

## City of Danbury Fire Department

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# Peer Fitness Training Certification Report

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To: Training Officer Mark Omasta  
CC: Lt. Bill Lounsbury  
From: F.F. Seth Ambruso  
Date: March 9, 2009

## Purpose

It is the intention of the Fire Department and the Local 801 Health and Safety Committee to design and implement a comprehensive wellness program, including a physical fitness initiative. This report details the Peer Fitness Trainer certification program as outlined by the national Wellness and Fitness Initiative.

## Relevance

Labor and management must work together to establish a wellness program that is educational, rehabilitative and non-punitive.

Heart attacks are the number one cause of line-of-duty deaths in the fire service. This is triple the rate of non-firefighters, and a firefighter working intensely at a fire is 100 times more likely to suffer a heart attack.<sup>1</sup> “To reduce these deaths, NIOSH (National Institute for Occupational Safety and Health) recommends that fire departments and fire fighters follow established medical screening guidelines, adopt risk reduction measures during fire fighting operations, and develop and participate in comprehensive wellness/fitness programs.”<sup>2</sup>

“NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2007 Edition, includes key elements that focus on the comprehensive wellness and fitness program. NFPA 1582 outlines key elements that focus on fire department medical physicals and also provides for a health and fitness coordinator, and a health and safety committee. NFPA 1583, *Standard on Fire Department Occupational Safety and Health Program*, 2008 Edition, focuses on fire department fitness programs.”<sup>3</sup>

The United States Fire Administration (USFA) also recommends and promotes reducing firefighter fatalities by incorporating the recommendations from NIOSH, the IAFC, and the NFPA<sup>4</sup>

The IAFF/IAFC/ACE *Peer Fitness Trainer Reference Manual* specifically outlines the need for a wellness and physical fitness program:

“Historically, the fire service has paid more attention to its fire apparatus and equipment than to the uniformed personnel who provide emergency services and use the equipment. Fire fighters and emergency services respond to emergency incidents that require extreme physical exertion. The high physical demands of the job often result in injuries and psychological stress, affecting the overall wellness of the fire fighting and emergency response system. In the past, the fire service has sought to improve wellness, fitness, and health by instituting fitness programs that rely solely on time-based performance tests. These tests were created to motivate fire fighters to improve their fitness by mandating that they meet a performance-based standard. These programs produced mediocre results and were often viewed as punitive by personnel.”<sup>5</sup>

“The goal of the WFI is to improve the quality of life of all uniformed personnel. The WFI seeks to promote the value of investing in wellness resources over time to maintain fit, healthy, and capable fire fighters and EMS responders throughout their careers. Effective implementation of the full program should result in significant cost savings by reducing lost work time, workers’ compensation, and disability for fire departments.”<sup>6</sup>

“Every fire department in cooperation with its local IAFF affiliate must develop an overall wellness/fitness system to maintain the physical and mental capabilities of uniformed personnel. While such a program may be mandatory, agreement to initiate it must be mutual between the administration and its members represented by the local union. Any program of physical fitness must be positive and not punitive in design; require mandatory participation by all uniformed personnel once implemented; make allowances for age, gender, and position in the department; allow for on-duty participation utilizing facilities and equipment provided or arranged by the department; provide for rehabilitation and remedial support for those in need; contain training and education components; and be reasonable and equitable.”(PFT Reference Guide)<sup>7</sup>

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## Peer Fitness Trainer

### Overview

The Peer Fitness Trainer (PFT) program is part of the joint Wellness and Fitness Initiative established by the International Association of Fire Fighters (IAFF) and the International Association of Fire Chiefs (IAFC). It was designed in conjunction with the American Council on Exercise (ACE), a non-profit organization that promotes physical fitness and is recognized for certifying professional personal trainers. ACE worked in collaboration with the IAFF, and the IAFC to design a trainer certification program specific to the needs of the fire service. The program has been validated for both fitness and legality and is founded on current scientific exercise principles.

FF Seth Ambruso, FF Kyle Houser, and FF Walter Arteaga of the Danbury Fire Department attended the 5 day workshop hosted by Milford Fire Department to become certified Peer Fitness Trainers (PFTs). The workshop was conducted from 0800-1700 Monday March 2

through Thursday March 5, with a review and certification exam from 0800-1200 on March 6<sup>th</sup> (40 hours total). Firefighters from many Locals throughout the nation and Canada participated. The entire program was highly intense and comprehensive. The content of the workshop included modules in the following subjects: the IAFF/IAFC Wellness Fitness Initiative (WFI); the PFT Professional Responsibilities; Health Screening and Assessment; Exercise Science; Fitness Assessment; Program Design; Program Implementation; and Program Administration. The workshop also included detailed components on Anatomy, Physiology, Nutrition and Body Mechanics.

