The Effects of Competency Based Training Implemented for the City of Forest Park Fire Department

By: Stephen A. Coley
Captain
City of Forest Park Fire Department
1201 West Kemper Road
Forest Park, OH 45240

A proposed research project submitted to the Ohio Fire Executive Program

28 July, 2010

CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

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ABSTRACT

Over the past two decades, The City of Forest Park Fire Department has added many new roles and functions to its operational plan without explicitly defining what expected standard and the instrument to measure the standard. The administration and training division decided to study the effects of competency based training on the personnel of The City of Forest Park Fire Department to create a standard and a means to measure that standard.

To obtain the effect of competency based training, six tasks were selected: Hose Deployment, Personal Protective Equipment, Ropes and Knots, Traction Splint Application, Four Minute Pump Operation Drill and Mega Code (Advanced Cardiac Life Support scenario). These six competencies were selected because they are common skills that an employee should be able to perform without additional training. The procedure for collecting data was department personnel preformed these skills in a pre-test, participated in four instructional sessions and completed a post-test. Performance of skills in the pre and post-test was documented and scored for statistical analysis. The scores were averaged and charted on an individual performance and two groups based on experience in the fire service. The two groups were divided between the five years or less of experience or six years or more of experience in the service. The data collected was used to gauge the performance of our personnel against the state standards of both the fire and emergency medical services

The study attempted to answer the following four questions. What are the present measureable skill levels of The City of Forest Park Fire Department personnel in the six chosen competencies this research will study? What is required to improve all present personnel to meet or exceed the standard set by the Forest Park Fire Department in the six specific competency based skills? What effects, if any, does competency based training and testing have on the City

of Forest Park Fire Department's personnel competency level? What effect does job experience (five years or less in the profession) have during competency based training and testing?

A literature review of government regulations, professional standards, professional journal articles, and departmental programs and procedures was undertaken. Skill sheets on the six competencies were developed using standards found during the literature review.

The results of this paper on an overall individual performance are as follows; Personal Protective Equipment (PPE) the average for the pre-test was 76.7%, the post-test 98% and overall improvement was 21.3%. Ropes and Knots the average for the pre-test was 63.8%, the post-test 91.5% and overall improvement was 27.7%. Traction Splint Application the average for the pre-test was 69.9%, the post-test 97.8% and overall improvement was 28.2%. Fire Apparatus Operator (FAO) the average for the pre-test was 80.8%, the post-test 92.7% and overall improvement was 11.9%. Mega Code the average for the pre-test was 76.2%, the post-test 92% and overall improvement was 15.8%. Hose Deployment was a group evolution and this study was unable to produce individual percentages for this competency. Hose Deployment deviated from this study by testing group competency rather than individual competency. Research and data was conducted and certified in a manner consistent with this study and there were three groups. The group results are as follows: 0% pass rate on the pre-test, 100% on the post-test for 100% improvement on the evolution.

In regard to the effects of job experience the results are as follows. Personal Protective Equipment (PPE), five years of experience or less had a 78.8% on the pre-test, 88.2% on the post-test for a 9.4% improvement; the six years of experience or more had a 73.3% on the pre-test, 87.1% on the post-test for a 13.8% improvement. Ropes and Knots, five years of experience or less had a 71.3% on the pre-test, 88.2% on the post-test for a 16.9% improvement; the six

years of experience or more had a 66.4% on the pre-test, 87.1% on the post-test for a 20.7% improvement. Traction Splint Application, five years of experience or less had a 62.1% on the pre-test, 95.7% on the post-test for a 33.6% improvement; the six years of experience or more had a 77.1% on the pre-test, 100% on the post-test for a 22.9% improvement. Fire Apparatus Operator (FAO), five years of experience or less had a 83.3% on the pre-test, 92.3% on the post-test for a 9% improvement; the six years of experience or more had a 79.7% on the pre-test, 92.7% on the post-test for a 13% improvement. Mega Code) five years of experience or less had a 80.6% on the pre-test, 94.3% on the post-test for a 13.7% improvement; the six years of experience or more had a 77.7% on the pre-test, 92.3% on the post-test for a 14.6% improvement.

It was concluded that use of core competency based training is a positive way to instill the fundamentals in the new employees and a needed process to reinforce the details of the basic skills for the more seasoned veteran. The ability to utilize basic skills is imperative to enable personnel to perform at the apex of the profession. As a result of this study The Forest Park Fire Department will develop their comprehensive training plan based on an explicit list of organizational functions, input from personnel, government regulations, and professional standards.

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INTRODUCTION

Statement of the Problem

The Fire Service is unique in itself and when you compare it to any other profession, it stands out as the best job on earth with the opportunity to perform on someone else's worst day. The Fire Service has evolved into a "Jack of all Trades" career. Our profession has gone from a bucket brigade, to an enclosed cab with air conditioning, 1500 gallons per minute pump, and automatic transmission. The Life Squad, as we call them today, started as a hearse (ambulance) with first aid equipment driven to fires to support the firefighters in case of an injury; to a fully equipped emergency room on wheels with a two person crew who committed over a year of their lives to be trained to the level of paramedic.

The City of Forest Park Fire Department requires all personnel to obtain both Fire and emergency medical certifications. We also require them to maintain their certifications. On any given day, our personnel are subject to intervene in situations that even a vivid imagination can not consider. These emergencies will range from, but are not limited to, a structure fire with a person still inside, a child stuck in a storm drain to a 16 year old entrapped in an automobile accident or a hazardous material spill in a water way.

In the past, training consisted of meeting the minimum set standard for re-certification requirements. This required all employees to meet minimum standards set for firefighters with training that reflects the mastery of skills taught in the State of Ohio Professional Firefighter courses. We require our personnel to be proficient in every aspect of their profession.

We have an expected standard but there is no method to measure and monitor the level of proficiency annually. In order to provide optimum job performance, standards that have been set by the National Fire Protection Agency and the Ohio EMS board will be the minimum standards

of the Forest Park Fire Department. Competency based training will allow us to determine how our personnel are reflecting our expectations in their performance.

Purpose of the Study

The purpose of this study is to identify what effects competency based training will have on the organization proficiency. This study serves as an instrument to determine if competency based training will achieve its function for the City of Forest Park Fire Department to measure, monitor and produce a highly skilled employee. It will also provide information regarding whether the organizational standards of the City of Forest Park Fire Department can be accomplished using competency based training and testing.

Research Questions

The following questions will be answered by this evaluative and action research:

1. What are the present measureable skill levels of the City of Forest Park Fire Department personnel on the six chosen competencies this research will study?
2. What is required to improve all present personnel to meet or exceed the standard set by the Forest Park Fire Department in the six specific competency based skills?
3. What effects, if any, does competency based training and testing have on the City of Forest Park Fire Department's personnel competency level?
4. What effect did job experience (five years or less in the profession) have during competency based training and testing?

BACKGROUND AND SIGNIFICANCE

In 1961, Forest Park was incorporated as a Village and achieved city status in 1968. The City, in its present state (2009), is a community with a flavor for big city democracy and small town politics. Several of the City's council members have obtained state level offices because of our progressive leadership style. Forest Park is one of the most diverse cities in Ohio with 57% African American, 37% White and 6% other. Encompassed in the city is a large, covered retail mall, which includes a Bass Pro Shop, numerous industrial parks/areas and copious amounts of stand alone specialty shops/stores. The City of Forest Park covers seven square miles, serving 20,000 residents with a daytime population of 100,000 occupying our 640 businesses.

Established in 1961, the City of Forest Park Fire Department provides fire suppression and rescue, emergency medical service, public safety education and fire prevention for the third largest city in Hamilton County, Ohio. The Forest Park Fire Department is comprised of two stations, which combined include two three-person engine crews, two two-person paramedic crews and a four person technically trained ladder/RAT crew.

From the department's humble beginning in 1961, a Volunteer Fire Department with a single fire station was established. It evolved in 1990 to a city fire department with a staff of two career firefighters and a paid daytime fire chief, supplemented with paid part time and volunteer firefighters. The Forest Park Fire Department has transitioned into the present 2009 staff, consisting of a fully paid fire department, which includes 29 career and 32 part-time employees providing service from two fire stations.

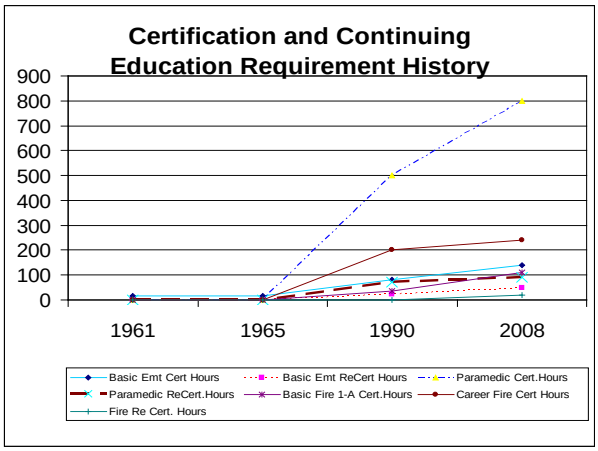
Operational responsibilities have increased dramatically since the fire department's inception. Operational responsibilities include fire suppression, emergency medical care and transport, technical rescue, ladder operations and hazardous material responses. From the first

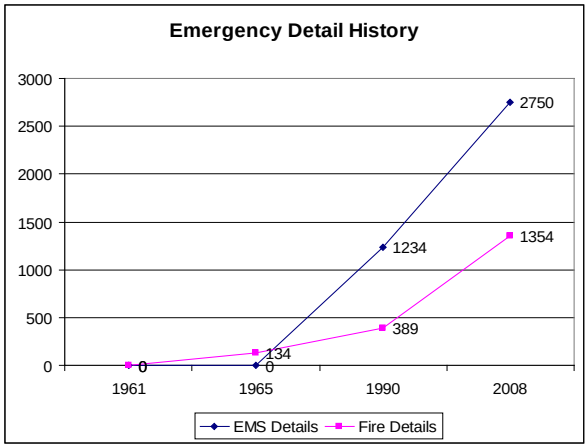
fire run at 520 W. Sharon Road in 1962, to the present, statistically the city has matured to be the largest user of all of the cities using the Hamilton County Communication Center; with emergency details totaling 4,104 in 2008, the personnel are continuously taxed.

In 2003, The Forest Park Fire Department purchased a ladder truck with specifications to combine the responsibilities of a heavy rescue and ladder operations. The truck is staffed with Basic Emergency Technical Rescue trained personnel. Special technique training requirements increased in 2008 with both fire certifications and inspection certifications now requiring continuing education credit hours. The Ohio EMS Board also increased their continuing education credit hours in 2008. Since the City of Forest Park has accepted the responsibility to certify the department personnel to provide advanced operations and patient care (ie: Rapid Assistance Team, Urban Search and Rescue and Cardiac Monitor, twelve lead and external cardiac pacing) there has been little time spent to hone the day-to-day basic skills.

The City of Forest Park Fire Department has been on the forefront of training their personnel. A full-time Training Captain and a budget able to support the aggressive training curriculum is a coveted facet for other fire departments not as fortunate. In 2006, the Forest Park Fire Department reviewed, revamped and implemented new “Standard of Operations Guidelines” which specifies tactical tasks for each position on the apparatus. As a member of the Hamilton County Protocol Committee, the Forest Park Fire Department collaborated in the changes of the Paramedic Protocol.

The following charts show the increase of demand on personnel and the versatility needed to maintain current minimum training standards.





Tradition in the fire service dictates education for the task, i.e., Fire, Hazardous Materials and EMS certifications with little continuing education. In the career of a 20-year veteran, the training opportunities are endless, but the individual must have the desire to seek their own training. An individual could work their entire career without being competent in all tasks because there were no required standard set. In order to assure a 20-year veteran who may have only taken the basic certifications and the five-year veteran who is not as experienced continue to be competent, a standard had to be set.

In 1994, the National Leadership Council approved the National Park Service (NPS) Employee Training & Development Strategy. The Strategy set a new direction for training. In the future, training opportunities will be designed around "competencies" which are established for each career field and for each job title. Competency-based performance is a current concept in business and government.

One comprehensive definition of "competency" is: "A cluster of related knowledge, skills and attitudes that affects a major part of one's job (a role or responsibility) that correlates with performance on the job that can be measured against well-accepted standards and that can be improved via training and development."

The Forest Park Fire Department is informed on the training processes and how to better allocate training hours and funds to stay current on the department's personnel skills and knowledge. By defining the City of Forest Park Fire Department's Standard of Operations Guidelines, we are able to measure and evaluate each personnel against a standard of the competencies.

