

**Feasibility of a Physical Fitness Program
For Maumee Firefighters**

OHIO FIRE EXECUTIVE

BY: Richard Monto
Deputy Chief
Maumee Fire Division
Maumee, Ohio

An applied research project submitted to the Ohio Fire Executive Program

May 2002

ABSTRACT

Firefighting is a dangerous and physically demanding occupation. In emergency operations a firefighter's physical capacity serves as a valuable resource during fire ground operations. This environment where the firefighters work puts a high demand on their physical ability. Research has repeatedly shown the need for high levels of fitness to perform safely in the fire service.

The fire service's greatest asset is not equipment, apparatus or stations, but rather its personnel. This research is to identify the need for a physical fitness program in the Maumee Fire Division and the possibility of establishing/implementing a program.

Using statistical and action research, the following research questions will be answered:

1. Number of firefighters who would support a physical fitness program?
2. What types of exercises would be included in a physical fitness program?
3. When a fitness program is established, should program be mandatory or voluntary?

A Literature Review was performed to document what and how other fire divisions started and kept their program successful, firefighters motivated, and everyone healthier. Forty firefighters were interviewed to find out how they felt about a physical fitness program. The results of this survey showed that they would support a physical fitness program and they voiced their opinions on what they would like to see in that physical fitness program.

Although the support seems to be there, more information needs to be obtained before a physical fitness program can be established. A steering committee should be established to determine when physical exams are to be scheduled, and to set up policy and procedures. The

possibility of hiring a trainer would also rest on the committee. This will help establish an ownership of a successful program.

Unfit firefighters are less able to fulfill their commitment to their communities if they are unable to perform essential functions of the job. It is recommended that each firefighter take serious steps at improving their physical fitness. Until this can be accomplished, all members of the fire division will be encouraged to pursue a healthier life style through fitness and a well balanced diet.

TABLE OF CONTENTS

| | |
|-----------------------------------|----|
| Abstract..... | 2 |
| Table of Contents..... | 4 |
| Introduction..... | 5 |
| Background and Significance..... | 6 |
| Literature Review..... | 8 |
| Procedures..... | 19 |
| Results..... | 22 |
| Discussion..... | 25 |
| Recommendations..... | 26 |
| Reference List..... | 27 |
| Appendix 'A' (Maumee Survey)..... | 29 |

INTRODUCTION

Every year, death and injury surveys demonstrate that firefighting remains one of the most dangerous occupations in the United States. The job is very demanding both physically and mentally. Federal Emergency Management Agency states that in a 1999, firefighting fatalities were 16% higher than the 10 year and 5 year trends. FEMA reports that 49% or 54 firefighters died from stress or overexertion (heart attacks). In 2000, 45 dead or 44.1%; a decline from 1999 in firefighters deaths. In 2001, 39 firefighters died (heart attacks) or 8.8%; heart attacks continued to be the leading cause of death. The environment and high demands of firefighting require above average levels of fitness. At times a firefighters' physical capability can be the difference between saving lives theirs' or their coworkers. When they go to work they are wearing approximately fifty (50) pounds of personnel protective equipment.

Even with the new technologies of new equipment and apparatus, the mainstay of the Fire Division is its personnel. They are the ones that serve the public and extinguish the fires, provide emergency medical services, rescue and other tasks that can be directed. Research has repeatedly shown the need for high levels of fitness to perform safely in the fire service.

In this research it will determine the feasibility of a physical fitness program in the Maumee Fire Division. In doing this we would educate personnel in areas of fitness and to determine the need for a physical fitness program.

Using statistical and action research, the following research questions will be answered:

- 1) Number of firefighters who would support a physical fitness program?
- 2) What types of exercises would be included in a physical fitness program?
- 3) When a fitness program is established, should that program be mandatory or voluntary?

BACKGROUND AND SIGNIFICANCE

The City of Maumee is a small community with a fulltime population of 15,561 residents and a daytime population of over 30,000. The City of Maumee is a suburb of the City of Toledo.

The City was founded in 1838 and the first “Fire Company Organization” was presented to Council in April of 1843 and set into motion on May 26, 1843 as a volunteer department. Throughout the years the Fire Division has become a combination department with 20 career employees. They provide fire and emergency medical service to the citizens with the help of approximately 26 volunteers.

The City is mostly made up of residential neighborhoods although; there are a considerable amount of commercial buildings and also some heavy industry.

In 1990 the Chief and the Deputy Chief followed along with several other fire departments in the area by establishing a physical agility test. The agility test would consist of five (5) timed events. The events would be a ventilation scenario, ladder raise, ladder climb, hose drag, and a coupling test. If the test is completed in less than ten minutes, without difficulty, they were said to be okay. This physical agility test would weed out the undesirables that could not produce. In 1993 along with the physical agility testing, the possible volunteer was also sent to a local hospital to have a complete physical taken and passed before they were put on the Fire Division.

