfit and let them train on their own time and return in a motivated state when they are ready”. He warns, “If you have recruits struggling to complete tasks in the academy, where do you see these same people in one, five, or twenty years” (p. 36)?

Fitness programs

A successful manager understands that the strength of the organization lies in its rank and file employees (Parr, 1995, p. 90). Improving individual and organizational performance requires changes in organization, processes, and technology” (Kaufman, Mayer, & Rojas, 1993, p. 134).

“As the planner of the program, you may think you know what employees want, but you can’t really know until you ask them (Sarkis, 2000, July, p. 41). Lambert states, “for a training program to become truly effective, it must be based on a real need” (p. 25). He continues,“…needs analysis…provides the essential link between perceived needs and specific areas to be developed” (p. 26).

"For any training effort to be truly successful, a strong alliance must be forged with the parent organization and its corresponding line organization" (Lambert, 1986, p. 25). Ball (1999) states, "A train-the-trainer approach can be a cost-effective solution" (p. 60). "…good chiefs recognize talent, recruit and develop it, and then turn it loose to run a part of the organization" (Fire Chief, 2001, March, p. 144).

"In a survey of successful fitness programs it was determined that 10% of the success was due to organization, 40% was attributed to content, and 50% of the success was related to leadership" (United States Fire Administration, 1990 p. 10-5). Sarkis (2000) states, "An effective wellness program is designed to fit the culture of a company" (p. 40). "Programs that use education and training to promote the benefits of health and fitness are the preferred approach to maintaining a productive and effective workforce (Women in the fire Service Inc., n.d. p. 2).

The peer fitness trainer certification covers four performance domains: 1) fitness assessment, 2) program design, 3) program implementation, and 4) administration (Runnels, 2001, April 15 p. 4). Training materials for the Peer Fitness Trainer certification include: 1) a fire service-specific text, 2) a personal trainer manual published by the American Council on Exercise, and 3) a study guide (Craig, 2001 September p. 3).

Smith (1990) encourages departments to seek certification of a fitness coordinator (p. 7). Anders (2001) recommends hiring an exercise specialist with a degree in exercise physiology or kinesiology, certification as a personal trainer, and a thorough understanding of firefighting. (p. 41).

"Today's trainer can be described as one who identifies, evaluates, and transmits the appropriate knowledge to aid individuals in performing assigned tasks" (Lambert, 1986, p. 26). Egherman (2001) believes marketing skills of the peer fitness trainers will make the program

work (p. 22). “Applied learning requires constant practice and positive reinforcement” (Lambert, 1986, p. XIII). “With positive feedback, a person feels encouraged, certain that the chosen course is the right one, and he enjoys the praise and camaraderie…” (Staley, 1998, p. 124).

Firefighters must be retrained if they do not retain the requisite understanding or skill (National Fire Protection Association, 2001, ¶ 3). Johnson (1995) stresses the importance of continuing education, “Fitness and wellness education programs should find a home on the monthly training schedule” (p. 48).

Fitness assessment

LeCuyer (2000) states, “The fitness test is the test instrument of the fitness program, which is categorically an assistance program designed to determine a level of preparedness.” (p. 233). Riddle (1999) advises, “The fitness assessment measures the individuals physical capacity pertaining to his or her job-related wellness” (p. 14). Health and fitness test are used as a diagnostic tool (Shelley, 2001, April, p. 45).

Anders (2001) suggests fitness assessments be mandatory for all personnel prior to beginning an exercise program. He advises using non-punitive testing with all results remaining confidential. Anders recommends using the information from the assessment to design an exercise prescription tailored to the specific needs of the individual firefighter, keeping in mind his/her particular job duties. He encourages departments develop a fitness assessment tracking mechanism, to show members their results, and to assist them in identifying their areas of challenges and success (p. 43). Curtis and Davis (1983) contend, “periodic… testing …suggests management has an interest in program compliance” (Curtis & Davis, 1983, p. 25).

Loy (2001) states, “Knowledge is power. Armed with the knowledge of their health status, firefighters can take steps to improve their health and, consequently their fitness” (p. 30). “Start with a baseline…implement your plan and chart your progress” (Perry, 2000, September, p. 65). “Fitness assessment can give firefighters a reason to keep working out. These test can provide tangible proof of the benefits of a healthy lifestyle, making them great exercise catalysts” (Shelley, 2001, September-a, p. 34). “The assessments also foster the spirit of competition among firefighter, as seeing how they rank in their department motivates them to improve their standing…the evaluation entices them based on personal pride to want to be average or above” (Formichelli, 2001, April, p. 37).

Davis (1996) warns some members may not be enthusiastic about fitness assessments. He reports the poor attitudes of a number of professional football players when they received results of their fitness assessments. He described their mindset as “agnostic”, and laments, “They could not see the benefits of physical fitness programs” (p. 26).

Individualized exercise prescription

Curtis and Davis (n.d.) state, “If exercise is to provide a beneficial effect, it must be tailored to the needs of each firefighter….a program approach designed to meet the unique requirements of the firefighter” (p. 62). Metejka (1997) argues, “The focus of the program should continually be the individual member” (p. 21). Stefano (2000) adds, “…each person is unique in his or her exercise and nutritional needs” (p. 107).

Cooper (1982) attributes success of Japanese employer fitness programs to the “personal attention” paid to the employees needs” (p. 213). “If exercise is to be effective and therapeutic, it must be prescribed in doses according to the need of the individual. This means that you personalize the prescription to suit the needs of the firefighter” (Davis, 1996, November, p. 34).

Bizjak and Adams (1999) state, “Each individual brings something different to the learning environment and expect something significant from the learning experience” (p. 5). “The leaders job is to work with the employee to mesh individual needs…with the organization’s needs for performance and results” (Staley, 1998, p. 122).

Motivation

Concerning the challenge to motivate, Davis (1997) suggests ,“If someone does not want to be fit, there is not much you can do about his or her attitude, but I seriously question the professionalism of a firefighter who is not up to the task” (p. 26). “Without getting into local politics, department philosophies, or fiscal impact studies it becomes crystal clear that, for the most part you are the only person who is going to do something for your well-being” (Perry, 2000, September, p. 64). Davis (2000) states, “The attitude about personal fitness that started long ago has come home to rest in the mind of the individual who believes that he has what it takes to do the job – and don’t try to tell him otherwise” (p. 29).