LITERATURE REVIEW

NFPA 1001 (2002) – Firefighter Professional Qualifications state “the authority having jurisdiction shall establish instructional priority and the training content to prepare individuals to meet the job performance requirements.” NFPA 472 (2002), NFPA 1002 (2003) and NFPA 1006 (2003) standards on professional qualifications made the same statement and went on to identify the minimum job performance requirements (JPR) for that standards job title.

It is clear, every agency had to be responsible to define and prioritize its own core competency training and testing based on the needs of the agency. Professional qualification standards guide an agency, but core competencies are needed to base an individual agency’s priorities and functions. In fact, core competency may exceed the requirements of the Firefighter Professional Qualifications. NFPA 1001 (2002)

So, the question is, how do fire departments select their training materials and what are they based on? Cayse (2001) suggests a seven-step needs assessment model that would identify what training was required and lacking.

1. Use your department’s mission statement along with fire personnel and equipment to identify all the functions members are required to fill.
2. Research all laws and standards that apply to the departments types of responses.
3. Determine the minimum training time required for each specific function your members must perform.
4. Identify training deficiencies and their extent based on the current training program and the laws and standards that cover functional areas.
5. Examine in-house records for apparent training deficiencies. These include injury reports, legal actions and accidents.

6. Survey members for their views on the current training program.
7. Analyze the results looking for trends. Start with the minimum legal requirements that you must meet and then address other areas recognized in the assessment.

Barr and Eversole (2003) in their chapter on training and education discussed the “need to clearly define and delineate exactly what your organization does. What service does it provide what degree or level with those services, and all functions that you perform as an organization.” They also recommended using the organizations mission statement as a starting point.

The City of Forest Park Fire Division has responded to a variety of calls, emergency and non-emergency, which opens the door for a vast choice of competency trainings. The mission statement of the Fire Department states, “to provide those we serve with vital emergency services”. The mission statement dictated the competency based training start with the focus on emergency services.

Barr and Eversole (2003) addressed this by saying “another organization might respond to every call for help that is outside the scope of any other ... department within that community. What does this mean? You need to clearly define that which you intend to respond to and mitigate or at least maintain and support until it is mitigated.”

They went on to define a three tier system for prioritizing training:

1. Must Know — these are governmental mandates that all fire fighters are subject to.
2. Need to Know — these are professional qualification standards aligned to the functions of your organization. Certification is stressed.

3. Nice to Know — this is explained as knowledge that may be useful, but is not essential to fulfilling the job function or operation, also described as professional development.

Another important concept in developing core competencies is clarity. A competency (standard skill) must be “distilled down to its essence, the very nugget of what it is”. Morse (1999) “A hazy idea of a concept cannot help but give a hazy description to others.”

Caffarella (1994) said needs assessment can be a powerful tool to justify and focus the planning effort, but it is only one of many ways that ideas are formulated for educational programs. She also said a formal needs assessment is not the way ideas are generated for educational programs and may not be necessary in terms of time and money spent. Program ideas can come from different sources such as personal observations, hunches and experience.

Thiel, Stem, Kimball, & Hankin (2003) in their report on trends in firefighter training identified several issues directly relevant to the Forest Park Fire Division. First, “the need to expand training to include technical type training and advanced EMS has increased the types of training hazards to which firefighters can be exposed.” Second, “in order to meet the demands of expanding fire service roles, advanced and technical evolutions have increased, thus reducing the amount of time available to perform basic training evolutions on such subjects as hose, ladder, and tool work.” Finally, “new technologies will inevitably become part of the training tools used by firefighters. These technologies can enhance personnel, but not substitute for actual live” hands-on training evolutions.

Reeder (2006) wrote about the difficulty in covering all of the topics that must be part of a training program. He suggests starting by defining basic skill levels and focusing training on continuously improving these skills. Reeder emphasized focusing on “core skills.., required to

complete basic parts of a job" because we must be proficient at the basics before we can master the complex. He recommended using NFPA 1000 series standards, department SOG's and job descriptions to develop job performance requirements.

The Occupational Safety and Health Administration (2006) part 1910 on the training and education of fire brigades stated brigade members will be provided with training in all duties which they are expected to perform and this training must be provided by instructors with a comprehensive knowledge of the subject. It went on to state that training should be frequent enough for members to safely and satisfactorily (a minimum of quarterly for structural firefighters) perform their duties.

The Literature Review attempted to define core competency, identified core competencies mandated by law, regulations and standards pertaining to fire service organizations and understand the methods used by others in the fire service to determine core competencies.

Core competency is a defined level of expertise that is fundamental to a particular job. The regulations and standards shaping the fire service uniformly state fire departments need to explicitly state their capabilities and provide comprehensive training to their personnel with enough frequency to maintain a competent skill level.

In 1994 the National Leadership Council approved the National Park Service (NPS Employee Training & Development Strategy). This Strategy set a new direction for NPS training. In the future, training opportunities will be designed around "competencies" which are established for each career field and for job title. Competency-based performance is a current concept in business and government.

(Training magazine: July, 1996) One comprehensive definition of "competency" is: "A cluster of related knowledge, skills and attitudes that affects a major part of one's job (a role or

responsibility) that correlates with performance on the job that can be measured against well-accepted standards and that can be improved via training and development".

The majority of literature on how to define an organization's core competencies includes some form of a needs assessment. Some authors described a formal, time intensive process to uncover the functions, needs, and competencies of an organization. Another author wrote that this formal process usually takes too many resources and that most programs rely more on personal observations, hunches and experience to define program goals. While authors may differ in the methods they used to determine core competencies, all agree that the process starts by clearly identifying the roles and functions of the organization. Once functions are clarified, the authors agree that some process of prioritization must take place. Core competencies can then be established after functions are identified and prioritized. The City of Forest Park Fire Department will use the process outlined in the procedures section to identify a base line skill level and the desired training to be proficient with core competency based testing.

Mitch Horowitz (2006) "From the Socks Up: The Extraordinary Coaching Life of John Wooden", Horowitz wrote, " Coach Wooden said "Don't be too concerned with regard to things over which you have no control, because that will eventually have an adverse effect on things over which you have control." In other words, put your shoes on properly before you start to worry about what the other team is up to.

PROCEDURES

The procedures used to prepare this research paper include research questions, a literature review and a focus group consisting of the City of Forest Park Fire Administration and the Training Division. The focus group decided upon six specific competency training and testing standards using task analysis sheets, which directed us toward possible problems. The following six were chosen in several skilled areas of the fire service because of the simplistic nature of the skills. The committee anticipated one skill (Ropes and Knots) that is rarely utilized along with five other skills that are commonly utilized during most typical emergencies in the City of Forest Park:

1. Hose Deployment
2. Personal Protective Equipment
3. Ropes and Knots
4. Traction Splint Application
5. Four Minute Pump Operation Drill
6. Mega Code (Advanced Cardiac Life Support scenario)

These six skills have been identified particularly because the competencies are basic functions of the City of Forest Park Fire Department and all personnel should have experience and knowledge of these skills.

Once a problem statement was established, four research questions were developed:

1. What are the present measureable skill levels of the City of Forest Park Fire Department personnel in the six chosen competencies this research will study?

2. What is required to improve all present personnel to meet or exceed the standards set by the Forest Park Fire Department in the six specific competency based skills?
3. What effects, if any, does competency based training and testing have on the City of Forest Park Fire Department's personnel competency level?
4. What effect did job experience (five years or less in the profession) have during competency based training and testing?

A literature review was performed to help answer question 2. The review included NFPA & OSHA standards pertinent to firefighter training and professional qualifications, Ohio Administrative Code chapters on EMS and American Heart relevant to firefighter and EMTs training, Forest Park Fire Department's SOGs on job requirements and publications from IFSTA and Brady Emergency Care 11th edition. Questions 1, 3 and 4 will be answered using the questionnaires and core competency gradable skill sheets.

Step-One is to develop a lesson plan, a questionnaire (when appropriate) and a core competency gradable skill sheet to match each chosen competency.

Step-Two is to institute a plan of action to test, train and re-test the employees. This will be achieved by testing each employee separately; then teaching the lesson plan to all three shifts consecutively and re-testing using the gradable skill sheet. The same evaluator will grade all students during all testing periods.

Step-Three is to collect all data and develop charts to allow a clear and concise evaluation of the effects of the six competency based trainings. The data will be assembled using an absolute group analysis along with data, which will involve separating the group into greater than or less than six years of experience.

Definition of Terms

Hazardous Materials **Dangerous goods**, also called **hazardous materials** or **HazMat** ("HazMat teams" are personnel specially trained to handle dangerous goods) are solids, liquids or gases that can harm people, other living organisms, property or the environment.

Standard of Operational Guidelines (SOG). Established procedure to be followed in carrying out a given operation or in a given situation.

Limitations of the Study

The scope of this research project is limited to specific skill sets that are commonly used every day during emergencies. One skill, Ropes and Knots six was chosen because it is rarely used and yet very important in specific rescue situations. Areas such as pump operations, hose deployment, care for a patient with cardiac issues, ropes and knots, personal-protective equipment and splinting deserves significant consideration in any comprehensive training plan. The trainings in this project did not include the fire chief or deputy chiefs in an effort to get data that reflects the personnel's knowledge and ability in the field.

This research project is limited because of the employee's schedule. The firefighters work twenty-four hours on duty and off duty for forty-eight hours (one day on and two days off). The employees also get personal time off and shift trades are available with other employees for additional time off. Due to the time restraints on this research project, it makes it impossible to test one hundred percent of the employees, one hundred percent of the time, therefore; only the employees who are available for the complete testing and training period will be used.

Hose Deployment is a group effort, the group consisted of the entire ten person crew. It is impossible to measure individual performances and therefore was not used in question 4 results.

RESULTS

This paper evaluated The City of Forest Park Fire Department personnel on six skill sets. The personnel used in this study were present for the pre-test, four refresher sessions and the post-test. In order to maintain continuity, employee numbers were utilized to track research data. The results are as follows:

The paramedics and emergency medical technicians were tested using the same scenario and the skill sheets found in appendix 2, Figures 1-2 and 1-3.

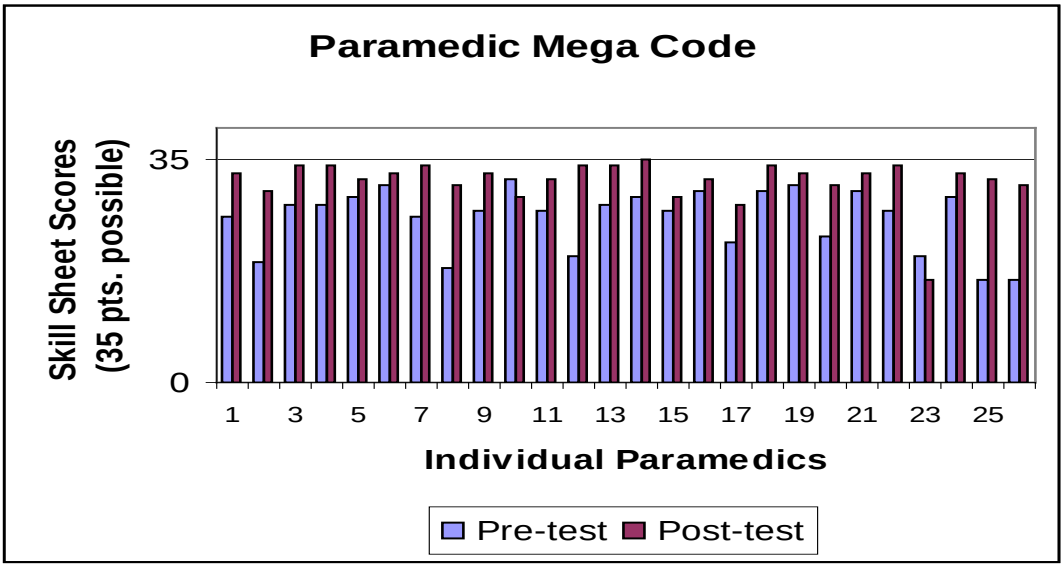


Figure 1-1

The chart above demonstrates the individual paramedic performance on the American Heart Association's Ventricular Tachycardia / Fibrillation Mega Code skill sheet. The average overall percentage of improvement was 15.7%.

The difference between the two focus groups (see Appendix 1, Figure 1-3) divided by years of experience (question 4) of this research project indentified those with five years or less experience displayed an improvement of 13.4% while those with six years or more experience improved by 18%.