The fire division doesn't have a physical fitness program in place and within this research project it will be determined if a successful program can be instituted. I believe that with some support from the employees they can benefit and enjoy their career. I believe as an officer it is in my best interest to keep my employees healthy, safe and in good shape.

Over the years, the fire station basement has collected and purchased a variety of exercise equipment. The fire personnel have access to free weights, benches, dumbbells, Nautilus machine, Shwinn Aerodyne and a Nordic Track machine. They are permitted to use this equipment while on duty or off duty.

Within the last 3 years, injuries and strains have seemed to be the problem, although, little time off work has been compiled. Back and shoulder problems have been the majority of injuries from lifting patients into the squad to overhauling at fire scenes.

In 1999 there were twenty-five injury reports filed, although six of the twenty-five were not related to strains, twists or sprains. 1999 breakdown is as follows:

- 13 were back-related injuries
- 06 were knee or ankle injuries from twisting/edge mishaps
- 02 were from falling
- 04 were puncture wounds

In 2000 there were twenty injury reports filed. Five of the twenty reports filed were not related to sprains, strains, or twists. 2000 breakdown is as follows:

- 09 were back related injuries
- 06 were knee and ankle injuries
- 02 were fall injuries
- 02 were puncture wounds
- 01 chest pain

In 2001 there were twenty injury reports filed. Four of the twenty filed were not related to sprains, twists, or strains. 2001 breakdown is as follows:

- 09 were back injuries

- 05 were knee and ankle injuries
- 03 were fall injuries
- 02 were puncture wounds
- 01 chest pain

LITERATURE REVIEW

What is physical fitness? Physical fitness is the ability of the human body to function with vigor and alertness, without undue fatigue and with ample energy to engage in leisure activities and to meet physical stresses. Muscular strength and endurance, cardio respiratory integrity and general alertness are the overt signs of physical fitness. Physical fitness is measured in relation to functional expectations, typically by periodic tests measuring strength, endurance, agility, coordination and flexibility. Along with the preceding factors, stress testing, which ascertains the bodies' accommodation to powerful, sustained physical stimuli, is used to analyze fitness. If individuals are able to accommodate the stressors, they are assumed to be fit. (Internet; www.encyarta.msn.com; February, 2002.).

Physical fitness for firefighters has become quite a hot topic; there has been some debate on what type of exercise should be utilized; strength, aerobic, or a combination of both. The National Institute of Health states that some risk factors of heart attacks and heart disease are cigarette smoking, high blood pressure, high blood cholesterol and obesity. We all can find one person in the department that fits one if not more in one of those categories. This should be a reminder that everyone should take part in some sort of physical fitness to help decrease the risk factors mentioned above. (Internet; www.nih.gov/health/exercise)

Vigorous exercise activities like swimming, brisk walking, running or jumping rope can reduce the risks. People are rediscovering the benefits that these exercises can have on the body.

The national institute of health states “You need to burn off 3,500 calories more than you take in to lose one (1) pound. This can be accomplished by a couple of ways, keep the same routine and cut your intake or keep the same diet and increase your physical activity” (Internet; www.fitnessonline.com; 2002).

Firefighter fitness.com workout objectives; firefighter-fitness concept (8/28/2001) states that they give you one body in this life, what you do with it is the most important thing. In our job you must be at your best at all times.

In the same article they share five objectives in “fit 2 fight” their five fitness objectives are.

- 1) Build aerobic capacity.
- 2) Increase strength.
- 3) Increase flexibility.
- 4) Decrease body fat and increase muscle.
- 5) The ability for you to work at a significant intensity without stressing the heart.

In a 1992 study, “Characterization of the physical demands of firefighting” (Fire Chief Magazine, April 1999) Dan Ball reports “Obesity significantly limits the performance of firefighters. Excess body fat has a negative influence on the ability to perform simulated firefighting tasks and leads to adverse cardiovascular effects, which increase the risk of premature death.”

Dr. O’Connor discusses the benefits of improving the components of fitness in articles for Firefighter News (1994; August/September issue) and how improvement in fitness levels can reduce injuries and improves efficiency on the fire ground. “Muscular strength along with

cardiovascular stamina are the two most important components on fire ground operations. The basic interface between you and the fire is the equipment you wear and use. It is the equipment that drives the physical fitness requirement and affects performance in firefighting”.