## **PFT Professional Responsibilities**

The scope of practice for a PFT includes the “obligation to be knowledgeable in a wide variety of areas, including exercise science, anatomy, physiology, assessment, exercise programming, behavior change, and basic nutrition.” The PFT is trained to gather relevant information from participants, identify health risk factors, conduct fitness assessments, design fitness programs, recognize warning signs and/or symptoms, and establish follow ups.<sup>8</sup> The PFT is also trained to document all aspects of the Peer Fitness Training program.

PFTs have “both legal and moral obligations to protect the confidentiality of all information that clients provide them.”<sup>9</sup> This is one of the most important aspects of the Peer Fitness Trainer Program. If the WFI is accepted by a Fire Department, it *must* become mandatory, remain confidential, and non-punitive. This will create positive interest, adhesion, and a positive environment for progress and change. This is of mutual benefit to fire personnel (increased health, safety, and fire ground effectiveness) and the municipality (injury prevention, cost/benefit savings).

## **PFT Physical Fitness Program**

- Step 1. Health Screening
- Step 2. Determining the Firefighters Goals and Preferences
- Step 3. Determine the Current Fitness Level
- Step 4. Develop the Exercise Plan
- Step 5. Implement the Plan
- Step 6. Progress and Re-evaluate.

### **Step 1: Health Screening**

This is the first step in the program design. It requires that all personnel to have a complete physical by a physician every year to screen for health issues and determine their ability to participate in physical fitness endeavors. The PFT administers health history forms to “identify some condition that may require modifications to an exercise program and/or healthcare professional participation.”<sup>10</sup> Firefighters fill out a Physical Activity Readiness Questionnaire (PAR-Q), a Lifestyle Information Form, and a WFI Health History form to identify any potential

risk factors. Participation in exercise by individuals with risk factors must have physician approval and input before any other steps are performed. This allows the PFT to design a safe and effective exercise program depending on the participants conditioning and with regard to physically fitness abilities and limitations. The health screen forms remain confidential and are maintained in a secure location (separate from personnel files) by the PFT.

### **Step 2: Determining the Firefighters Goals and Preferences**

“Successful fitness programming allows for individual needs and goals of firefighters, as well as department resources.”<sup>11</sup> The success of any physical fitness program is dependant on participation and adhesion, and so it must include the firefighters active involvement and interests. The PFT conducts an individual, private, and confidential meeting with each firefighter to discuss the participants goals and preferences for exercise.

### **Step 3: Determine the Current Fitness Level**

“Research has demonstrated the need for high levels of aerobic fitness, muscular endurance, muscular strength, muscular power, flexibility, and body composition to perform safely and effectively in the fire service.”<sup>12</sup> The WFI Fitness Assessment Protocol has been designed for PFTs to evaluate fellow firefighter’s physical capacity to perform his or her job.<sup>13</sup> The evaluation should be annual, non punitive, confidential, and mandatory for all uniformed firefighters. The evaluation results should be measured against the individual’s previous assessments and *not against a standard or norm*. A pre-evaluation survey is conducted to determine if the firefighter can safely participate in the evaluation, and any new risk factors that have not been cleared by a physician require the evaluation to be deferred. The WFI requires that participants must have a resting hear rate below 110 beats per minute and blood pressure below 160/100 prior to beginning the evaluation. Height and weight are measured and appropriate forms are filled out. These five tests have been determined to be valid indicators of overall ability

#### **1. Body Composition.**

This is determined by caliper skin fold measurements. This is an accurate and cost effective method to determine body fat composition. Studies have shown that excessive body fat contributes to numerous health and heart related medical problems which can be compounded into the overall safety and effectiveness of a firefighter on the fire ground. The test requires a skin fold caliper and tape measure.

#### **2. Aerobic Capacity.**

This is a sub-maximal (the test stops when 85% predicated maximum heart rate is achieved) test to determine aerobic efficiency (VO<sub>2</sub>) and metabolic output (METs). Research indicates that given the rigorous demands of firefighting, a safe and effective firefighter is expected to operate in a minimum of 11-13 MET range. This correlates to a VO<sub>2</sub> capacity of 38-45 ml/kg/min. The test requires a treadmill or stairmill, a heart rate monitor, and a stopwatch.