Kiell claims, “Fears of illness or death are not good keys to motivation” (p. 28). Phillips (2000) states, “the best motivation is internal, not external (p. 15). Grant and Hoover (1994) define motivation as, “providing an inner urge that prompts a person to action with a sense of purpose” (p. 162). Hayford (1995) states, “Like other values, your beliefs and attitude about fitness are an individual matter that reflects your own personality and a lifetime of experience”. He suggests, “keep in mind that when making any lifestyle change, like starting a new exercise program, it is easier when your values support what you plan to do” (p. 16). “Motivation never remains static; it continually fluctuates on various levels. These motivational levels can be built up, reduced, or enhanced, depending on the stimulus present, and once satisfied, motivation can remain dormant for years” (Lambert, 1986, p. 31).

Tichy and Devanna state, “Overcoming resistance by people used to the old ways is more complex than merely issuing orders that a new era now exists”. They suggest, “people must be given a way to work out the psychodynamics of closing off what has been (‘endings’), working through a transition period, and taking up new beginnings” (p. 60). “You don’t motivate people though your value system, you motivate people through their own value system” (Staley, 1998, p. 126). “Part of being an inspirational leader involves understanding different types of people and what motivates them. The leader must then apply the types of motivational tactics that will be the most effective” (Fire Chief, 2001, March, p. 23). “Motivation poses the greatest challenge to leadership. It is often the most difficult part of a fire officer’s job” (Grant & Hoover, 1994, p. 163). “Once people accept the fact that business as usual is unacceptable, they begin to mobilize behind the changes” (Bellingham, 2001, p. 11).

Hayford (1995) asks these questions, 1) “Why do some individual enjoy physical fitness activities and others find them boring or unpleasant?” and 2) “Why do some fire and rescue workers stick with their exercise routine and other quit after a short period of time?” He claims, “The answer seems to lie in the ‘psychology of fitness’. In other words your beliefs and attitudes about fitness strongly influence your response to any fitness program” (p. 16). Bellingham and Cohen (2001) warn “…excitement can turn to discouragement when we fall short of our over-ambitious expectations. In many cases, we have not established realistic and achievable goals…(p. 275).

Ball (1995) relates an experience with firefighters scoring higher on assessment exams that they expected. This success inspired them to renew their commitment to fitness (p. 66). Shelley (2001) describes how Indianapolis’ Pike Township Fire Department financially rewards firefighters who score above average on their fitness test (p. 46). “Incentives are nice but

unnecessary; you should not have to pay people to meet the requirements of the job. However, incentives, such as T-shirts or certificates of accomplishment, add spice and provide tangible proof of fitness, as if actual fitness were not enough" (Davis, 1997, March, p. 26).

Efficient Training

Firefighters are occupational athletes. This title reflects the numerous "uncontrollable variables that are part to the job and must be considered when designing individual exercise programs" (International Association of Fire Chiefs, International Association of Fire Fighters, & American Council on Exercise, 2003, p. 11). "Physical fitness programs should be designed based on firefighting functions" (Bachtler & Brennan, 1995, p. 301). "When training firefighters use as many functional exercises as possible to better prepare them for the rigors of the job" (Stefano, 2000, p. 30).

"A good understanding of the overreaching and overtraining phenomena are critical to the success of any fitness program" (International Association of Fire Chiefs et al., 2003, p. 175). Overtraining can have long-term detrimental effects and require a recovery period of several weeks up to one year (p. 176).

Davis (1997) advises, "Our understanding of the principles dynamics and benefits of exercise have been greatly expanded through the body of sports medicine research completed and published in the past 40 years". He contends we are failing to employ our knowledge of the physiology of exercise, " we are only using about 10% of what we know" (p. 30).

Kendal (2000) advocates stair climbing as a means of training that is well suited to firefighters (p. 30). "What's needed is a short, rather intense workout that doesn't leave one totally drained and overly fatigued" (Stefano, 2000, p. 1).

Nutrition

Shelley (2001) states, “The primary causes of death in the United States are lifestyle-related illnesses…some researchers estimate that nutritional habits make up 63 percent of that” (Shelley, 2001, September-b, p. 38). “Proper nutrition is just as important as a good exercise program. Poor eating habits are a major contributor to bad health” (Powers, 2000, August, p. 68). “Contrary to popular opinion, EMS jobs do not necessitate eating at fast-food restaurants 24 hours a day” (Powers, 2000, August, p. 68).

Phillips (2000) refers to the challenge of staying away from fire station donuts, cookies, ice cream, and sweets” (p. 14). Shelley (2001) states, “Overeating and unhealthy foods can also be comforting”. She also describes firefighters using food as a reward and that the “macho stereotype” is a big obstacle to healthy eating (p. 38). Phillips (2000) describes the challenge faced by members who are very hungry because they missed a meal and are in a hurry to eat before the next call” (p. 14).

Powers (2000) advises, “…select foods high in carbohydrates and proteins, but low in fats. Pay attention to food groups: Grains and pastas should make up most meals, followed by fruits and vegetables and meats and dairy products” (p. 68). Phillips (2000) states, “when crews cook together, they frequently eat like royalty” (p. 14). “A much healthier choice would be to pack a well-balanced meal at home and bring it to work” (Powers, 2000, August, p. 68).

Shelley (2001) states, “In every firehouse you should have a bowl of fruit out in the morning” (p. 38). Loy (2001) states, “…you need to eat the right foods at the right time. A powerful engine that’s out of gas is of little value” (p. 22).

Division Chief Scott Pelton of the Phoenix Fire Department states, “Firefighters who eat low carbohydrates are very vulnerable to hitting the wall, which could lead to profound fatigue and poor cognitive abilities”. Kevin Malley the director of human performance for the New York City Fire Department advises, “One thing you should never do is get involved with the Atkins Diet” (Shelley, 2001, September-b, p. 40).

Stress

Formichelli (2001) quotes Davis, “I can’t imagine a greater stress than knowing that you’re taking a paycheck for a job that your body can’t fulfill” (p. 35). Cooper (1982) states, “…exercise helps to relieve individual stresses and tensions…” (p. 211). Formichelli (2001) concurs, “…exercise helps relieve stress. This is especially true - and important - for people in such tension-ridden jobs as firefighting” (p. 35).