In a related article “The Joy of Flex” (Firefighter News; 1996) Dr. O’Connor discusses the issue of flexibility and its relationship to fire ground operations. “Good flexibility is important for everyone engaged in dynamic activity, but critical for those who’s jobs require lifting, reaching, climbing and other tasks where their bodies bend and move appendages beyond normal ranges.” All of these actions define firefighting. O’Connor goes on to say “ Lack of flexibility in the lower back increases the chance of injury and reduces the efficiency of movement (pg. 39; 1994). Fit and flexible individuals tend to recover quicker from muscular injury” (pg. 23; 1996).

The American College of Sports Medicine and the American Heart Association (Fire Chief Magazine, April 2001; Steven Loy) recommended a medical examination with an exercise EKG test for men over 45 years and women who intend to participate in a vigorous activity. “Although participating in a program will not guarantee that you won’t suffer a heart attack, or you staying healthy, but you do increase the odds that our members will return home safely.”

Other reasons to exercise are that firefighters are susceptible to muscular sprains particularly at the ankle. Strengthening the muscles makes joints more stable so that sprains occur less frequently and are less severe. Exercise combined with some flexibility or stretching can help prevent and alleviate back injuries.

Dr. Lynn Smaha, President of American Heart Association, (MSNBC Internet, MSN.com; Health. August 2001) states “People who exercise 30 to 45 minutes per day, 5 days a week are more likely to burn more calories, spend less time on the couch and smoke less.

Whether your fat, thin, or average exercise will lower your risk of obesity, heart disease and diabetes.”

Paul Davis, President of On Target Challenge, conducted a study in the early 1990's, which targeted the Wichita Kansas Fire Department and Police Department. The study showed that before the fire department implemented a mandatory physical fitness program the fire and police departments were using sick leave at the same rate. Within a year of implementation of the firefighter fitness program, the fire department was at half the level of sick time as the police department. The Phoenix Fire Department has witnessed similar results as Wichita- in six years since the inception of their fitness and comprehensive wellness program the severity of injuries in the department decreased by 46 %.

In an article out of the American College of Occupational and Environmental Medicine, (Lechner, L., et al. Effects of an Employee Fitness Program on Reduced Absenteeism; Sept. 1997, Volume 39 #9. pgs 827-831) “People who exercise as little as once a week in an employee fitness program report an average of nearly five fewer sick days per year.” Paul Devico states, “Other advantages of healthier personnel is the division or employer can save money through workers compensation claims, less sick leave and increased productivity.”

Paul Davis' analysis of one moderately sized department revealed that the return in one year was \$1.45 for every dollar spent on fitness and wellness initiatives. Although most of the cost reductions occur in the first three years after starting a fitness program, and those reductions can be as high as 25% per year. It is however typical to experience a slight increase in the beginning due to employees getting injured while starting a fitness program Devico warned.

As reported by Tom Scully in Fire Chief Magazine (April 2000) “The San Jose California Fire Department tested their fitness program from 1994 to 1998. Lost work days decreased 22%,

there incurred cost rate went down 12%, hospitalization payments fell 27% and indemnity payments diminished by 59%. They also found that disability salary payments were 300% less for program participants than non-participants.” These are quite impressive figures.

Wade Womack, a faculty member at Texas A&M Applied Exercise Science Laboratory (Internet; www.firehouse.com; Thursday May 10, 2001) charted 74 firefighters over a six-year period. His study was titled “Cardiovascular Risk Markers in Firefighters: A Longitudinal Study”, and results state that most firefighters are overweight and have less-than-ideal cholesterol levels. Both of these results could pose serious health problems and lead to heart attacks. Womack states the message is clear; firefighters need to improve their workouts with a physical fitness program. Without this he states firefighters will continue to be at high risks for heart attacks and other health problems.

Womack’s results are similar to data collected by the NFPA 1977-95; one-half of all line-of-duty deaths by firemen were not the result of fires, but heart attacks. “In almost all of the cases, the heart attacks suffered by firemen are directly linked to the exertional demands of the firefighters job,” Womack reports.

“An effective cardiovascular exercise session takes 30 to 45 minutes, including warm-up and cool down. Flexibility exercises (stretching) should not take much more than 15 minutes and a good strength training routine can be completed in about an hour. These exercises don’t need to be done all at one time, but can be spread out over the day.” (Firehouse Magazine, May 1996 pg. 60; John Hayford, M.S.)