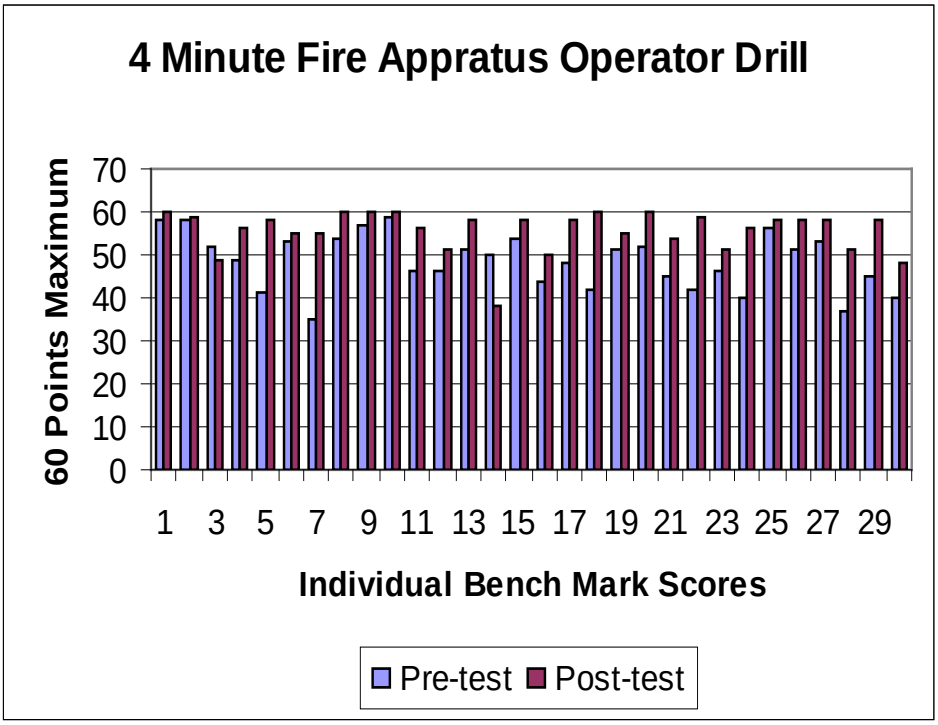


Figure 2-1

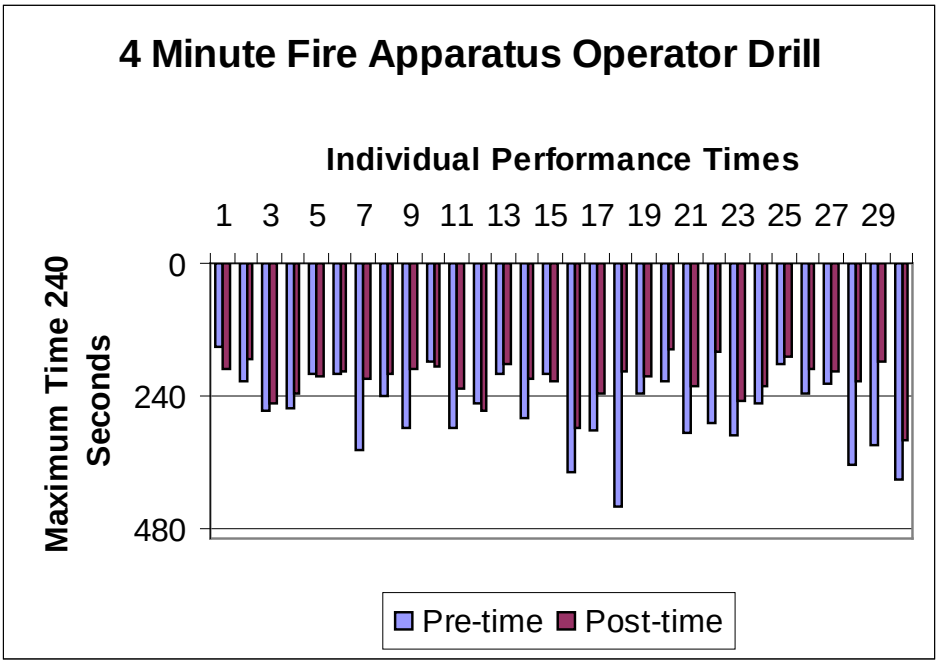


Figure 2-2

Fire Apparatus Operator (FAO) is a drill established using the NFPA 1410. The Score

Sheet found in Appendix 2, Figure 2-5 was used to score individual performances. The preceding above charts show both individual scores on the bench marks set by NFPA 1410 and individual overall times. The overall percentage of improvement in Figure 2-1 is 10.9% on bench marks completed while Figure 2-2 shows an overall improved time of 51.4 seconds faster to complete the drill.

The difference between the two focus groups (see Appendix 1, Figure 2-3 and 2-4) divided by years of experience (question 4) of this research project indicated those with five years or less experience displayed an average of 9.1% improvement on bench marks complete along with 39.4 seconds faster to complete the skill while the six years or more experienced an average 12.8% improvement on bench marks complete and a 63.5 seconds faster to complete the skill. Additional information can be obtained in graphs found in Appendix 1.

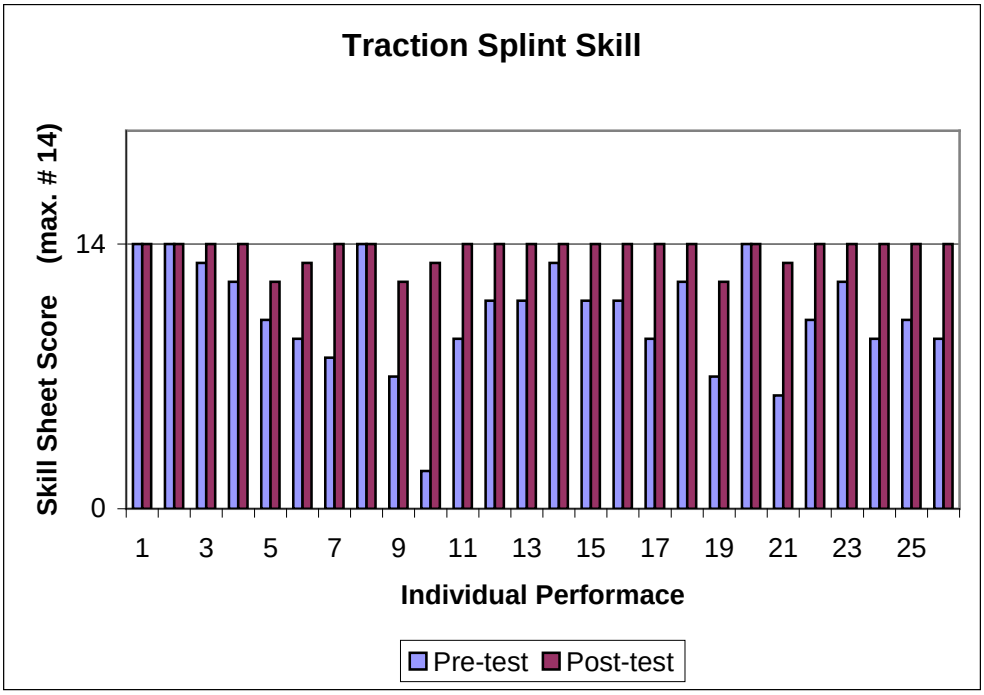


Figure 3-1

Traction Splint is a basic skill used to splint a fractured femur bone (thigh bone). The

skill sheet used in the task is found in Appendix 2, Figure 3-3.

The preceding chart displays the individual performance on the traction splint application. The overall improvement in Figure 3-1 is 10.0% improvement on the skill sheet scores.

The difference between the two focus groups (see Appendix 1, Figure 3-2) divided by years of experience (question 4) of this research project indentified those with five years or less experience displayed an average 33% improvement on the skill sheet scores while those with six years or more experience achieved an average 4.3% improvement to obtain a 100% score on the skill sheet. Additional information can be obtained in graphs found in Appendix 1.

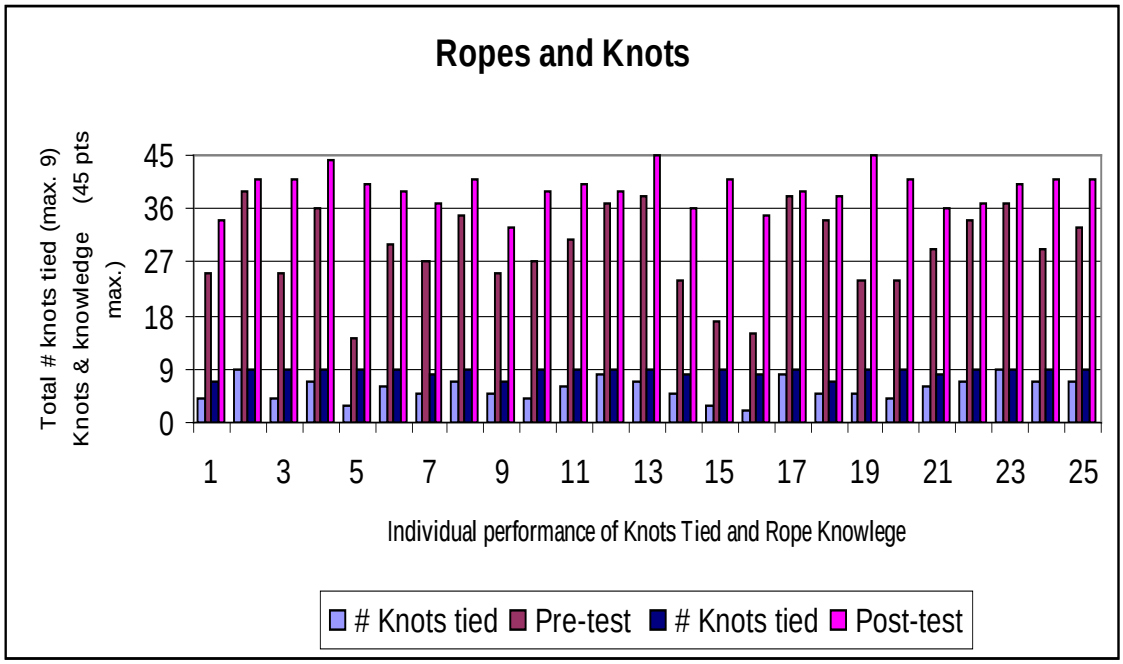


Figure 4-1

Ropes and Knots is a competency drill certified in the State of Ohio by the Ohio

Department of Safety. The Score Sheet found in Appendix 2, Figure 4-5 was used to score individual performances. The above chart shows both individual scores of knots tied and knowledge of ropes. The overall improvement in Figure 4-1 is an 18.8% on the knowledge of ropes and a 28.3% improvement in knot tying.

The difference between the two focus groups (see Appendix 1, Figure 4-4) divided by years of experience (question 4) of this research project indentified those with five years or less experience displayed an average 20% improvement on the number of knots tied along with a 16.9% increase in the knowledge of ropes while the 6 years or more experience had an average 36.7% improvement on the number of knots tied and a 20.7% increase in the knowledge of ropes. Additional information can be obtained in graphs found in Appendix 1.