Campbell (1998) advises, “Firefighters need to be taught that heat stress will never be solved with one approach. Training, departmental tactics, protective clothing, physical conditioning…all need to be addressed to solve the heat stress problem” (p. 59). Loy (2001) explains, “The body is like an engine – if you don’t keep it cool, it’s not going to work at peak efficiency or, in the worse case, it may not perform at all” (p. 46). “A strong, lean body is more efficiently able to cool itself down and warm itself up, making you less susceptible to the ravages of extreme heat or cold” (Stefano, 2000, p. 2). Kovach (1995) explains the physiology of performing activity in protective clothing:

> The physical strain induced by the use of protective equipment during exercise can be attributed to the heat stress connected within the microclimate. As a result, the firefighter’s cardiovascular response is altered. Data suggest that firefighters experience significantly greater cardiovascular and thermal regulatory stress during a standard activity when that activity is performed in bunker gear than when in station uniform. The heart rate increases, temperature rises and oxygen consumption is increased under these

> conditions. It is obvious that a physical training program is requisite for firefighters under these circumstances (p. 13).

Overfat

In an effort to express the difficulty of weight control, Ulrich (1997) reports that five percent of Weigh Watchers clients reach their target weight and only one half of one percent maintain it forever" (p. 157).

Phillips (2000) states, "Clearly, being overweight and out-of-shape doesn't necessarily mean you can't do the job, as thousands of dedicated EMTs and paramedics prove every day. But how well can you do it and for how long" (p. 13)? NFPA 1583 *Standard on Health-Related Fitness Programs for Firefighters* states, "overweight, out-of-shape firefighters are an accident waiting to happen. The multiple stress factors and rigors of the profession requires firefighter to be medially and physically fit in order to perform the required tasks" (National Fire Protection Association., 2000, p. 1).

LeCuyer (2000) states, "…the most important detriment of excess body fat is its association with the development of CHD, diabetes, and hypertension. No other fitness dimension affects one's health status more that body composition…" (p. 55). "Obesity contributes to poor posture and lower back problems (Curtis & Davis, n.d. p. 12). "Excess body fat also serves an insulator, thereby inhibiting the body's ability to cool itself, which lower the threshold for heat injury" (LeCuyer, 2000, p. 55).

Injury

"Injuries are a constant threat to the firefighter. Low visibility, treacherous footing, mass confusion, hysteria, and unknown hazards are the major factors that threaten you with injury" (Curtis & Davis, 1983, p. 5). Formichelli (2001) states, "…firefighters are five time more likely

to be hurt than workers in the private sector…" (p. 34). Phillips (2000) contends that the injury problem in EMS is not sufficiently understood yet – or sufficiently documented – to motivate people to action (p. 15).

Baker, O'Neill, and Karpf (1984) address 10 basic strategies applicable to the prevention of injury of all types. Three strategies that directly apply to firefighter fitness are 1) to make the person more resistant to damage, 2) begin to counter damage already done, and 3) to stabilize, repair, and rehabilitate the injury (p. 97).

In an effort to make the member more resistant to damage, Stefano (2000) recommends, "Aerobic conditioning can also give firefighters the edge they need when they are called on to operate under extreme conditions, thereby reducing their risk of a cardiovascular incident" (p. 17). He also advises, "exercise lowers serum cholesterol levels, triglyceride levels, and blood pressure thereby reducing the risk of heart disease, diabetes, osteoporosis, and other ailments" (p. 2). Concerning flexibility, he states, "Years ago, it was common for firefighters to be either strength trainers or runners with little thought given to flexibility" (p. 16). He suggests, "keeping the joints, tendons, ligaments, and muscles limber will prevent injury" (p. 2).

For stabilization, repair, and rehabilitation of injuries, Beck (n.d.) suggests, "the exercise program would not be used as a vehicle to terminate a firefighter, but instead would act as a model to rehabilitate the injured and help get people in shape (p. 32). Loy (2001) states, "If the program detects a physical injury, then, in my opinion, it's in the very best interest of the firefighter and those he or she works with and for, to diagnose and rehabilitate the injury". He encourages work hardening programs and returning the employee to duty as soon as possible (p. 22).

Workers Compensation

Concerning workers compensation, Bacow states, “Employers are required to carry insurance to cover the costs of claims. The insurance premiums are determined in part on the basis of the risks present in the insured firm as well as its prior claims experience”. He further explains, “Because premium levels are determined in part by the level of risk in the insured workplace, worker’s compensation insurance provides financial incentives for hazard abatement …by reducing hazards…employers can reduce insurance premiums”(p. 55).

Phillips (2000) describes how from 1990 to 1997, the Phoenix Fire Department fitness/wellness program has provided an injury frequency drop of 26 percent; an injury severity drop of 42 percent, and has seen the incidence of re-injury plummet 75 percent (p. 16). Formichelli (2001) states, “analysis of one moderately sized department revealed that the return in one year was $1.45 for ever dollar spent on fitness and wellness” (p. 34). Bacow (1980) warns, “Risks are hard to monitor, incentives created are remote, and it is not clear that employers would respond to small changes in the cost of insurance premiums” (p. 55).

Regarding injuries caused by the fitness program, Johnson (1995) writes, “Injuries from exercise will occur…” (p. 44). After experiencing many expensive exercise related injuries, one department came out with a policy encouraging members to lift lighter weights and to increase the number of repetitions (Anders, 2001, April, p. 44). “…We should focus our attention on the net benefit – the difference between dangers reduced and the dangers created” (Wildavsky & Bowling Green State University. Social Philosophy & Policy Center, 1988, p. 54). Johnson (1995) also had this warning, “…be careful to guard against off the job injuries that occur elsewhere and are transported to the job. Physical fitness programs are a very convenient scapegoat, since they are frequently a scheduled part of the daily activities” (p. 44).

Data collection and analysis

"The importance of having data – before and after program – is essential to demonstrating the effectiveness of any wellness program…doing so provides evidence to management that a wellness program works" (Sarkis, 2000, July , p. 40). Phillips (2000) states that the Initiative aims to create a national database aimed at proving the value of investing in maintaining a fit, healthy firefighting force (p. 15).

Albert (1988) states, "Improved communications coupled with data collection and analysis provides decision makers with knowledge to make informed choices. Evaluations can aid in developing future programs…you can take those pieces of information, synthesize them and then take your program to the next level" (p. 47). Injury reports should be reviewed to gain feedback on program effectiveness (Sarkis, 2000, July, p. 40). Fitz-Gibbon, King, and Morris (1987) warns, "Few evaluation reports pay enough attention to describing the processes of a program that helped participants achieve its outcome" (p. 9).

Mandatory

Concerning voluntary vs. mandatory fitness programs, Kovach (1995) states, "Only mandatory programs will work" (p. 14). Peacock (1998) contends voluntary programs do not attract the members who really need the program (p. 9). "Studies of sedentary rats show that if you coerce them to exercise, they will ultimately do it on their own…maybe we need to be more like rats" (Davis, 1996, November, p. 32).