Jill Craig, Wellness/Fitness Coordinator for the Austin Fire Department states, “ Most of the tasks firefighters perform are anaerobic in nature. Good cardiovascular capacity means better endurance and quicker recovery.” The American College of Sports Medicine Guidelines

recommend that firefighters exercise 20 to 30 minutes of aerobic exercise 3 to 5 times a week and two days a week spent on weight training. (Fire Chief Magazine, April 1, 2001)

“Physical fitness in the firefighter field can only help and let the firefighter enjoy his career to the fullest. However, if the firefighters fitness is at a low level it not only jeopardizes his safety and health but also his co-workers and the public.” (Firehouse Magazine, 1997 pg. 68; John Hayford M.S.) According to Daniel R. Ball, Fitness Consultant, (Fire Chief Magazine, April 1999 issue) “Poor physical fitness has been shown to be a significant factor in shortening the career of a firefighter. Candidates got in shape to pass the rigorous physical entry level exam, but once hired many fail to maintain an adequate fitness level and body fat percentage throughout the remainder of their career.” Mr. Ball also explains that poor flexibility, which is often a byproduct of poor fitness, is the leading factor in firefighting related injury and disability. Approximately 40% of all firefighters injuries during 1990 to 1994 were classified as sprains, strains, and other musculoskeletal injuries as released by FEMA in 1996. “When a call comes in the middle of the night and firefighters jump out of bed, the adrenaline produced in that type of situation puts a lot of strain on the body. If the fitness of a firefighter is poor, that adds an even greater strain to the cardiovascular system.”

“A significant number of firefighters and police think that their physical conditioning consists of recreational sports like basketball, volleyball, or softball. But this usually results in a high rate of injury. These games are ineffective forms of cardiovascular exercise because your physical activity is not maintained steadily throughout.” (Hayford, J., Firehouse Magazine, May 1996)

An article written by Linda Formichelli states, “The most important reason to exercise is for the safety of the personnel.” (Fire Chief Magazine, April 2001). In the article it points out

that you should choose a workout program that will fit the needs of a firefighter and not a professional athlete.

Dr. Lynn Smaha reports that people who exercise thirty (30) to forty-five (45) minutes at least five (5) times a week have a better chance to:

1. Burn off more calories.
2. Spend less time on the couch.
3. Smoke less.
4. Are less hungry.

Dr. Nain-FengChu headed a study that involved two hundred sixty-eight (268) men between the age of forty-seven (47) and eighty-three (83). The study showed Leptin levels were the highest when they weighed more and exercised less. Also, when they ate more foods high in saturated fat and cholesterol. Leptin is a hormone that is produced by the bodies' fat cells and is believed to be a major culprit in causing obesity. The fatter you get the more Leptin your body produces but when you exercise, the amount of Leptin in your body decreases.

Dr. Nain-FengChu also found that VO₂ Max, a measure of aerobic fitness, deteriorated significantly during the course of the study; 41.8 to 35.6. This suggests a negative trend in the firefighters overall physical condition.

Benefits from being in good physical condition are:

1. Healthier personnel – lower blood pressure, less chance of getting diabetes.
2. Better physical condition – more stamina.
3. More productivity – less time would be used to cover the employee's sick leave.
4. Decreased stress levels.

Janet Willmoth states “Firefighters adrenalin can go from zero-to-60 in seconds; starting an emotional roller coaster that can reach some pretty dark lows. Heart attacks, stress-related diseases, alcoholism and divorce abound because 9-1-1 is suppose to handle all of the world’s problems and disasters.” (Fire Chief Magazine; April 2001)

In an Internet article written by Melissa Stoppler titled “Stress Management”, it was explained, “Exercise could help reduce stress levels in people with high stress jobs. By exercising you produce Endorphins that naturally reduce pain and induce feelings of well being and relaxation.”

Other benefits of physical fitness, besides stress relief, include increased athleticism, better posture (which helps strengthen the muscles that help you stand straight), better self-image by achieving goals you have set, and psychological advantages from a fitness regimen. Better self-image also boosts self-confidence, self-awareness and self-esteem. In addition to these avails physical fitness helps you with discipline, which can have a positive effect in your career. There are also intellectual gains; fitness helps the immune system meaning better work performance. “Exercise increases blood and oxygen flow throughout the body, including the brain. Studies have shown that those who exercise react more quickly to stimulus than there less fit counterparts. This, in your job as a firefighter, is definitely a great benefit.” (Internet; www.ehospital.com; 2000) Researchers have found that people who are self aware have more circulating monocytes which are disease fighting white blood cells, which in turn makes them more likely to resist infections. (Internet; www.choicesfor.com; 2002)

In an online article (Internet; www.cdc.gov; Center for disease Control and Prevention 2002) some key messages that are conveyed is that men and women of all ages benefit from a moderate amount of daily physical activity. CDC states “Whether you walk briskly for 30

minutes or jog for 15 to 20 minutes, it has a positive effect on the body. Although it has been proven that you can get better health benefits by establishing a physical fitness routine, care should also be taken as the risk of injuries can increase along with the increase of greater physical activity.” Physical activity facts state that 60% of adults in the United States don’t get the amount of physical activity that is recommended. They go on to say that 25% of adults don’t participate in any physical fitness at all. Physical activity is more common in men than women, white adults more than African Americans and Hispanics, younger than older.