#### **3. Strength**

“Firefighting is a very strenuous job that requires high levels of muscular strength and endurance in order to perform successfully and to avoid injuries.”<sup>14</sup> The WFI utilizes static isometric tests to determine general muscular strength. The tests are “reliable, valid, cost-effective, portable, easy to administer, and safe.”<sup>15</sup> The tests are conducted in

the areas of Hand Grip, Static Arm, and Static Leg. A vertical jump test determines power output. The strength evaluations require the following tools: a hydraulic hand dynamometer, a strength evaluation dynamometer, a straight handlebar, a V-Grip handlebar, and a pressure mat.

#### 4. Endurance

Two tests are used to indicate relative muscle endurance: a static plank test and a dynamic pushup test. These tests require a stopwatch, a metronome, alternate grip push-up handles, and a five inch prop (sponge).

#### 5. Flexibility

Increased flexibility is correlated with a reduction of sprain and strain injuries. This test consists of a modified sit and reach to assess gross posterior muscle flexibility. . It requires a Novex Acuflex 1 or equivalent trunk flexibility test device.

### **Step 4. Develop the Exercise Plan**

“The exercise plan should be a complete program that addresses cardiovascular exercise, muscular strength, muscular endurance and flexibility. How much or how little of each aspect is included in the program is dependant on the overall goal of the program and the fire fighters’ current strengths and weaknesses which were determined after the baseline testing.”<sup>16</sup>

The Peer Fitness Trainer has been trained to design a safe, effective, and attainable program that allows for individual needs and goals. Specific details are based on these goals, the firefighter’s current physical conditioning, and any pertinent medical limitations of the participants with regards to the annual physical and health screen. These factors will dictate variance according to 4 exercise principles: Frequency, Intensity, Time, and Type.

### **Step 5. Implement the Plan**

“The plan is a guideline and should be followed as closely as possible. However, the PFT should be prepared to adapt the program due to unforeseen circumstances such as injuries, illnesses and fire fighter fatigue unrelated to the exercise program.”<sup>17</sup> The PFT is expected to insure that firefighters are trained in the safe and effective technique for exercises using a Tell, Show, Do technique with constructive feedback.

### **Step 6. Progress and Re-evaluate**

“The program should be progressed at a sensible rate so that the firefighter continues to make improvements. Re-evaluations should be scheduled frequently to show the firefighter that his or her hard work is paying off with tangible results. This practice will help maintain motivation and adherence.”<sup>18</sup>

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## Conclusion

The workshop was designed to give the PFT a broad base in exercise science principles in order to implement a basic, safe, and effective fitness program. The program outlined in this report is just one aspect of the broader wellness initiative. It is expected that the PFT will continue his or her education (and required for re-certification) and requires them to stay up to date on the latest scientific developments in the fields of health and wellness.

An effective wellness program should also include an educational component in order to convey the most information to fellow firefighters. Periodic classroom training done “in house” by the PFTs is within their scope and can be used to disseminate general health and fitness education and information. This should become a regular part of the wellness program.

The Peer Fitness Trainer Program has the potential to be an effective, cost effective way to begin implementing a Physical Fitness and Wellness Program for the Danbury Fire Department. It should be set up according to the standards IAFF/IAFC/ACE Wellness and Fitness Initiative. Their collaborative effort has paved the way for a tried and true format that has been tested by hundreds of fire departments and validated by exercise science institutions across North America.

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## ENDNOTES

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<sup>1</sup>.Stefanos N. Kales, M.D., M.P.H, Elpidoforos S. Soteriades, M.D., Sc. D., Costas A. Christophi, Ph.D., and David C. Christiani, M.D., M.P.H. “Emergency Duties and Deaths from Heart Disease among Firefighters in the United States” *New England Journal of Medicine* 2007

<sup>2</sup>.CDC website, “Preventing Firefighter Fatalities Due to Heart Attacks and Other Sudden Cardiovascular Events” NIOSH 2007-133

<sup>3</sup>.Murphy, John K. “Firefighter Fitness and Medical Evaluations: A Difficult Journey” *Fire Engineering* 2008 (12): 67-68

<sup>4</sup>.Murphy, John K. “Firefighter Fitness and Medical Evaluations: A Difficult Journey” *Fire Engineering* 2008 (12): 67-68

<sup>5</sup>.*IAFF/IAFC Peer Fitness Trainor Reference Manual* , page 11

<sup>6</sup>.page 11

<sup>7</sup>.page 12

<sup>8</sup>.page 26

<sup>9</sup>.page 27

<sup>10</sup>.page 72

<sup>11</sup>.page 201

<sup>12</sup>.page 78

<sup>13</sup>.page 78

<sup>14</sup>.page 155

<sup>15</sup>.page 80

<sup>16</sup>. page 202

<sup>17</sup>.page 202

<sup>18</sup>.page 202