The union representing Tukwila Fire Department members did a poll revealing a majority supported a mandatory fitness program (Ball, 1999, April p. 62). Loy (2001) states, "LAFD has instituted mandatory, task-specific exercise: We train the body parts and systems that are required for firefighting" (Loy, 2001, June, p. 22).

Presenting the results of a research project, Crouse, Green, and Womack (2000) explain, "The findings of this study…have proven that mandatory exercise programs and/or fitness requirements significantly reduce cardiovascular risk markers and support the need for required fitness programs and minimum fitness standards for firefighters" (p. 548).

Skinner (1991) states, "It is up to the organizational leaders to require the actions that are in the long rang interests of their personnel, the organization, and the public (p. 16). "If all personnel from the Fire chief to the newest recruit are required by directive to participate in a well developed and supervised physical fitness program as specified in NFPA 1500, everyone will comply" (Kovach, 1995 p. 14).

Leadership

"Leaders, by necessity, must recognize, identify and discuss crises and opportunities before, during, and after they occur so that the organization believes there is a sufficient urgency to change" (Bellingham, 2001, p. 11). "It is not change itself, but rather how companies introduce and manage the change, that results in a negative or positive acceptance of it" (Topchik, 2001, p. 95). Albert (1988) states, "Effective visions and organizational mission statements can't be forced upon the masses. Rather they must be set in motion by means of persuasion" (p. 164).

Bass (1991) states, "The success of any health and fitness program depends on the support and involvement of top management (p. 3). Koczan (1997) states, "It is imperative that the fire service approaches the health and safety of its workforce with the same enthusiasm as it does the health and safety of the community it strives to serve" (p. 23).

Wilmoth (2001) discussed the importance of the fire chief in influencing change. She advises, "…your personnel look to you to not only set standards but to live them" (p. 6). Metejka (1997) argues, "Top administrators of the department should not only support the project, but participate in it" (p. 21). Leaders set and enforce standard by personal example" (Davis, 1996, January, p. 14). Coon (1997) contends the fitness program should apply to all ranks within the organization (p. 28).

Elliot (2001) advises fire service managers to, "Take stock of your own fitness/wellness regime; you can be sure that the troops will notice your condition as the topic of physical testing comes increasingly to the fore" (p. 54). Chicago Fire commissioner James T. Joyce describes how he makes exercise a top priority, "Sometimes I feel the pressure to skip a workout because of a meeting, but I made the decision that my meeting schedule will have to fit around an early morning workout" (Joyce, 2001, July, p. 72).

Politics

Perrow (1999) argues, "sensible living with risky systems means…recognizing the essentially political nature of risk assessment" (p. 306). Phillips (2000) explains that fitness has to compete with a lot of other interests for both attention and money (p. 15).

Riddle (1999) stresses the importance of communicating, "the objective measurable improvements in overall firefighter health to city management…" (p. ii). Dwyer (1991) warns, "Investments should be made or rejected according to study results…such analysis has been applied to the field of occupational safety in only a few instances" (p. 239). "It may be difficult to sell the program to the budget supervisors unless you can show savings in other areas, such as reduced sick leave, lower insurance ratings, or fewer worker's compensation cases (Johnson, 1995 p. 2). Jacobs (1990) states, "Fire chiefs and city governments, however, often need more

traditional, ‘black and white’ proof before budgeting the necessary funds for a physical fitness program.” He offers the example of Los Angeles Fire Department which saved $250,000 in the third year of their program (p. 41).

“Top management wants to participate in profit improvement programs – even if we call them ‘safety programs’…” (Petersen, 1975, p. 100). “Productivity and quality must have the firm commitment of top management. This commitment should be reflected in a company’s philosophy, goals, policies, and priorities” (Buebler, 1988, p. 486).

Literature Review Summary

The literature review was central to the identification and evaluation of important program components and ideas. A significant contribution to this project was provided by Paul Davis’ journal articles. Dr. Davis has continually and persistently provided fitness insight, ideas, and advice to members of the fire service. His thorough knowledge of job requirements, fitness needs, and possible solutions coupled with his dedication and longevity make his input indispensable. Steven Loy’s contributions are notable because of his knowledge of the current challenges facing a peer fitness trainer.

With the literature review complete, the next step is to utilize an evaluative research methodology to determine the change in the knowledge, skills, and abilities of the IAFF/IAFC Peer Fitness Trainer Certification Workshop students.

PROCEDURES

Research Methodology

The desired outcome of this research project was to foster recommendations that would promote fitness and reduce future injuries and deaths of AFD members. The research methodology used

to answer the research questions was both evaluative and historical.

The research was evaluative in that the results could be used to facilitate future decisions regarding components of the AFD fitness program. "The purpose of evaluation research is to measure the effect of a program against the goals it set out to accomplish as a means of contributing to a subsequent decision making about the program and improving future programming" (Weiss, 1972, p. 4).

The research was historical in that a literature review was used to explain and understand how past studies, programs, and trends have influenced the present situation and may affect future events. Analysis of the data collected and findings of recent research may lead to improvements in firefighter fitness, health, and safety.

Process

Literature Review

The literature review began at the Learning Resource Center at the National Fire Academy (NFA) in Emmitsburg, Maryland. The electronic card catalogue was used to search for relevant material. The key search terms used were fitness, injury, nutrition, workers compensation, motivation, absenteeism, evaluation, teamwork, systems, organizational theory, feedback, and program management. The search revealed several relevant trade journals, textbooks, and Applied Research Projects. The search continued through the Anchorage Fire Department, Anchorage Municipal, and University of Alaska libraries and on the Internet.

Survey

Evaluative research methodologies were used to determine and report the value of the IAFF/IAFC Peer Fitness Trainer Certification Workshop in developing the knowledge, skills,

and abilities of AFD candidates. The purpose of the survey was to clarify the current system by evaluating the talent levels and opinions of the members. “An important function of most evaluations is answering the question, ‘Does the combination of materials, activities, and administrative arrangements that constitute this program seem to lead to the achievement of its objective?’” (Fitz-Gibbon et al., 1987, p. 9).

The survey utilizes a Likert scale, which is described by Cornell University (2001) as a scale that may be shown as a series of numbers like one-to-ten, or ordered words like poor-to-excellent, or even as a purely graphical scale. The respondent merely checks off or circles the point in the scale that—in his or her opinion—best answers the question posed by the item. The score for the item is a value on an *ordinal* scale (para . 1).