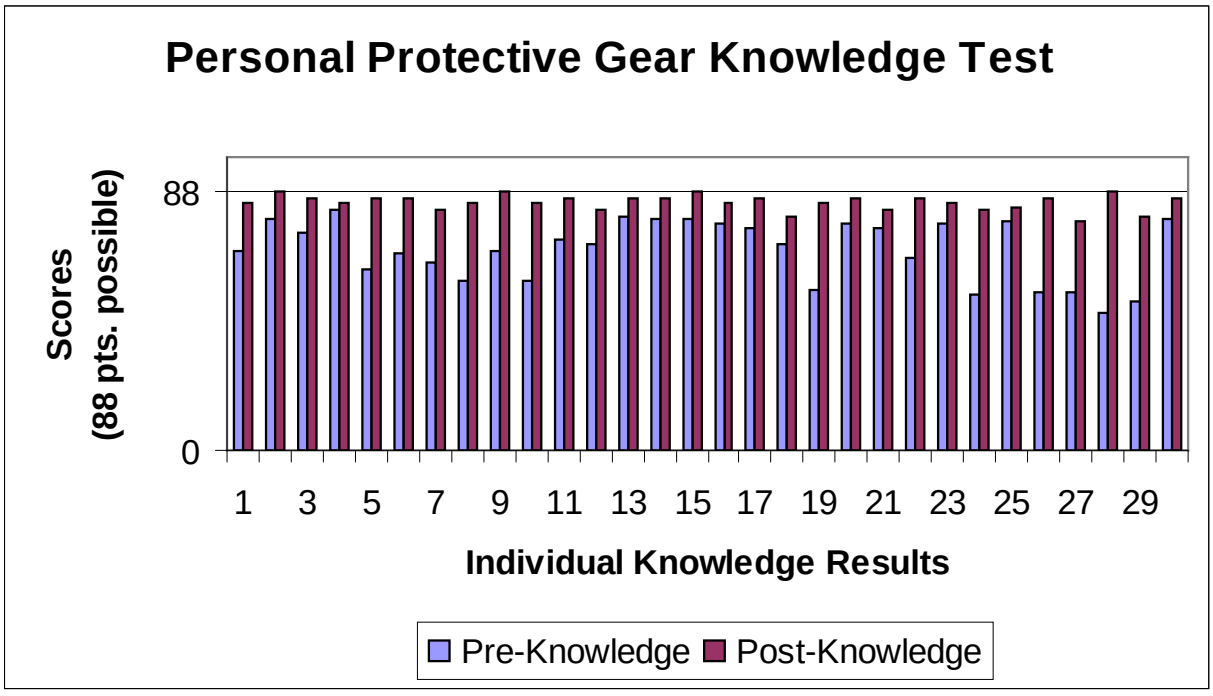


Figure 5-1

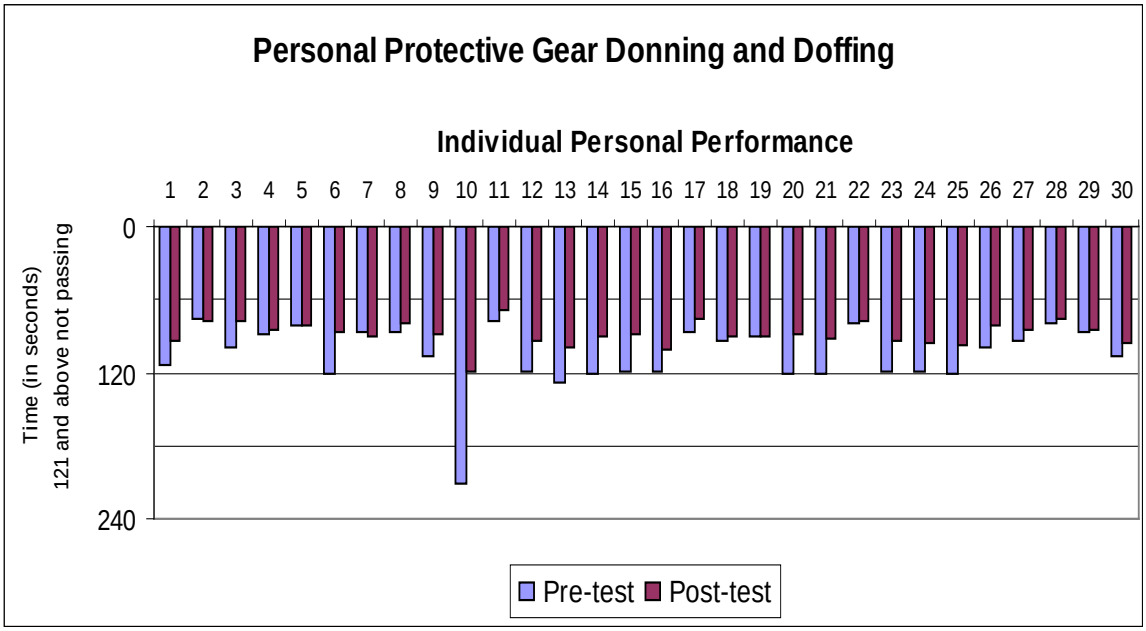


Figure 5-2

The Donning and Doffing of Personal Protective Equipment is a drill established using the NFPA 1410 standard. The Score Sheet found in Appendix 2, Figure 5-5 was used to score individual performances. The above charts shows both individual scores on the bench marks set by NFPA 1410 and also individual overall times. The overall improvement in Figure 5-1 is an 18% on knowledge of care and maintenance while in Figure 5-2 shows an overall improved time of 16.7 seconds to complete the drill.

The difference between the two focus groups (see Appendix 1, Figure 5-3 and 5-4) divided by years of experience (question 4) of this research project identified those with five years or less experience displayed an average 17% improvement on knowledge of care and maintenance and 15.7 seconds improvement of time to complete the skill while the 6 years or more experience had an average 23.9% improvement on knowledge of care and maintenance and 17.8 seconds improvement of time to complete the skill. Additional information can be obtained in graphs found in Appendix 1.

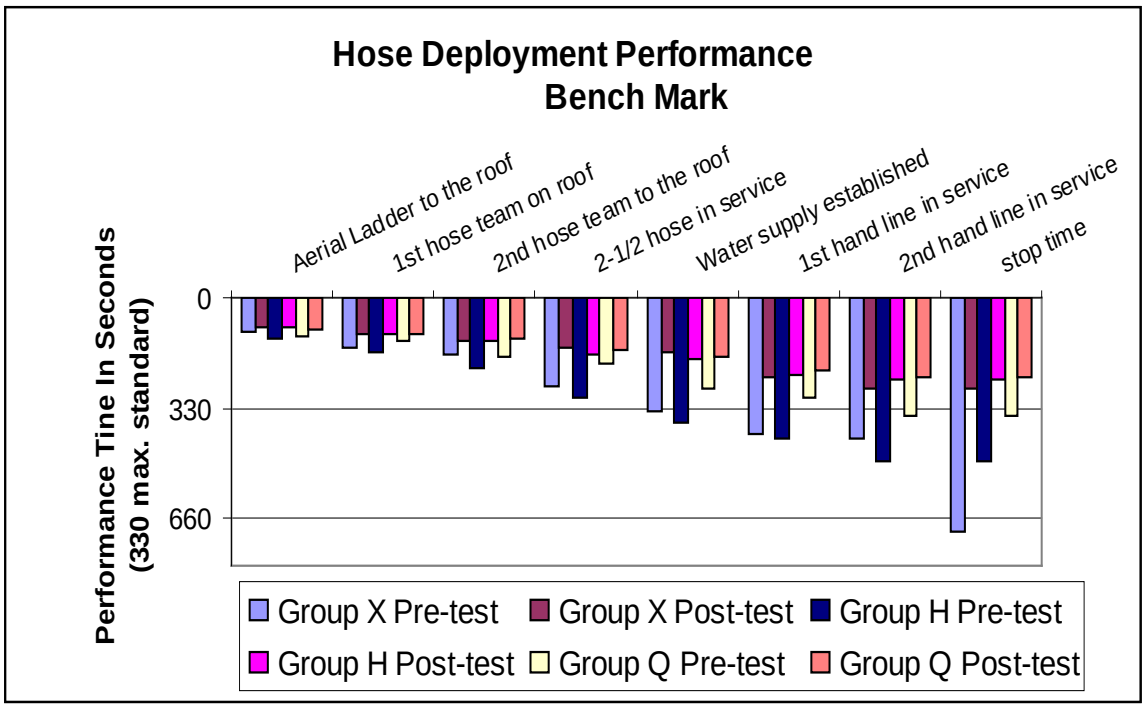


Figure 6-1

Hose Deployment Evolution as defined in the NFPA 1410. This evolution was preformed using the entire crew on each shift. The evolution score sheet found in Appendix 2, Figure 6-7 set the benchmarks required to perform the evolution. For continuity purposes each shift was assigned the following identifiers: H, Q and X.

The chart above displays the focus group H, Q and X pre-test and post-test performances. Group H improved their performance time by 244 seconds (4 minutes and 4 seconds), Group Q improved their performance time by 110 seconds (1 minute and 50 seconds), and Group X improved their performance time by 430 seconds (6 minutes and 10 seconds). All three groups were under the 333 seconds standard upon completion of the post-test, see Appendix 1, Figures 6-4, 6-5 and 6-6. Additional information can be obtained in graphs found in Appendix 1. No fire service experience data (question 4) was generated due to the nature of the evolution. Additional information can be obtained in graphs found in Appendix 1 figures 6-2 and 6-3.

DISCUSSION

Through a review of industry standards, articles in professional magazines, government studies and regulations, fire service textbooks and adult learning texts helped to determine The City of Forest Park Fire Department's direct with training. That research led to several conclusions. Government and its agencies mandate certain training. Fire departments are required to provide training in the organization's functional areas so that firefighters are adequately prepared to safely perform these functions in an emergency, Ohio Administrative Code, BWC (2006). The City of Forest Park Fire Department increased the number of functional areas over the past 20 years causing training demands to increase. An organization's functions must be clearly defined and stated in writing, Barr and Eversole (2003), Ohio Administrative Code, BWC (2006), and Morse (1999). This was an essential first step in determining what the core competencies of the organization were. The City of Forest Park Fire Department did not have all organizational training clearly defined in writing. This led to establishing importance as to what the level of service provided should be for certain organizational functions such as hose deployment evolutions. Another problem associated with undefined organizational training was the inability of The City of Forest Park Fire Department to provide a comprehensive training plan that covered all of the needs of the department. Once training is determined, they can be prioritized and an effective plan can be developed to meet the training needs of the organization relative to the identified organizational competencies. NFPA 1410 (2002)

Professional standards act as a guide in formulating both core competencies and a training program to address the fire department's training needs, but reliance on these standards alone can not provide a comprehensive list of a fire department's core competencies. More information was needed from the organization itself. Caffarella (1994) Some form of needs

assessment model was identified by several sources as a method to determine what the organization's trainings were and what the training program was or was not doing to meet the training needs. Cayse (2001), Reeder (2006), Barr, Eversole (2003) An important part of these assessments was discovering what the organization itself identified as core functions or competencies. Initially, the author had planned to survey outside departments to determine how they developed their training programs and what other departments defined as their core competencies. After talking with Fire Chief Trish Brooks, of The City of Forest Park Fire Department, about the survey, the author became convinced that there was a greater need to perform actual core competency training and testing of the internal members of The City of Forest Park Fire Department to determine what effect they have on the most critical functions of the department. The results of six core competencies gave the author a direction on training for the department. The City of Forest Park Fire Department personnel were tested, trained and re-tested on the six core competencies studied in this paper. The results lay out important information on core competency training in which The City of Forest Park Fire Department needs training and the frequency of that training.

The results of the research on core competency based training were remarkable and unexpected. The results of the six core competencies study (see figure 7-1 below) clearly showed that basic functions thought to be highly critical and difficult to maintain proficiency in should move to the forefront of the division's training program. Priority of training would move from there to highly critical technical functions, then to less technical critical basic functions difficult to maintain, and finally to functions easier to maintain and less critical. Each function should be broken down into job performance requirements (JPR) as defined by professional standards, governmental regulations and department needs. Once each function has been broken

down into its JPR, department personnel could be assessed for competency and areas of weakness addressed through the divisional training program working first from the most basic JPR's of the function up to the more complex JPR's.

The overall implication of the results for the City of Forest Park Fire Department was to develop an overall training program based on a prioritized list of core competencies identified through governmental regulations, professional standards and department operations.