As stated throughout this research project, the benefits of physical activity are numerous; reduction in the risk of developing high blood pressure, diabetes, colon cancer and dying from coronary heart disease. Physical activity can help maintain healthy bones, muscles and joints. It can also have positive results on your mental status, improve your mood and feelings of well being and reduce symptoms of stress, anxiety and depression.

So far we have mostly talked about cardiovascular and some weight training but there should be some time dedicated to stretching.

Wayne Westcott, a certified personal trainer and fitness research director, located at the South Shore Y.M.C.A., Quincy, MA. did a 10 week study of thirty-four (34) middle aged men and women. He found that a strength training and stretching regimen resulted in improvements in posture, muscular strength, as well as prevent back pain and disability.

Firehouse.com, Flexibility Training; Stefano, M., (October 16, 2002), states stretching or flexibility shouldn’t be overlooked as a type of fitness. Here are some benefits that Michael Stefano relates to in his book;

- Decreased risk of injury.
- Increased physical efficiency and performance.

- Increased circulation.
- Increased neuromuscular coordination.
- Improved muscular balance and posture awareness.
- Decreased risk of lower back pain.
- Reduced stress - stretching promotes physical and mental relaxation.

Some of the possible pit falls that could trip up a fitness program are the start-up cost. In Los Angeles they outfitted 166 sites; the cost per site was \$2,400.00. Overland Park Kansas opted for fully equipped fitness centers at its five stations; \$25,000.00 per station was the price tag. Through most of the research Chief Dennis Meyers of Overland Park Kansas stated that you get what you pay for so spend the extra money for a quality machine.

Janet Wilmoth suggests “There is one person who can influence change; The Fire Chief.” It might be up to you to set the standard but if not you, other officers. “You have to look in the mirror, then think of the people you know who have suffered or died from heart attacks. You must get your staff involved in keeping a fit force.” You and your staff have worked too hard to save the lives of others to overlook yourselves. (Fire Chief Magazine, April 1, 2001; what will it take to get the message article?)

Regular fitness activity has numerous benefits. Vigorous exercise strengthens the heart as the pump making it a larger, more efficient muscle. Moderate exercise can boost the good cholesterol (HDL) as well as lower body fat and blood pressure. These effects translate to a lower chance for heart problems and strokes. The American Heart Association attributes about 250,000 deaths in the U.S. (about 12% of the total deaths) to lack of regular physical activity. Being active can help you burn calories and you have to burn 3500 calories to lose 1 pound of weight. This in turn states the more active you are the more calories you burn. Burning calories

can help with weight loss and improve your metabolic rate; the rate at which you burn calories.

(Internet; www.lifeclinic.com; April 2002)

As you go through your career and get towards your retirement, you of course get older. As this happens your body changes and one of those changes is your metabolic rate slows down. So what does that mean you ask well it means your body converts food to energy at a slower rate. When this is combined with an inactive life style the food to energy conversion becomes food to fatty tissue, hence weight gain! Keeping physically active and maintaining a healthy weight will improve your health and decrease your risk of heart disease, diabetes, stroke, high cholesterol, arthritis, insomnia and depression. (Internet; www.timeforfitness.com; February 2002)

Physical fitness increases the good cholesterol (HDL) and thus lessens the bad cholesterol (LDL), which protects against cholesterol damage. Total cholesterol change cannot happen with just fitness alone, but diet must also be part of it. Increased levels of fitness reduce the risk of cancer; causative factors are outlined in immune function. The immune function has about four times as much fluid as the circulatory system, yet it doesn't have a heart to pump around fluids. It is physical movement and diaphragmatic breathing that is responsible for the movement of the lymph fluid. Lymph fluid surrounds each cell and it is through this medium that the nutrients and waste are exchanged. Exercise helps expedite the movements of the nutrients to the cells and the toxins from the cells.

Physical activity can protect against osteoporosis; exercise retards bone loss and it can also increase bone mass. Studies show that nothing will rob calcium from the bones faster than inactivity. They also show that bone density of broken limbs have shown that in just 2 months, a

bone can lose 5% of its mass. Weight bearing exercise such as walking, running and weight training will help keep your bones strong and resilient.

“Fitness also increases life span and the quality of those extra years. Being fit gives you a chance of becoming less ill. This helps in reducing health care costs; heart disease, stroke, cancer and diabetes are four of the top ten causes of death. They account for 65% of all deaths in Canada and the United States and are the greatest burden to our health care system. Consider the health care crisis we are facing and think of the savings fitness can have to yourself, your employer, and the state and federal government.” (Internet; www.veggiepower.ca/fithealth.htm; 1997, Bernie Thimian)

The key to more benefits is to keep your exercise program going. Don't give up, stick with it. Some things that can help would be to vary your exercise each day or change your routine. You could also get a partner to keep each other company and motivate each other. You could make a financial contribution to a separate account for every time you work out and watch your money grow. (Internet; www.sportsoutfitters.com; 2002)

PROCEDURE

A literary review was conducted using several sources; magazines or periodicals, computer searches via the Internet on the topic of firefighter fitness, cardiovascular disease, and stress, and a personal survey was also conducted. I also went through the personnel files for information on previous injuries.