A list of 25 survey questions (see appendix A) was compiled from information gained during a review of the IAFF/IAFC PFT certification program performance domains: 1) fitness assessment, 2) program design, 3) program implementation, and 4) administration (Runnels, 2001, April 15 p. 4). A 10-point Likert scale survey instrument was created and used in hopes that it would help to create enough point spread to adequately rank the list (see Table 1). As illustrated, a score of zero reflects a “poor” rating while a score of ten indicates “excellent”. Draft copies of the survey were submitted to 5 members for evaluation of purpose and clarity.

Table 1

Rating Scale Example

2. How do you rate your ability to design a personal fitness program?										
Poor			Fair			Good				Excellent
0	1	2	3	4	5	6	7	8	9	10

28 surveys (survey population n=29) were completed by the candidates early on the first day of the workshop. Candidates were instructed to rate their own knowledge, skills, and abilities as of that moment in time. The same candidates were given the same instruction and the same survey instrument at the end of the final day of the five day workshop.

Analysis of Data

Guided by McEwen's, *Fire Data Analysis* (2000), which states, "simple average or mean is calculated by summing all the data values and dividing by the number of observations" (p. 42), the data were compiled, tabulated and assembled in a spreadsheet format. The survey results were calculated by creating a spreadsheet with a column for each of the 11 numerical choices (0 through 10). As the surveys were tallied, a mark was placed in the box below the representative numerical choice. The number of marks in each box was multiplied by the number coinciding with the column (see Table 2). For example, the number 6 (**bold column**) in the "Rating" row represents a 6-point rating. The number 5 in the "Candidate Selection" row (**bold column**) indicates that 5 candidates ranked question # 2 with a score of "6", 5 marks were made on the tally sheet as the surveys were counted (6 points × 5 marks = 30 points for the box). The sum of the totals (bottom row) were divided by the number of surveys completed by candidates

(120÷28=4.286) to give the average rating found in the lower right corner of Table 2. The averages from the pre-class and post-class survey were then compared to quantify the change in candidate's knowledge, skills, and abilities.

Table 2

Example of Scoring Method used to Determine Value Ratings

QUESTION #2 Program Design							↓					Total Surveys	Total Points	Average Rating
Numerical Rating	0	1	2	3	4	5	**6**	7	8	9	10			
Candidate Selection	0	2	2	9	4	2	**5**	1	3	0	0	28		
Total Score	0	2	4	27	16	10	**30**	7	24	0	0		120	4.286

This method was recommended by Wallace (1998) in his book, *Fire Department Strategic Planning,* and was used by Strahan (2001) for data analysis in his applied research project (p.27).

Assumptions and Limitations

The assumptions were that the respondents understood the survey questions and they answered truthfully. The validity should be high based on the assumption that a 28-person response with a base of 29 would provide a 95% statistical reliability based on Krejcie and Morgan's table found in the National Fire Academy's Executive Development student manual (1998, p. 3-40). The author was the 30th student in the workshop, but did not participate in the survey.

The survey had several limitations: 1) because a linkert scale is a unidimensional scaling method, it is more appropriately used to measure a concept that is one-dimensional in nature (Cornell University, 2002, ¶ 2), 2) the respondent might have felt the lack of a comparison reference for a particular question, 3) because of the diverse backgrounds and job responsibilities

of the respondents, various questions may have had different meanings, 4) knowledge gained by the respondents while preparing for the workshop is not reflected in the ratings (respondents had the course textbooks for two months prior to the class), and 5) the survey procedures utilized did not provide any data analysis beyond a simple overall average and a comparison between the pre-class survey and the post-class survey.

RESULTS

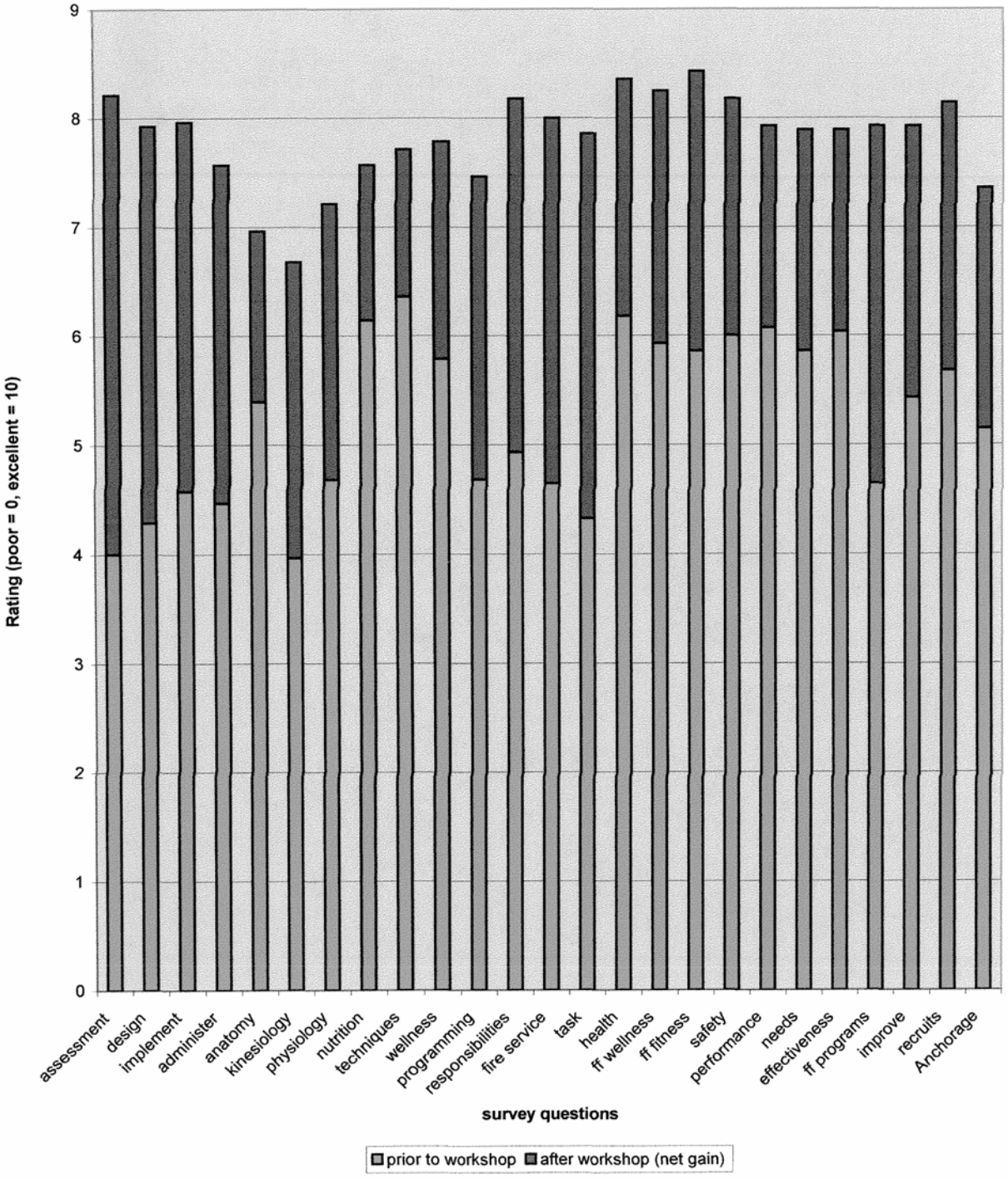
The results of this research were used to answer four research questions.