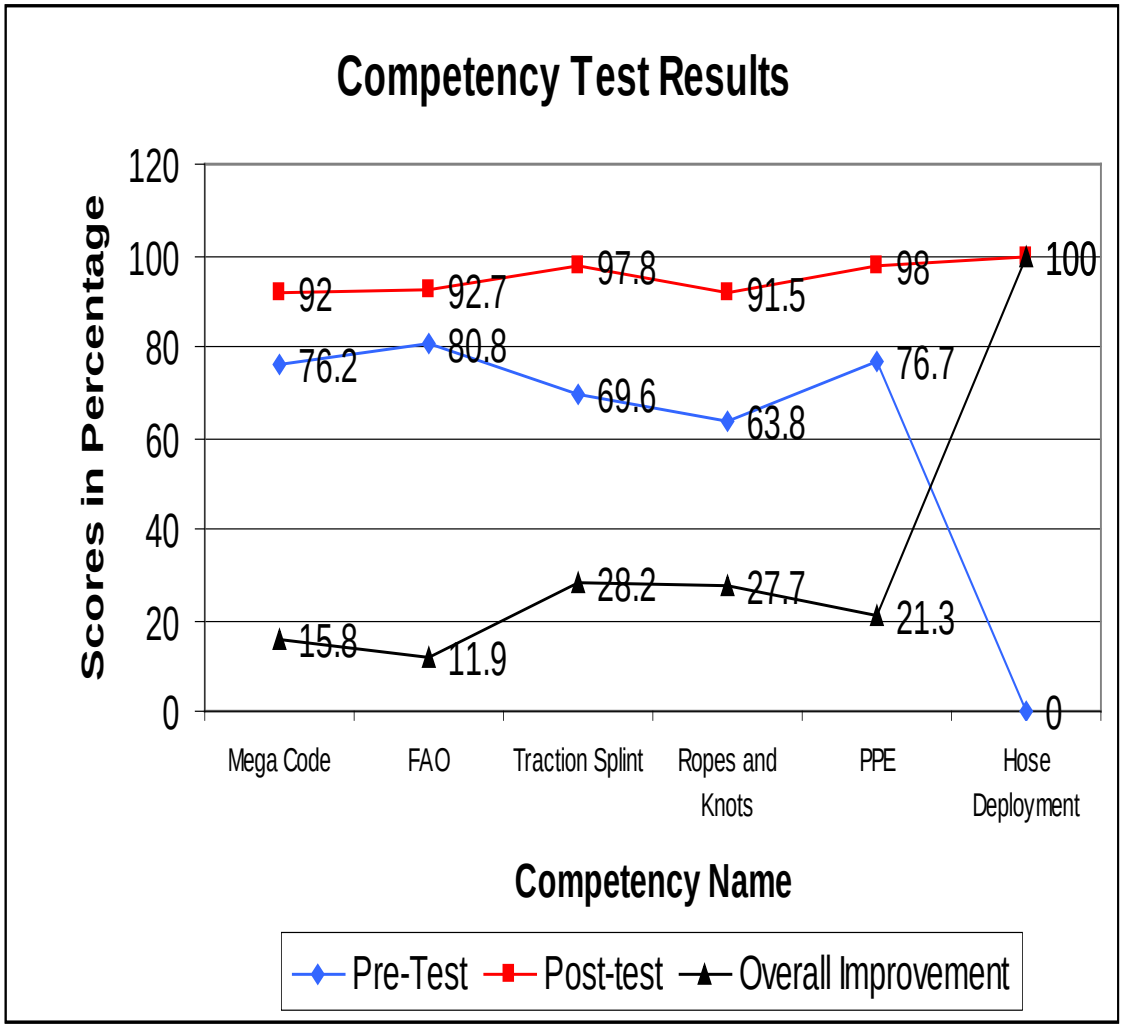


Figure 7-1

The two focus group results (see Figure 7-2 below) display information regarding years of experience. It demonstrates early in a person's fire service career, basic skills are retained; as with experience and additional training causes the dilution of the basic skills. The more seasoned firefighter files the basic skills further back in slide tray of experience but once they review the basics, they perform them nearly flawlessly.

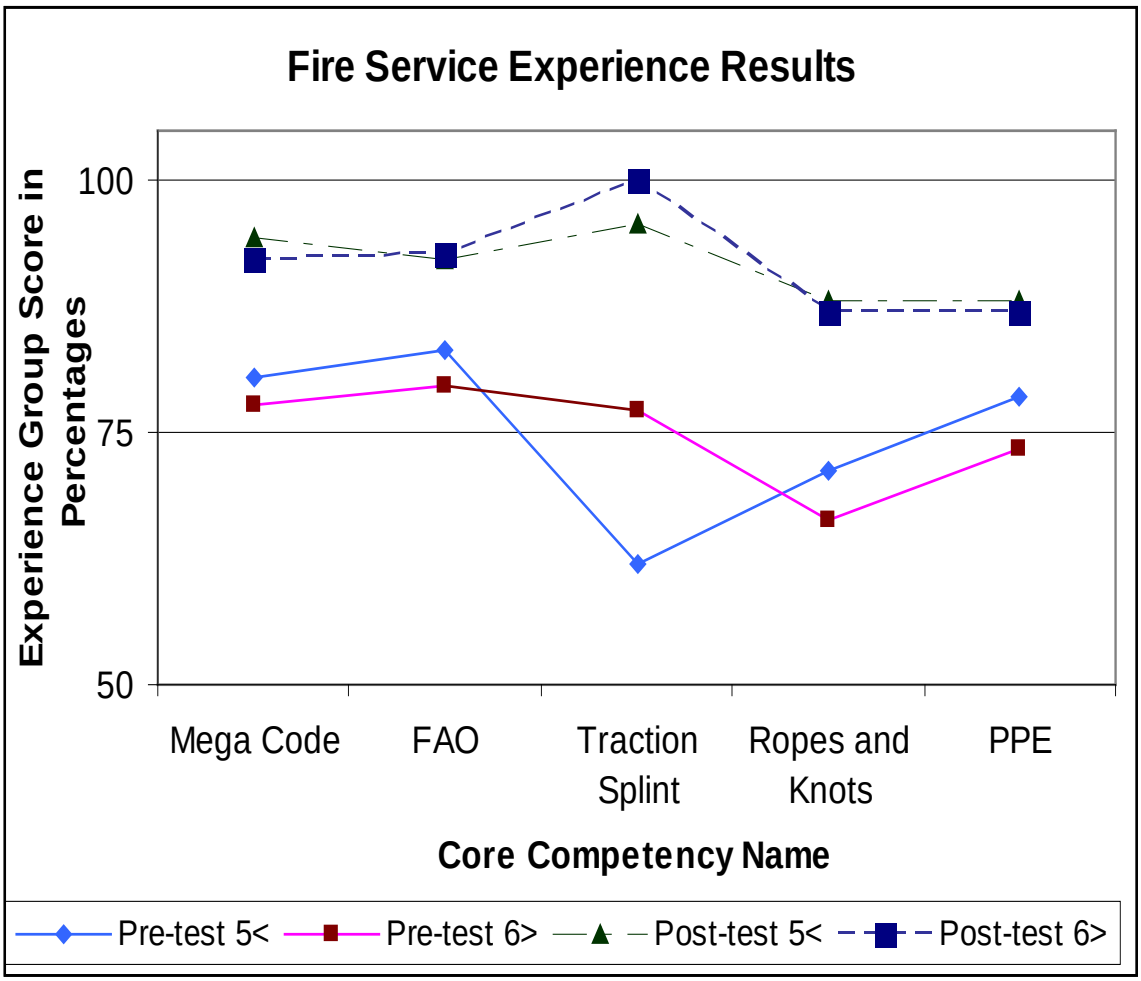


Figure 7-2

RECOMMENDATIONS

The analysis of data collected through the literature review, focus groups and testing exposed some weaknesses in The City of Forest Park Fire Department. The core competency training program is a critical function in maintaining the basic elements of all personnel. The core competency training program is the approach to establish a training which will allow all personnel to perform at a level that is accepted and measurable throughout their career. The City of Forest Park Fire Department's overall professionalism, preparedness and safety would improve if the following recommendations were implemented.

1. The literature review overwhelmingly recommended fire departments identify and express in writing the functions they intend to perform and the level at which they will perform those functions.

2. Fire departments must dedicate the resources necessary to properly train adequate numbers of personnel in all identified core competencies. Fire service roles have expanded, increasing the number of complex training evolutions. Therefore, safety on the training ground must be demanded. If a fire department does not properly train and equip personnel to safely perform a function that function should not be part of the department's defined capabilities or the department's potential liability is increased.

3. The City of Forest Park Fire Department must implement a rotating training schedule of core competencies enveloped into daily trainings. This schedule should encompass a year's schedule with each critical core competency refreshed every three months.

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APPENDIX 1 – PERFORMANCE DATA CHARTS

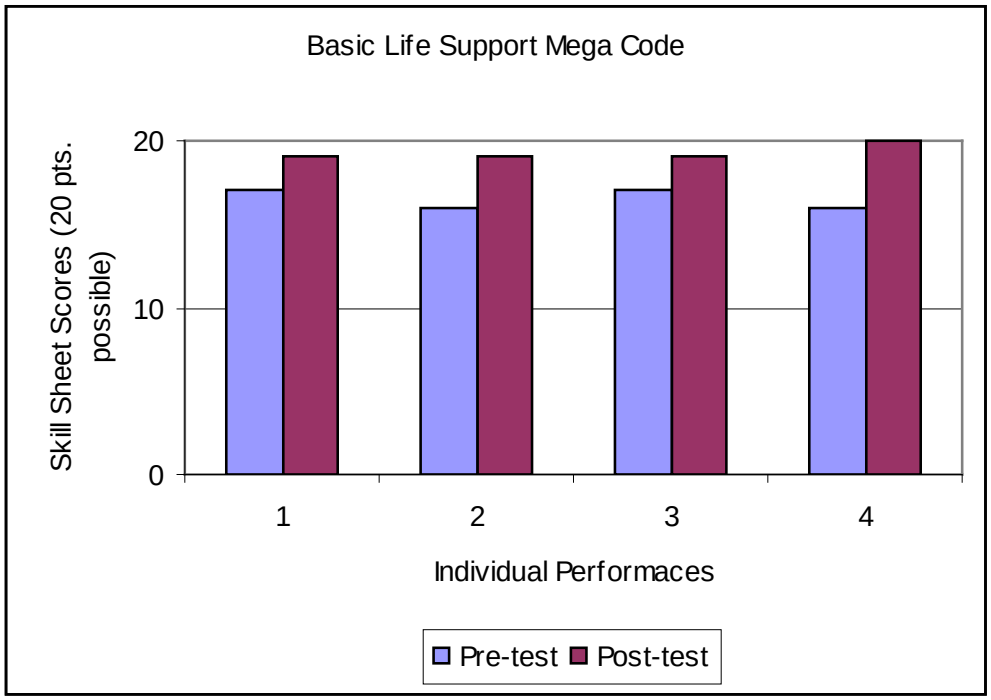

Figure 1-2 the above chart is a representation of the Emergency Medical Technician individual scores on the skill sheet. (Figure 1-5, appendix 2)

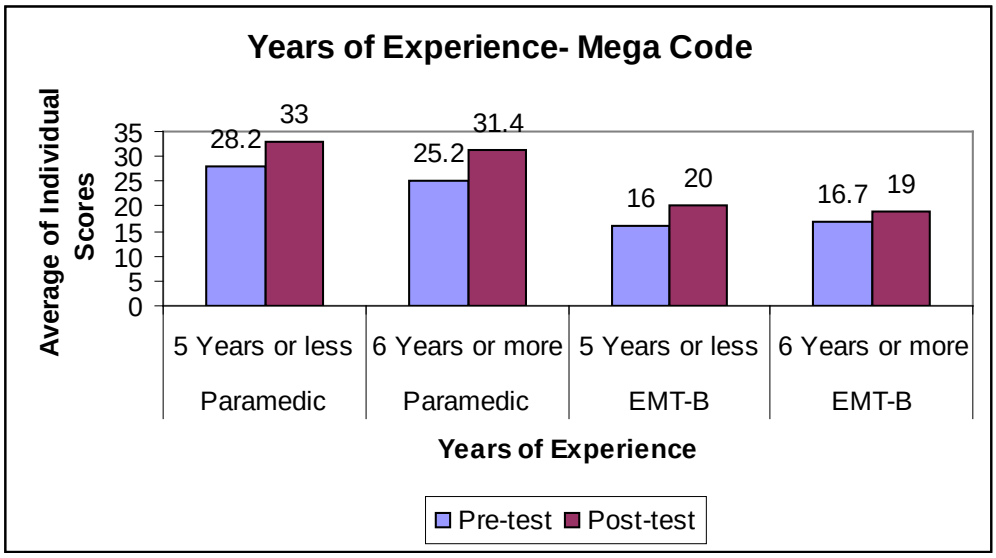

Figure 1-3 the above chart is a representation of the overall test scores divided by years of experience in the fire service. (referring to question 4 of this paper)

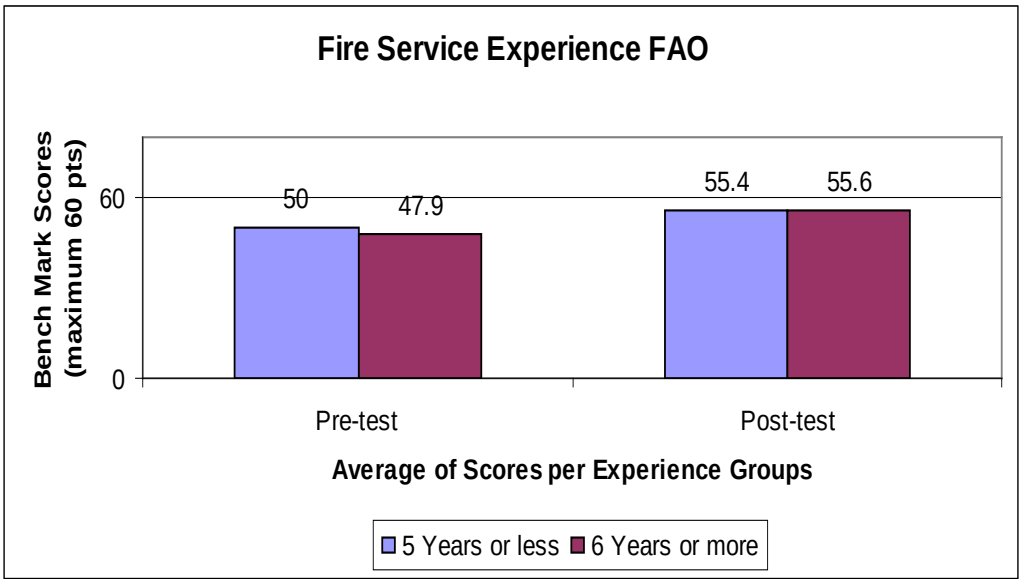

Figure 2-3 the above chart is a representation of the Fire Apparatus Operator individual scores on the skill sheet. (referring to question 4 of this paper)