Oral interviews were used as the instrument of choice for the survey. I did interview both full-time and volunteer firefighters of the division; male and female alike.

I received 100% participation in this survey. They were advised of this project and it was explained that negative or positive answers would not help or hinder them in any way. Survey questions were as follows:

1. How many years of service do you have in the fire service?
2. Would you support a physical fitness program? If no explain why?
3. What type of exercise would you like to see incorporated into this program?
4. Best time for training?
5. Do you think a fitness program should be voluntary or mandatory?
6. What should be the frequency of training?
7. Do you feel complete physical examinations should be scheduled yearly, once every two years, etc...?
8. What is your current age 20-29, 30-39, 40-49, 50-59, 60-↑?

Results of this survey are as follows:

1. Years of service went from first year firefighters to a thirty-four year service chief. A well-balanced range.
2. Of the forty firefighters that were surveyed, thirty-six said they would support a physical fitness program (90%). The four that said they wouldn't stated the following reasons; one felt that the people should be self-motivated and take the initiative; two people stated that they did not have the time to dedicate at this time voluntarily; and one stated that you should workout on duty but this is a volunteer department.
3. Types of exercise they would like to see was weight training, stretching, aerobics at the top of the list with swimming as another option mentioned frequently.

4. Best time for training was 1600 to 1800 hours with 1800 to 2000 hours coming in second.
5. When asked about voluntary or mandatory it was close to being split with twenty-two answering voluntary and eighteen answering mandatory.
6. When asked about frequency of exercise, three times a week was the most popular answer with two times a week and one time a week tied for second choice.
7. When asked about complete physical examination frequency, the first question out of their mouths was “Who is going to pay for these physicals?” When advised that the City will pay for these physicals, twenty-two of them stated that once a year would be good, fifteen stated that one every two years would be sufficient and the remaining three said once every five years.
8. Current age category averaged out to; eight in the 20-29, fifteen in the 30-39, twelve in the 40-49, three in the 50-59 and two on the 60 and over range.

Limitations

There was a considerable amount of research material available on the subject of firefighter fitness and fitness in general. The authors all basically conveyed the same message about fitness and what it does for your health. Inexperience may have also hindered this paper and its results.

Definition of Terms

Endorphins: Any of a group of proteins with potent analgesic properties that occur naturally in the brain.

High Density Lipoprotein (HDL): A lipoprotein of blood plasma that is composed of a high proportion of protein with little triglyceride and cholesterol and that is associated with

decreased probability of developing atherosclerosis.

Low Density Lipoprotein (LDL): A lipoprotein of blood plasma that is composed of a moderate proportion of protein with little triglyceride of a high proportion of cholesterol and that is associated with increased probability of developing atherosclerosis.

Monocytes: A large phagocytic leukocyte with basophilic cytoplasm containing faint eosinophilic granulations.

VO₂ Max: The maximum amount of oxygen that can be used by a person stated in liters per minute or milliliters per kilogram of body weight per minute. It is the best single measure of cardiovascular (aerobic) fitness.