Question 1. To what extent does the Peer Fitness Trainer Certification Workshop enhance the student's ability to conduct individual fitness assessments, design, implement, manage, and administer personal fitness programs? The largest improvements of the self assessment survey were found in the disciplines detailed in question 1 (see Table 3). The candidates rated their ability to conduct a fitness assessment initially as fair (overall average 4.0) and finally at good to excellent (overall average 8.21). This represents the largest percentage gain (105%) for any question in the survey. Survey ratings for program design, implementation, and management all enjoyed nearly as high rates of improvement with all final averages good or above.

Respondent Comments

- "I would have liked to seen more time in the gym going over proper mechanics of lifting".
- "At least in the beginning, having a resource to verify assessments and prescriptions would be beneficial".

Table 3
peer fitness trainer workshop knowledge, skills, & abilities survey results



-
- Regarding weights, cardio, and nutrition, I need more training in the area of actually putting people on the right track".
- "Until the PFTs actually get out and practice, I feel excellent ratings are not appropriate".

Question 2. To what extent does the Peer Fitness Trainer Certification Workshop increase the student's knowledge of anatomy, physiology, kinesiology, nutrition, exercise programming, exercise techniques, wellness, and professional responsibilities? With initial ratings of fair, knowledge of kinesiology received the lowest initial average score in the survey (see Table 3). The rating increased 68% to good, but was still the lowest overall average of all survey questions. Anatomy proved similar to kinesiology with slightly higher initial and final ratings. Additionally, kinesiology, anatomy, and physiology were the only survey questions that receive a higher initial rating than final rating from individual students (this indicates a loss of knowledge during the workshop). Nutrition, exercise techniques, and wellness all received some of the highest initial ratings and showed modest gains with exercise techniques providing the smallest percentage gain (21%) of any question. Exercise programming, physiology, and professional responsibility started with initial ratings of fair, but increased substantially.

Respondent Comments

- "Kinesiology is a confusing topic".
- "Motivation toward lifestyle change may be the most difficult issue in fitness promotion. It is hard to combat the powers of marketing, addiction, and lifelong preconceptions with sound fitness concepts".
- "The text contraindicates some exercise forms I have achieved success with".

- “Anatomy is still a hard subject”.
- “In my opinion, the food pyramid is out dated and knowledge of nutrition has advanced far beyond the information in the text”.
- “I do not have a strong knowledge base of exercise physiology”.

Question 3. To what extent does the Peer Fitness Trainer Certification Workshop develop the student’s aptitude for contributing to the improvement of firefighter wellness, health, fitness, safety, and job performance? All areas concerning the candidate’s aptitude received solid initial ratings of good and final ratings were among the highest of the survey (see Table 3). Candidates rated their aptitude for contributing to improvement of firefighter fitness higher than all other questions (overall average 8.429).

Respondent Comments

- “I believe functional training will be very effective”.
- “My enthusiasm is what I think will help me be an asset to the program”.
- “There should be an index and a glossary in the Peer Fitness Trainer Reference Manual”.
- “One full day of self study should be scheduled prior to the test”.
- “I believe we need to work hard at implementing the initiative within AFD”.
- “I think we need to include PFTs in recruit training and new hire physical testing”.
- “The module packet should have a table of contents”.
- “This seems like a good start and I look forward to being involved in the development of the program”.

Question 4. *What actions are now required of the Anchorage Fire Department to achieve optimum success of the Peer Fitness Trainer Program?* The survey established the effectiveness of the PFT certification workshop with an overall average increase of 52% in ratings. The AFD should schedule the workshop and other PFT education on a recurring basis (International Association of Fire Chiefs et al., 2003, p. 4). It is clear that AFD has room for fitness improvement. Fitness education will assist members in identifying their "next step". Hayford (1995) "…each member of the department needs to take an active role in managing his or her own health, " (p. 1). The commitment of administrators is important. Kluck (1995) contends fire departments must make financial, tactical, and political commitments to a fitness program (p. 3). The AFD must be seek knowledge and be persistent. Loy (2001) contends it takes time to establish a quality program. He advises, "…read about other fitness programs for other perspectives" (p. 16). Insuring recruits have a strong fitness orientation builds a solid foundation for the future. Davis (2000) suggests that new hire interviewing boards ask candidates what their personal fitness program consists of (p. 29)

Respondent Comments

- "Since we are on the forefront of the initiative movement, we should be involved with bringing the initiative to other departments through 'train the trainer' ".
- "The past week of class has served to point out holes in my personal knowledge base. I strongly recognize the need for additional education and study".
- "I believe that in order to implement the initiative, the MOA/AFD needs to compensate PFTs".
- "I think this class gave a solid base to work from".

- "It would be nice if the AFD would compensate the PFTs and provide continuing educational opportunities through classes, conventions, symposiums, etc".
- "There are still many areas in which I feel I am weak and need more study and training".
- "Thank you for the class and all the information, I believe it is a big step for the fire service".

DISCUSSION

"The purpose of the IAFF/IAFC PFT certification program is to provide a fitness trainer standard consistent with the health and fitness needs of the North American Fire Service (International Association of Fire Fighters, 2003, para. 2). The certification process is important part of the plan to "…create a universally accepted program" (International Association of Fire Chiefs et al., 2003 , p. 1).The International Association of Fire Chiefs et al (2003) provide the following list of ways a peer fitness trainer can contribute to a fire department:

1) Educating company officers about the benefits of wellness and fitness for their crew members
2) Educating new hires regarding the importance of wellness and fitness throughout their fire service careers
3) Educating fire department members about the benefits of wellness and fitness
4) Performing annual fitness assessments of incumbents
5) Evaluating and selecting fitness equipment
6) Designing and supporting personalized fitness programs for fire department members
7) Teaching Fire FitKids classes as part of the fire department's and IAFF's community outreach
8) Participating in recruiting and mentoring programs for the fire department
9) Designing and teaching preparatory classes for potential fire department recruits (p. 4).