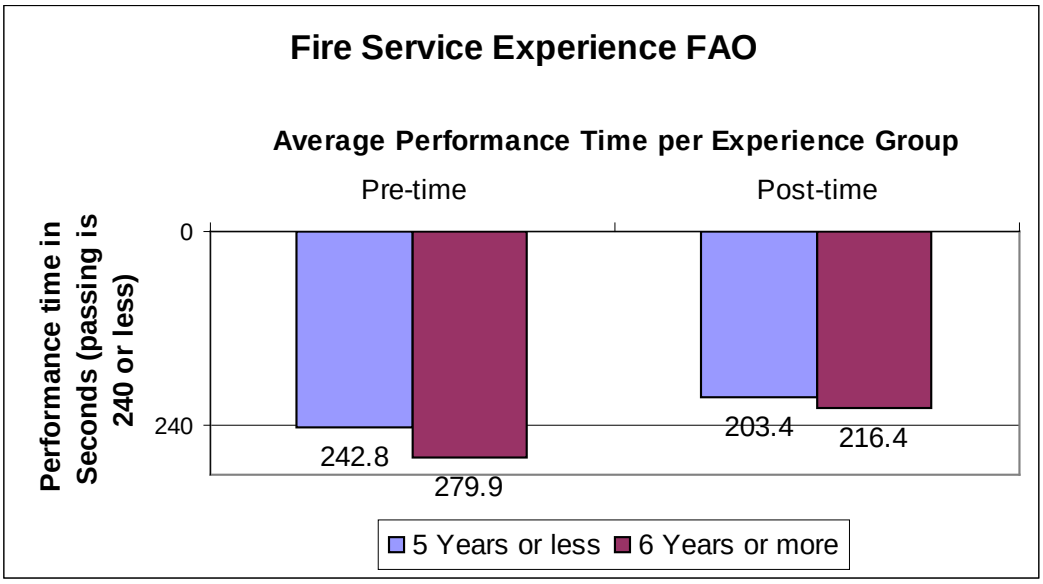

Figure 2-4 the above chart is a representation of the Fire Apparatus Operator individual time on the skill preformed. (referring to question 4 of this paper)

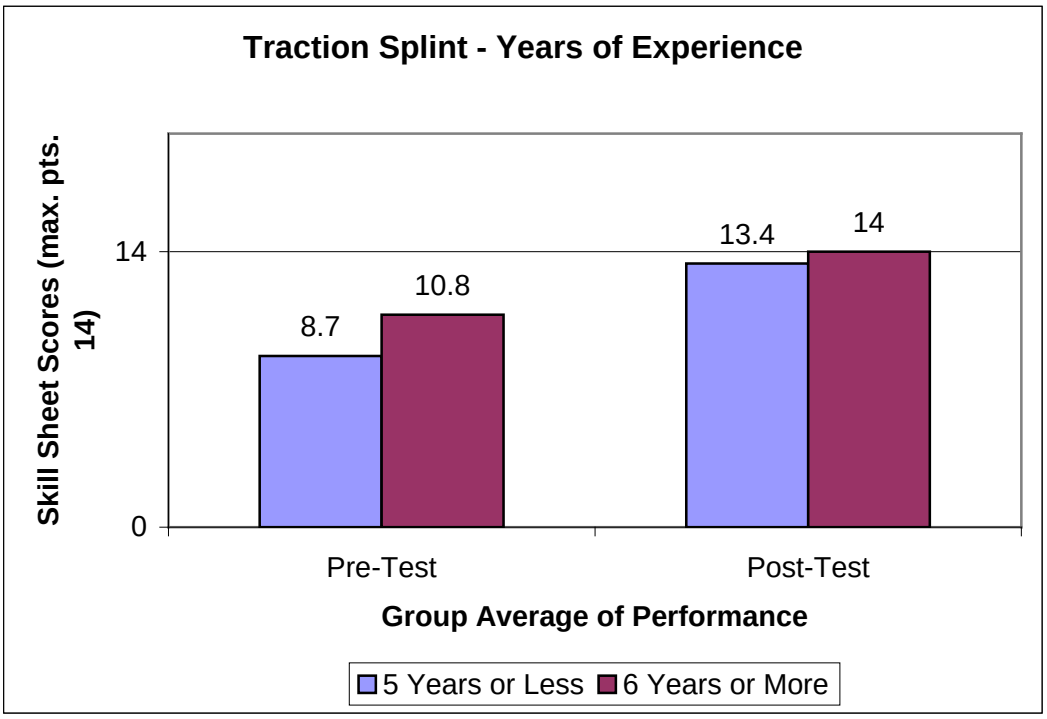

Figure 3-2 the above chart is a representation of Traction Splint Application individual scores on the skill sheet. (referring to question 4 of this paper)

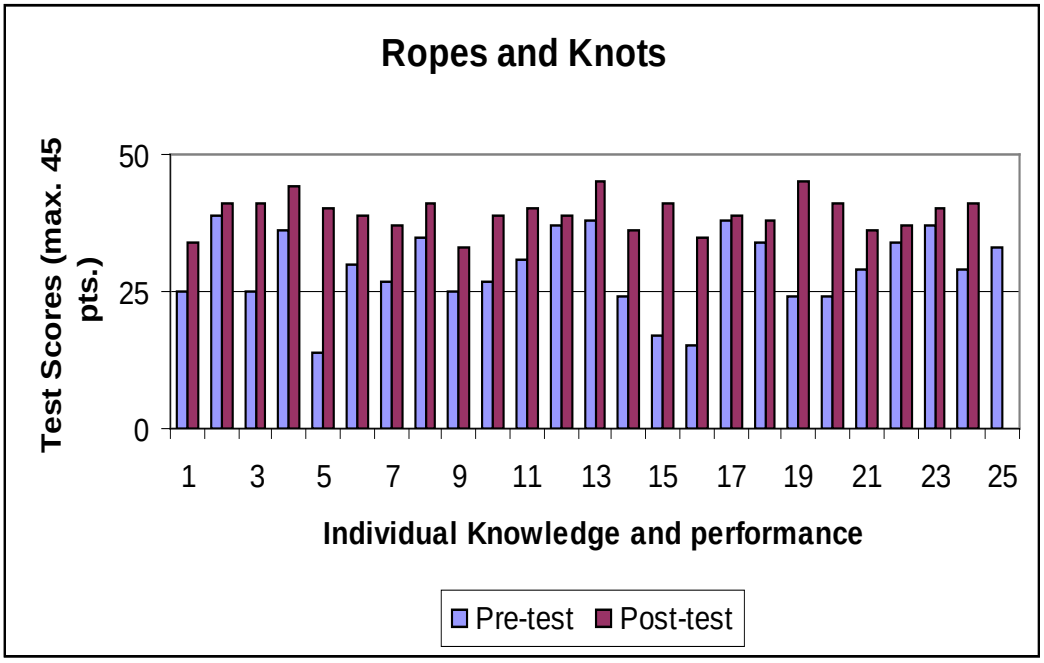

Figure 4-2 the above chart is a representation of the overall Ropes and Knots individual scores on the skill sheet. (Figure 4-5, appendix 2)

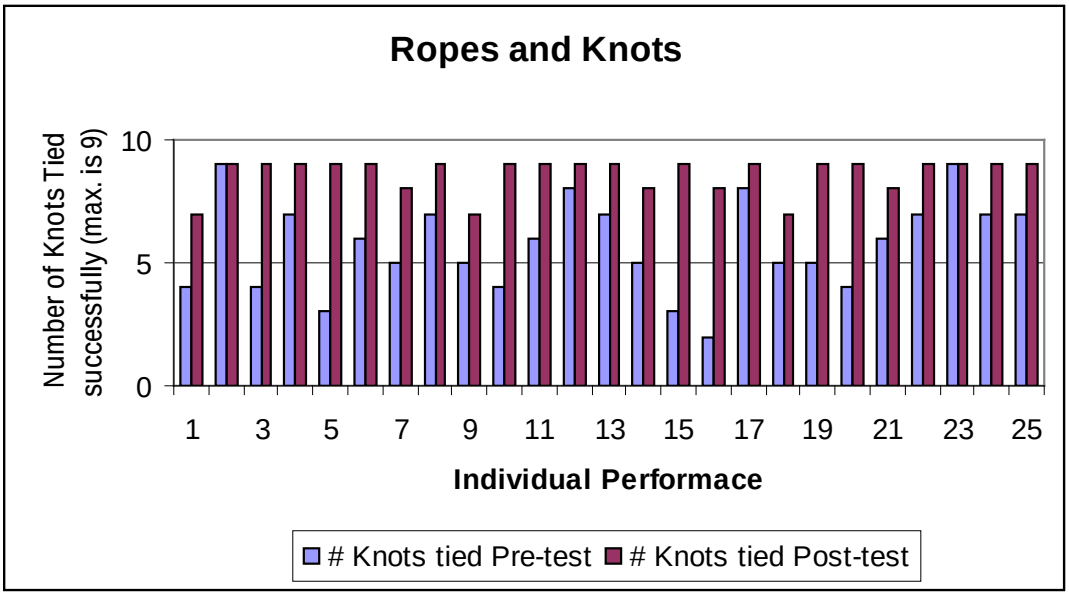

Figure 4-3 the above chart is a representation of the individual number of knots tied on the skill sheet. (Figure 2-5, appendix 2)

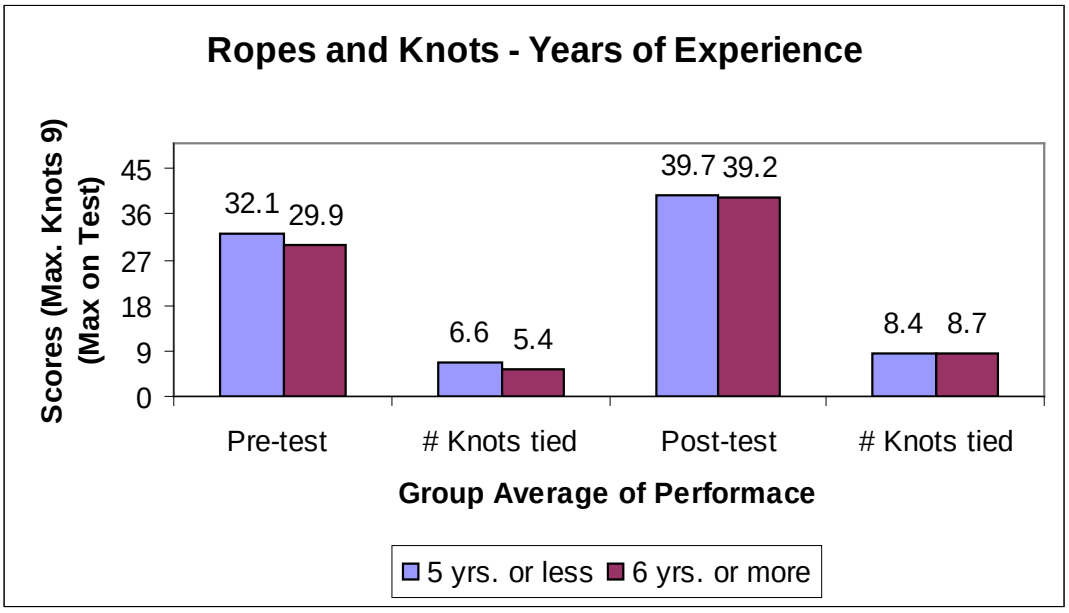

Figure 4-4 the above chart is a representation of the individual number of knots tied on the skill sheet divided years of experience in the fire service. (referring to question 4 of this paper)