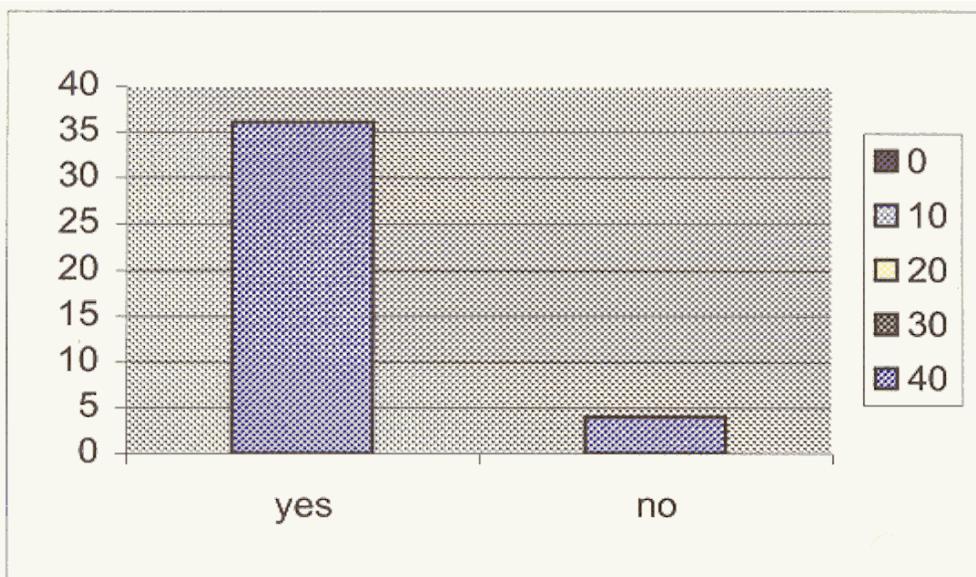
RESULTS

Each of the research questions were answered through the survey and it showed that a majority of the Maumee Firefighters (90%) supports the idea of a physical fitness program. (Figure 1)

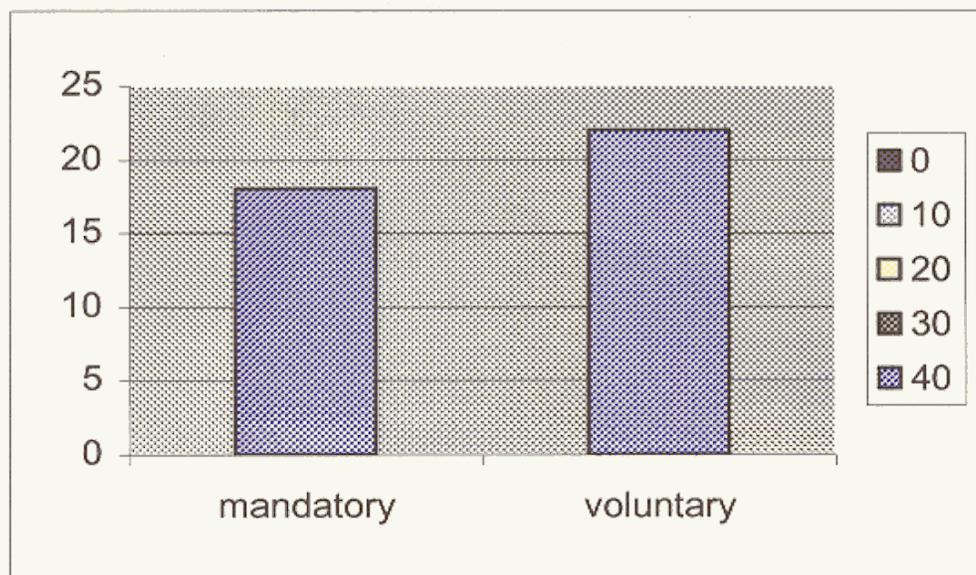
The results of the survey show that the types of exercise should include weight training, aerobics, and stretching. When given the choice of “other” the two top choices for types of exercise were swimming and walking.

As stated before the choice of voluntary or mandatory was voluntary. They state that if they are full-time it should be mandatory and if they are volunteers it should be voluntary. Three individuals state that all employees should be self motivated and take the initiative to work out on their own if they are interested in good health and being in tip top shape for what ever demands their job calls for. (Figure 2)

Research showed that the feasibility of a fitness program could be instituted within the Maumee Fire Division. The support by its members and the willingness to participate will be a good start.



Number of firefighters that would support a physical fitness program
figure 1



If a program is instituted should it mandatory or voluntary
figure 2

DISCUSSION

Firefighting is a dangerous job and along with it the challenges of being physically fit. This is important for the people you protect and for the firefighters you serve with. The Literature Review establishes the benefits of being physically fit. The review establishes that being physically fit plays a vital part in the outcome of your occupation.

Although 90% of the firefighters voiced they would support a physical fitness program, there may be a few who disagreed that will “go against the grain” of the system should it be implemented. Most of our firefighters are young and more active and might be able to persuade some of our seasoned vets to participate in a regular exercise program. The more you do something on a regular basis, part of a regular routine, the more it becomes habit, just part of what is and or has to be done or accomplished. This needs to be realized for better firefighter fitness.

A physical fitness program, if instituted, is no guarantee that it will prevent heart problems, but research shows if steps are taken to improve your health the odds increase that you will live a healthier life. And in a healthier life there should be a decrease in injuries, strains, sprains and sick time use.

The City Of Maumee already complies with the N.F.P.A. 1582 which states a medical evaluation be done before a new firefighter be hired. It also recommends that after an injury, a firefighter be evaluated and a return to work order signed by medical personnel. The Fire Division does this with both full-time and part-paid employees. The local hospital handles these occurrences through an out patient facility; this takes the place of a dedicated fire division physician.