International Association of Fire Fighters (2003) states, “Those successfully passing the certification exam will have demonstrated they possess the knowledge and skills …” (para. 2). The conclusion is that the study results concur with these objectives and establish AFD peer fitness trainers are well prepared for the majority of these responsibilities. Extensive efforts were expended to put together a solid validated program. The merit of the curriculum, the quality of the text books, and the excellence of the instructors are evident in the survey results.

Interpretation of the results indicates the Peer Fitness Trainer Certification Workshop was on target in most areas, but there are additional areas in need of attention. Lambert (1986) expresses “…the truly successful trainer is never content merely to achieve the stated expectations but works to exceed them wherever possible” (p. 4). Peer fitness trainer certification improves the credibility of a fitness program, but it is, “…only the first step. In order for PFTs to remain competent and improve the quality of their wellness/fitness programs, continuing education is essential. This may include taking college exercise science courses, attending workshops and symposiums, and reading professional journals” (International Association of Fire Chiefs et al., 2003, p. 4). “Ongoing professional development and education is required to maintain certification status and to keep in touch with accurate, up-to-date information” (p. 19).

The implications of the results promise many benefits to the AFD. Concerning the integrity of the program, International Association of Fire Chiefs et al (2003) compliments the American Council on Exercise (ACE). As a partner in the certification process ACE is a non profit organization, “dedicated to…protecting consumers against unsafe and ineffective fitness…instruction” (International Association of Fire Chiefs et al., 2003 , p. iii). This approach was extended to the AFD PFTs throughout the workshop and has conveyed the need for maintaining a high ethical standard.

AFD will benefit from the detailed focus on firefighter fitness, “the manual provides firefighter specific knowledge” (International Association of Fire Chiefs et al., 2003 , p. ix). Functional training (exercise designed to improve job performance) is the “smart” way for firefighters to exercise. The result will be a reduction in common firefighter ailments. Additionally, the focus on rehabilitation will reduce repeat injuries. Eller (1995) identifies occupational therapy in industrial rehabilitation or ‘work hardening’ as a method to reduce back injuries (p. 6).

In the future, AFD should benefit from a decrease in sick leave usage. In a study using a randomized, stratified sample comparing sick leave in the Wichita Fire and Police Departments, it was found that the firefighters went from using the same amount of leave as the police to half after the implementation of a mandatory fitness program (Formichelli, 2001, April, p. 36).

The literature review revealed a number of creative ideas. Some departments have established health and fitness libraries (Shelley, 2001, April, p. 45). Scully (2000) recalls how the San Jose Fire Department encouraged members to participate in a locally sponsored run and how the event put a “little fun into fitness” when over half of the off-duty members participated (p. 34). Shelley (2001) describes how Mesa Fire Department approached wellness as a team and how this led to group sports, “Mesa incorporated non-contact soccer, Frisbee football, and racquetball team programs as alternatives to working out on the exercise equipment”. They have found the group sports to be more fun and have seen those who are not fit participate because it is more of a “team effort” (p. 46).

Seeking advice from others will bring new knowledge and awareness to AFD. Mesa Fire Department’s recruit academy includes a fitness-conditioning course and a cooking class that are accredited through the local community college (Shelley, 2001, April, p. 46). The Los Angeles

Fire Department (LAFD) in collaboration with the Kinesiology Department at California State University, Northridge developed Firefighters In Training (FIT). This expansion of the IAFF/IAFC Initiative is designed to be replicated by other departments. LAFD FIT can be taken all or in parts by other fire departments at no cost to improve their fitness/wellness programs (Brown, Kampff, & Loy, 2001, April). Shelley (2001) mentions a health fitness newsletter and cable channel for the firefighters (p. 45). Sarkis (2000) recommends looking inside the organization for assistance, "use an interest survey to find out if employees have special skills and could contribute to the program" (p. 40).

RECCOMENDATIONS

AFD should immediately extend its commitment to the *fitness assessment* component of the program. A second set of assessment equipment should be ordered and installed as soon as possible. The fitness assessment is the critical "fitness report card" most members have never had. Assessments must occur at least annually to establish baselines and track fitness changes over time. Smith (1995) states, "adequate, timely feedback for correction, change, and control leads to continuous improvement" (p. 164). Assessments identify strengths and weaknesses and assist in personal fitness program design. They can serve as motivation and can spur competition. These tools are invaluable to the PFTs. A second set will improve availability and logistics.

Stakeholders and leaders must be educated about the importance of firefighter fitness and requested to assist. "Perhaps the real key to our past problems of getting management's 'backing' is that the few times we have gotten their attention we have not been sufficiently clear about what exactly we wanted them to do" (Petersen, 1975, p. 101). Mayor Begich, Municipal Manager LeBlanc, Fire Chief Fullenwider, Assembly members, and other MOA and AFD leaders must make vocal long term commitments to firefighter fitness. "Top management must

lead, inspire, and involve itself in creating a culture for consistent productivity and quality throughout the organization" (Buebler, 1988, p. 486). The PFT certification workshop and the new fitness equipment were funded 30% by the MOA and 70% by a federal fire grant. It is highly unlikely another grant will ever be available for AFD fitness. *High priority for funding* of new and replacement fitness equipment (including the second set of assessment equipment mentioned above), member wellness/fitness training (Johnson, 1995, p. 48), PFT certification, PFT continuing education (which is required to maintain certification), and creative fitness initiatives will establish leader steadfastness (International Association of Fire Chiefs et al., 2003, p. 4).

The program will also require constant selling and enthusiasm of leaders. "Sometimes executives underestimate how hard it can be to drive people out of their comfort zones" (Kotter, 1995, p. 60). Persistence and fortitude will also be needed. Vroom (1990) states, "…it often takes years to effect much genuine change" (p. 7). Mesa Fire Department Health Programming Coordinator Steve Giardini describes the long uphill battle for their program to reach is present level, "It's taken almost eight years for the program to progress to what we consider comprehensive and for the members to see it as a benefit…that other city employees don't have" (Shelley, 2001, April, p. 46).