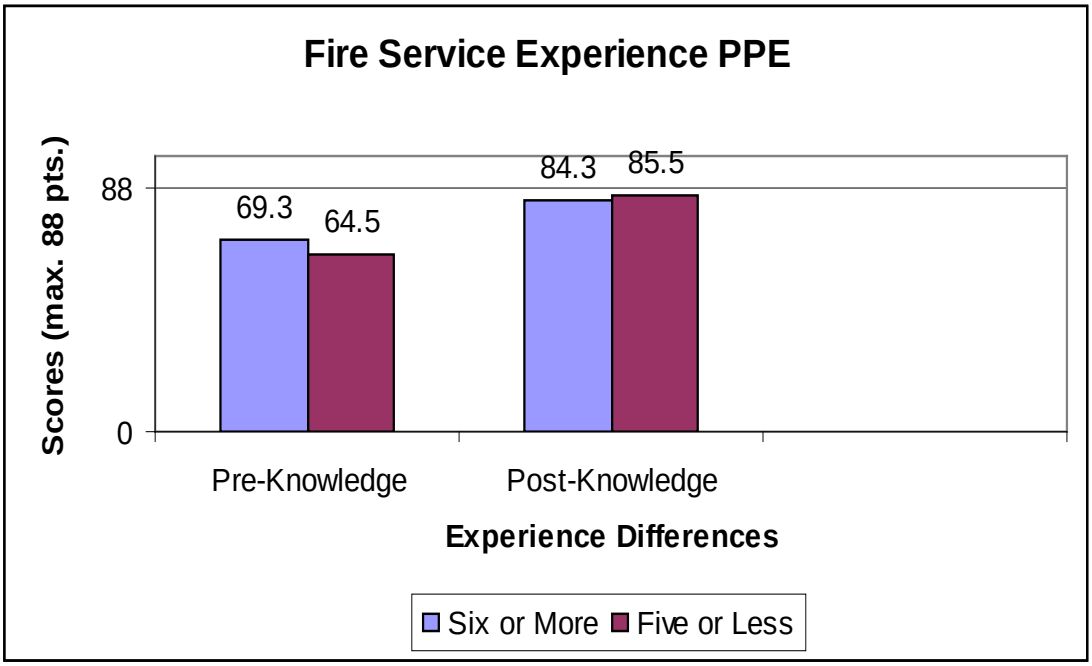

Figure 5-3 the above chart is a representation of the Personal Protective Equipment individual scores on the skill sheet. (referring to question 4 of this paper)

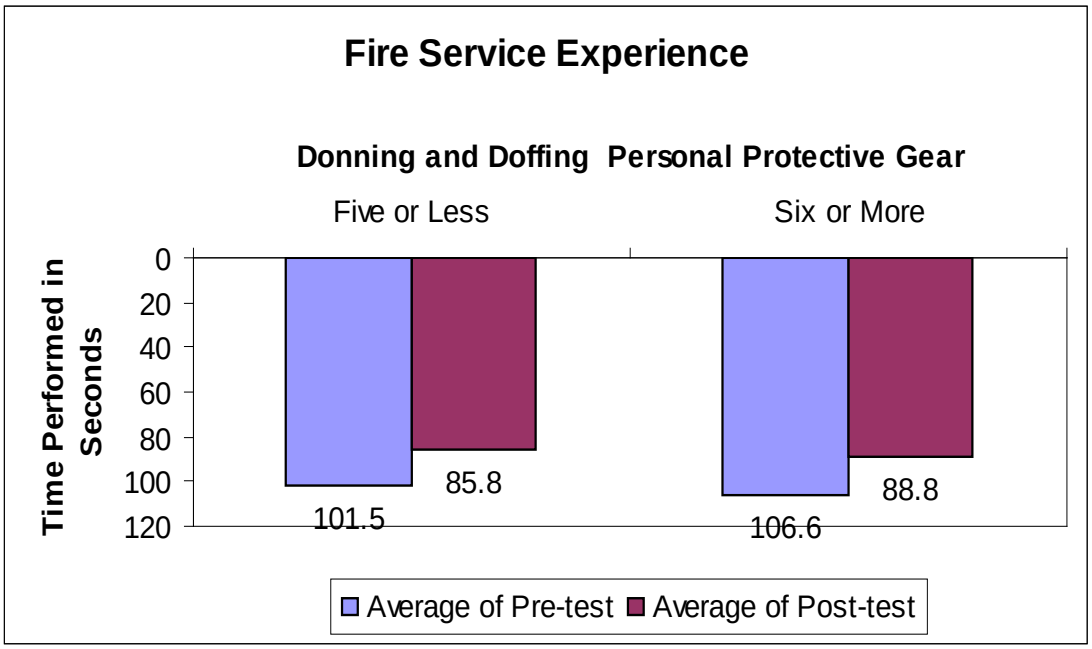

Figure 5-4 the above chart is a representation of the Personal Protective Equipment individual time on the skill preformed. (referring to question 4 of this paper)

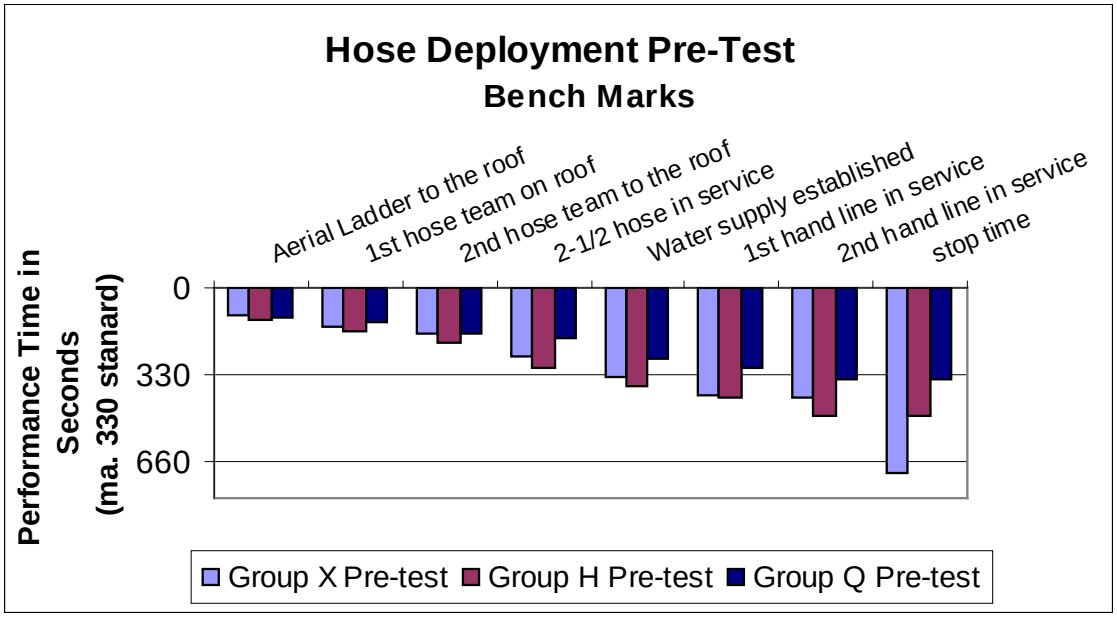

Figure 6-2 the above chart is a representation of the group's pre-test timed scores on the skill sheet (Figure 6-7, appendix 2)

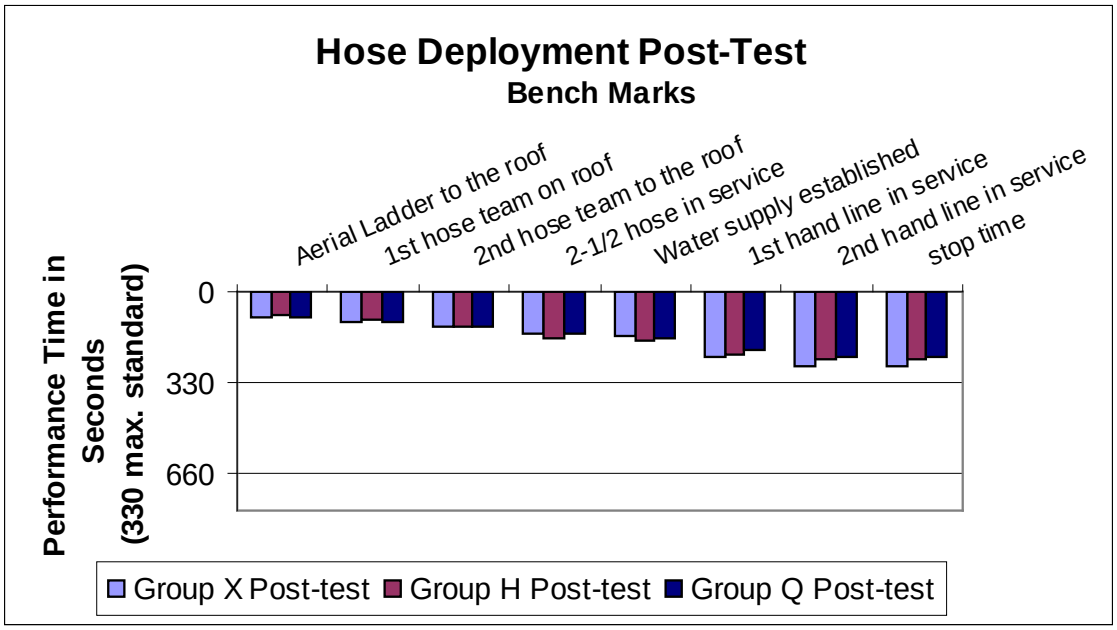

Figure 6-3 the above chart is a representation of the group's pre-test timed scores on the skill sheet (Figure 6-7, appendix 2)

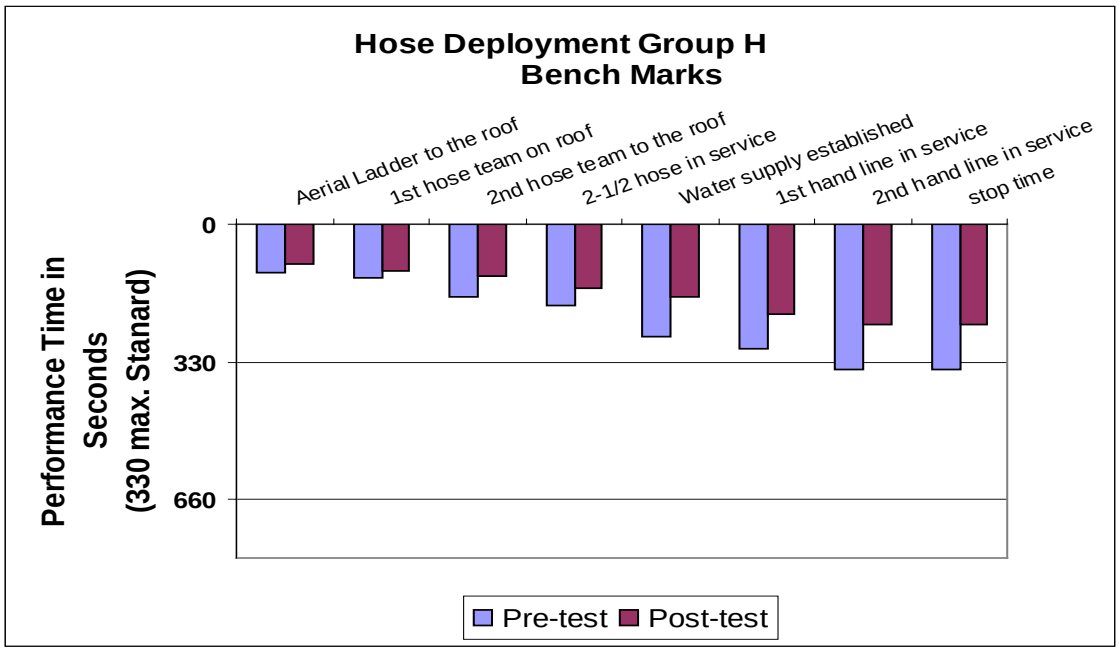

Figure 6-4 the above chart is a representation of the Group H pre-test and post-test timed scores on the skill sheet (Figure 6-7, appendix 2)