RECCOMENDATIONS

During the research for this paper most of the fire divisions that have a program in place appointed a steering committee. The steering committee should consist of full and part time personnel and one chief officer. The committee should decide on a mixture of programs; weight training, aerobics, stretching, etc... They should decide if it would be necessary to hire a wellness coordinator, or the possibility of sending a few personnel through seminars for fitness and nutrition counseling.

The steering committee could help decide the frequency of when physicals are done. They would also set up regular screening such as blood pressure, ekg's, and weight loss so that a data base could be established. They would also be responsible for the development of policies and procedures for the program.

The committee should also be able to anticipate what extra exercise equipment would be needed. This would help the Chief Officers with their capital and operating budgets. There should be a budgetary fund also set up for possible repairs of new and existing equipment.

The major problem that this committee will face will be if this program will be voluntary or mandatory. But until this is accomplished, the firefighters will be encouraged to pursue a healthier lifestyle with some sort of fitness regimen. This may be enough to get some of the personnel out of the lazy boy chairs and start exercising.

REFERENCES

Ball, Daniel, (1999. April). Personal Trainer.

Fire Chief Magazine, Volume 43, #4, 60-65

Formichelli, L. (2001. April). The need for fitness.

Fire Chief Magazine, Volume 45, Number 4, pp 35

Hayford, John M.S. (1996. May) Why Playing Sports Can't Get You in Shape.

Firehouse Magazine, pg. 60

Laino, Charlene (2001. August) Exercise lowers fat hormone levels.

MSNBC Internet. MSN.com (Health)

Lechner, L.: Effects of an Employee Fitness Program on Reduced Absenteeism.

(www.acoem.org September 1997, Volume 39 #9) Pages 827-831

Loy, S., Kampff, R., Brown, D. (2001. April). Get your department fit.

Fire Chief Magazine, Volume 45, Number 4, 28-32

National Fire Protection Association, (1992). NFPA 1582, Standard on Medical

Requirements for Fire Fighters. Quincy, MA: Author.

NFPA (2000.). NFPA Summarizes 2000 Firefighter Fatalities.

Firehouse.Com- In the Line of Duty, 5/14/01 pp 1-2

O'Connor, Jack. (1994, August/September). Components of Fitness.

Firefighter News, 12, 38-39

O'Connor, Jack. (1996, June/July). The Joy of Flex. Firefighter News, 14, 2-23

Retrieved February 20, 2002 from the World Wide Web: <http://www.encarta.msn.com>

Retrieved February 20, 2002 from the World Wide Web: <http://www.timeforfitness.com>

Retrieved March 29, 2002 from the World Wide Web: <http://www.firefighter-fitness.com>

Retrieved April 24, 2002 from the World Wide Web: <http://cdc.gov>

Retrieved April 26, 2002 from the World Wide Web: <http://nih.gov/health/exercise>

Retrieved April 29, 2002 from the World Wide Web: <http://www.fitnessonline.com>

Scully, Tom. (April 2000). A Fit Force. Fire Chief Magazine, Vol. 44, #4, 34-37

Stenson, Jacqueline. (February 2002). <http://www.msnbc.com/news/624091.asp>

Stoppler, Melissa C., M.D.: Stress Management Newsletter; Exercise to Control Stress

<http://www.stress.about.com/library/weekly/aa010201a.htm>

Thimian, Bernie. (1997). <http://www.veggiepower.ca/fithealth.com.htm>

Womack, Wade: Study Says FF's Need Exercise.

www.firehouse.com/news/2001/5/10_exercise.html

Appendix A

Maumee Survey

SURVEY FOR MAUMEE FIRE DIVISION.

1) HOW MANY YEARS OF SERVICE DO YOU HAVE IN THE FIRE DIVISION? _____

2) WOULD YOU SUPPORT A PHYSICAL FITNESS PROGRAM?

YES _____ NO _____

3) IF NOT, WHY?

4) WHAT TYPE OF EXERCISES WOULD YOU LIKE TO DO?

WEIGHT TRAINING

AEROBICS

STRETCHING

OTHER _____

5) BEST TIME TO HAVE TRAINING?

1600 HR TO 1800 HR

1800 HR TO 2000 HR

2000 HR TO 2100 HR

OTHER _____

6) DO YOU THINK A FITNESS PROGRAM SHOULD BE?

- VOLUNTARY
- MANDATORY

7) FREQUENCY OF TRAINING?

- ONCE A WEEK
- TWICE A WEEK
- THREE TIMES A WEEK
- FIVE TIMES A WEEK

8) SHOULD PHYSICAL EXAMS BE SCHEDULED?

- ONCE A YEAR
- ONCE EVERY TWO YEARS
- ONCE EVERY THREE YEARS
- ONCE EVERY FIVE YEARS

9) WHAT IS YOUR CURRENT AGE?

- 20 - 29
- 30 - 39
- 40 - 49
- 50 - 59
- 60 - OVER