Like any new program, care and adjustment is required to insure the design is viable and durable. Organizationally the AFD peer fitness trainer program is structured as a variation of the matrix management form. Beane (1979) in discussing the use of a matrix management form suggests team members must know exactly where they stand in the organizational structure. He states, "they must know how they will be judged, rewarded, or penalized during the life of the project and who will be judging their performance" (p. 8). A structure that encourages teamwork

among members at all levels will expedite the success of the program. Concerning compensation, the PFTs attended a majority of the 40 hour certification class on their own time. They have volunteered to assume additional duties beyond their job description. PFT pay incentives should be negotiated by MOA and labor. Anders (2001) suggests incentive pay for peer fitness trainers (p. 41).

Long term, AFD must work to inject accountability and responsibility into the fitness program. Extensive efforts should be made to hire fit individuals and require them to remain fit throughout their career. German (1992) states, “The fitness standard should be equally applied to all firefighters” (p. 13). In the future, a practical job performance exam should be listed as a rated component of the annual evaluation process. Phillips (2000) states, “…the most effective thing would probably be for people to pass a fitness test every so often, like you do in the Marines” (p. 14).

All members must be encouraged assist in developing and improving the AFD fitness program. “Means to provide feedback to the selection committee should be made available. Every department member needs to be involved in exploiting the limitless creativity of all people” (Buehler & Shetty, 1988, p. 486). Participation in the AFD fitness program should be mandatory. “How many other professions allow employees to work out while on the clock? Do not squander valuable time” (Powers, 2000, August, p. 66).

Creative fitness initiatives should be developed. Expansion of the program into other MOA departments, other fire service organizations, and the public should be considered. Fun aspects of fitness such as charity runs and non contact group sports should be encouraged. Soccer, football Frisbee, and racquet sports such as AFD wallball should be promoted (Shelley, 2001, April, p. 46).

As an inspiration to the citizens of Anchorage and the MOA workforce, firefighters should prove fitness is obtainable and valuable. Davis (1997) stipulates, “Firefighters should be role models for the nation in their quest for fitness”.

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APPENDIX A

Anchorage Fire Department
Peer Fitness Trainer Knowledge, Skills, and Abilities Survey

SURVEY DIRECTIONS

Indicate your choice by **circling** the appropriate number.
Please select an answer based on the **present moment**.
If you wish to add further explanation to an answer, please write the question number and your comments on the back of the survey and/or on a separate piece of paper.

Performance Domains

1. How do you rate your ability to administer an **individual fitness assessment**?

Poor			Fair			Good				Excellent
0	1	2	3	4	5	6	7	8	9	10

2. How do you rate your ability to **design** a personal fitness program?

Poor			Fair			Good				Excellent
0	1	2	3	4	5	6	7	8	9	10

3. How do you rate your ability to **implement** a personal fitness program?

Poor			Fair			Good				Excellent
0	1	2	3	4	5	6	7	8	9	10

4. How do you rate your ability to **administer** a personal fitness program?

Poor			Fair			Good				Excellent
0	1	2	3	4	5	6	7	8	9	10

Content Domains

5. How do you rate your knowledge of **Anatomy**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

6. How do you rate your knowledge of **Kinesiology**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

7. How do you rate your knowledge of **Exercise Physiology**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

8. How do you rate your knowledge of **Nutrition**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

9. How do you rate your knowledge of **Exercise Techniques**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

10. How do you rate your knowledge of **Wellness**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

11. How do you rate your knowledge of **Exercise Programming**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

12. How do you rate your knowledge of Peer Fitness Trainer **Professional Responsibilities**?

Poor					Fair					Good					Excellent
0	1	2	3	4	5	6	7	8	9	10					

13. How do you rate your understanding of Peer Fitness Trainer **Fire Service-Specific Knowledge**?

Poor					Fair					Good					Excellent
0	1	2	3	4	5	6	7	8	9	10					

14. How do you rate your understanding of Peer Fitness Trainer **Task-Specific Knowledge**?

Poor					Fair					Good					Excellent
0	1	2	3	4	5	6	7	8	9	10					

Fundamental Missions of the Fire Service Joint Management Wellness/Fitness Task Force

15. How do you rate your ability to contribute to improvement of firefighter **health**?

Poor					Fair					Good					Excellent
0	1	2	3	4	5	6	7	8	9	10					

16. How do you rate your ability to contribute to improvement of firefighter **wellness**?

Poor					Fair					Good					Excellent
0	1	2	3	4	5	6	7	8	9	10					

17. How do you rate your ability to contribute to improvement of firefighter **fitness**?

Poor					Fair					Good					Excellent
0	1	2	3	4	5	6	7	8	9	10					

18. How do you rate your ability to contribute to improvement of firefighter **safety**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

19. How do you rate your ability to contribute to improvement of **firefighter job performance**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

20. How do you rate your ability to contribute to improvement of firefighter effectiveness in **meeting the public safety needs** of Anchorge?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

21. How do you rate your ability to contribute to improvement of **Anchorage Fire Department's effectiveness in meeting the needs** of our community?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

Global Knowledge and Skills

22. How do you rate your overall ability to **design and implement** fitness programs**?**										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

23. How do you rate your overall ability to improve the **wellness and fitness** of the members of the Anchorage Fire Department?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

24. How do you rate your ability to assist in fitness and wellness training of Anchorage Fire Department **recruits**?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

25. How do you rate your ability to **assist the broader Anchorage community** in achieving wellness and fitness?										
Poor			Fair				Good			Excellent
0	1	2	3	4	5	6	7	8	9	10

APPENDIX B

Municipality of Anchorage

Anchorage Fire Department

Memorandum

DATE: July 30, 2003

TO: Fire Chief John Fullenwider

THROUGH: Deputy Chief Craig Goodrich

FROM: Safety Officer Tom Oxnam

SUBJECT: Peer Fitness Trainer Program

This memo is in response to the applied research project I completed for the National Fire Academy's Executive Fire Officer Program. As you recall, the purpose of my project was to identify and evaluate the components necessary to develop a strong fitness program.

I am pleased to present you with the results of this project. The implications of this study are positive. Many challenges, obstacles, and opportunities have been identified. Overall, the survey established that on average our peer fitness trainers are well prepared to assist in improving the fitness levels of our members.

The following recommendations are being presented based on the results of this project:

1) enhancement of the "fitness assessment" component of the program,
2) vocal long term commitments by Municipal and AFD leaders,
3) careful refinement of the organizational structure and design of the PFT program,
4) increased member accountability and responsibility,
5) ongoing input and feedback from all AFD members,
6) support of creative fitness initiatives,
7) AFD firefighters serving as role models.

Thank you for your support in this research project. I look forward to your comments and opinions concerning the results of the survey and research project.