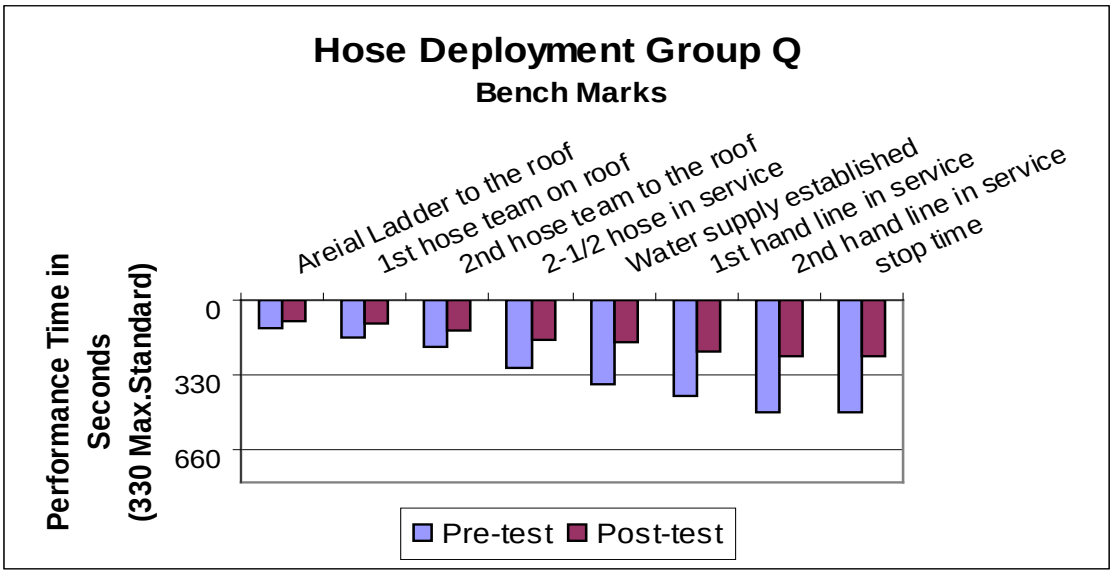

Figure 6-5 the above chart is a representation of the Group Q pre-test and post-test timed scores on the skill sheet (Figure 6-7, appendix 2)

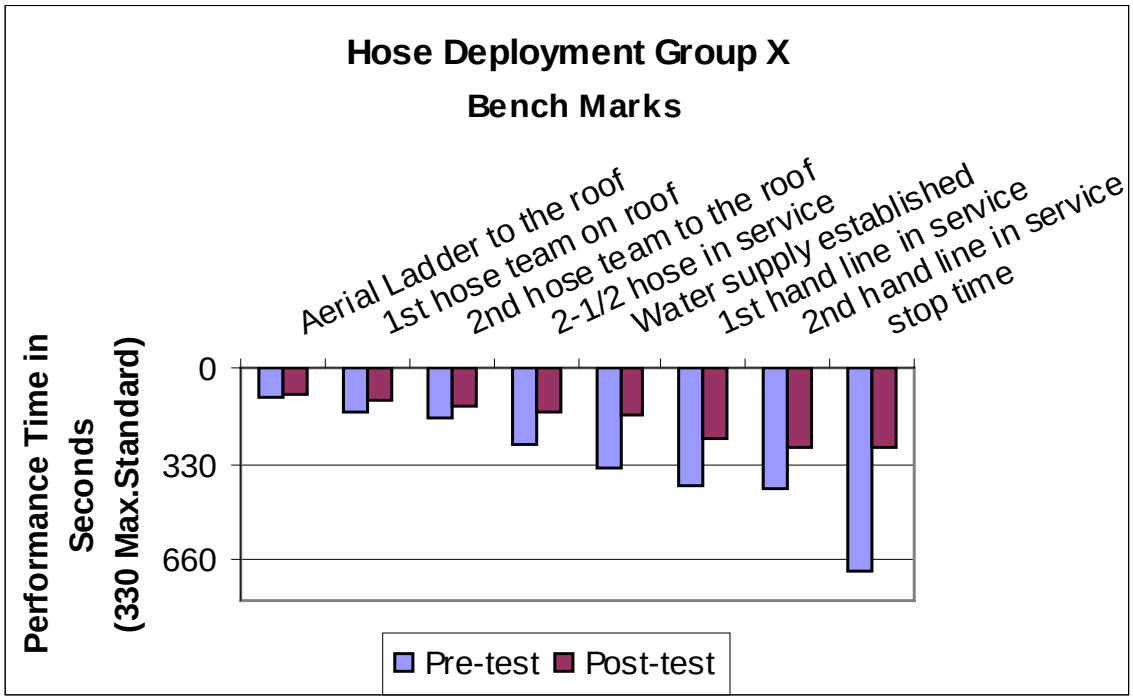

Figure 6-6 the above chart is a representation of the Group X pre-test and post-test timed scores on the skill sheet (Figure 6-7, appendix 2)

APPENDIX 2 – SCORE / SKILL SHEETS

STATIC CARDIOLOGY

Candidate and Shift #:_____

Date:_____

Certification Level:_____

	Possible Points	Points Awarded
Scene safety	1	
Gather patient history	1	
Checks level of responsiveness	1	
Checks ABC's	1	
Check vital signs	1	
Initiates CPR when appropriate	2	
Quality of CPR	1	
Proper compression to ventilation rate	2	
Attaches ECG monitor	1	
Correctly interprets initial rhythm (Pulseless V-tach)	1	
Check for pulse	2	
Cardioversion v.s. Defibrillation	2	
Proper pad placement	2	
Appropriately manages rhythm	2	
Establish secured airway	2	
Establish IV/IO	1	
Notes rhythm change (V-fib)	2	
Appropriately manages rhythm	2	
Notes rhythm change (Bradycardia 30 bpm)	2	
Pacer rate and milliamps	2	
Appropriately manages rhythm	2	
Administer anti-arrhythmic medication	2	
TOTAL	35	

Figure 1-4

CARDIAC ARREST MANAGEMENT/AED
WITH BYSTANDER CPR IN PROGRESS

Start Time: _____

Stop Time: _____ Date: _____

Candidate's Name: _____

Evaluator's Name: _____

	Points Possible	Points Awarded
ASSESSMENT		
Takes, or verbalizes, body substance isolation precautions	1	
Briefly questions the rescuer about arrest events	1	
Turns on AED power	1	
Attaches AED to the patient	1	
Directs rescuer to stop CPR and ensures all individuals are clear of the patient	1	
Initiates analysis of the rhythm	1	
Delivers shock	1	
Directs resumption of CPR	1	
TRANSITION		
Gathers additional information about the arrest event	1	
Confirms effectiveness of CPR (ventilation and compressions)	1	
INTEGRATION		
Verbalizes or directs insertion of a simple airway adjunct (oral/nasal airway)	1	
Ventilates, or directs ventilation of the patient	1	
Assures high concentration of oxygen is delivered to the patient	1	
Assures adequate CPR continues without unnecessary/prolonged interruption	1	
Continues CPR for 2 minutes	1	
Directs rescuer to stop CPR and ensures all individuals are clear of the patient	1	
Initiates analysis of the rhythm	1	
Delivers shock	1	
Directs resumption of CPR	1	
TRANSPORTATION		
Verbalizes transportation of the patient	1	
Total:	20	

Critical Criteria

_____ Did not take, or verbalize, body substance isolation precautions

_____ Did not evaluate the need for immediate use of the AED

_____ Did not immediately direct initiation/resumption of CPR at appropriate times

_____ Did not assure all individuals were clear of patient before delivering a shock

_____ Did not operate the AED properly or safely (inability to deliver shock)

_____ Prevented the defibrillator from delivering any shock

Figure 1-5

DATE: _____

NAME or BADGE #_____

	AVAILABLE POINTS	SCORE				
PROPER PLACEMENT OF VEHICLE	5	1	2	3	4	5
DEPLOY 200' OF 1 3/4" HANDLINE WITH COMBINATION NOZZLE FLOW 150 GPM MAKE SURE BED IS CLEARED (150 PSI)	5	1	2	3	4	5
SET RELIEF VALVE****F-13	5	1	2	3	4	5
FLUSH HYDRANT	5	1	2	3	4	5
OPEN 5"/MIV AIR BLEEDER AND MAKE CONNECTION TO HYDRANT	5	1	2	3	4	5
OPEN HYDRANT FULLY AND BACK ONE TURN	5	1	2	3	4	5
MINIMAL OR NO KINKS IN 5"	5	1	2	3	4	5
SWITCH TO TANK TO HYDRANT WITHOUT 5 POUNDS OF PRESSURE LOST OR GAIN	5	1	2	3	4	5
DEPLOY 150' OF 2 1/2" LINE WITH 1 1/8" TIP FLOW BETWEEN 300-320 GPM MAKE SURE BED IS CLEARED (64-74 PSI)	5	1	2	3	4	5
REFILL TANK	5	1	2	3	4	5
FLOW DECK GUN AT 500 GPM (80 PSI)	5	1	2	3	4	5

Subtotal_____

TOTAL TIME: _____

3 MINUTES	10
4 MINUTES	5
5 MINUTES	0

OVERALL SCORE [ ]

_____

_____

Figure 2-5

IMMOBILIZATION SKILLS
TRACTION SPLINTING

Start Time: _____

Stop Time: _____ Date: _____

Candidate's Name: _____

Evaluator's Name: _____

	Points Possible	Points Awarded
Takes, or verbalizes, body substance isolation precautions	1	
Directs application of manual stabilization of the injured leg	1	
Directs the application of manual traction	1	
Assesses motor, sensory and circulatory function in the injured extremity	1	
Note: The examiner acknowledges "motor, sensory and circulatory function are present and normal"		
Prepares/adjusts splint to the proper length	1	
Positions the splint next to the injured leg	1	
Applies the proximal securing device (e.g..ischial strap)	1	
Applies the distal securing device (e.g..ankle hitch)	1	
Applies mechanical traction	1	
Positions/secures the support straps	1	
Re-evaluates the proximal/distal securing devices	1	
Reassesses motor, sensory and circulatory function in the injured extremity	1	
Note: The examiner acknowledges "motor, sensory and circulatory function are present and normal"		
Note: The examiner must ask the candidate how he/she would prepare the patient for transportation		
Verbalizes securing the torso to the long board to immobilize the hip	1	
Verbalizes securing the splint to the long board to prevent movement of the splint	1	
Total:	14	

Critical Criteria

_____ Loss of traction at any point after it was applied

_____ Did not reassess motor, sensory and circulatory function in the injured extremity before and after splinting

_____ The foot was excessively rotated or extended after splint was applied

_____ Did not secure the ischial strap before taking traction

_____ Final immobilization failed to support the femur or prevent rotation of the injured leg

_____ Secured the leg to the splint before applying mechanical traction

Note: If the Sagar splint or the Kendricks Traction Device is used without elevating the patient's leg, application of manual traction is not necessary. The candidate should be awarded one (1) point as if manual traction were applied.

Note: If the leg is elevated at all, manual traction must be applied before elevating the leg. The ankle hitch may be applied before elevating the leg and used to provide manual traction.

Figure 3-3

Name_____

Date: Badge #

Ropes	Pnts Avail.	Score	Number Attempts	Time
Distinguish between life safety and utility rope applications	1			
Ties a Bowline	3			
Tail on the correct side of the k	1			
Finishes with a safety knot	1			
Ties a Double Figure 8	4			
Finishes with a safety knot	1			
Ties a Follow Through Figure 8	4			
Finishes with a safety knot	1			
Ties Half Hitch around bar	4			
Ties Clove Hitcharound bar	4			
Finishes with a safety knot	2			
Ties a Becket Bend	3			
Finishes with a safety knot	1			
Knows reason for the knot	1			
Ties a Square knot	3			
Finishes with a safety knot	1			
Knows reason for the kno	1			
Ties a Double Fishermans' kno	2			
Finishes with a safety knot	1			
Prussick knot	2			
Match rope materials to their descriptions	4			
Tie approved knots and hoist tools and equipment using approved knot with safety knot	2 2 1			
TOTAL	50			

Rope Materials

Laid (Twisted)

Braided

Braid on Baraid

Kermantle

Figure 4-5

Name:_____	POSSIBLE POINTS	POSSIBLE POINTS		Date __/__/____					
List four hazardous atmospheres to don an air pack		12	3	3	3	3			
List physical, mental, and medical factors that affect *a firefighters' ability* to use an air pack		9	3	4	3				
What limitations effect the firefighter and the SCBA equipment during useage		10	1 1	1 1	1 1	1 1	1 1		
List the characteristics of open circuit and closed circuit SCBA		4	2	2					
List 4 components of an SCBA		12	3	3	3	3			
What actions would you preform an emergency situation while wearing your SCBA		8	1 1	1 1	1 1	1 1			
Describe usage and familiarization recommendations for a PASS device.		3	1 1	1					
Describe how to inspect a SCBA unit		8	1 1	1 1	1 1	1 1			
Change a SCBA cylinder		12	1 1	1 1	1 1	1 1	1 1	1 1	
Refill an SCBA cylinder		10	1 1	1 1	1 1	1 1	1 1		
TOTAL		88							
Donning Personal PPE & Breathing Air Time Limit (Seconds)		Less than 120 scnds							

Figure 5-5

Date / / SHIFT - 1 - 2 - 3

Hose Deployment Evolution	Minutes	Seconds
Parking brake on truck starts time		N/A
Ladder set to roof		
First firefighting team on roof		
Second firefighting team on the roof		
2-1/2" charged with tank water		
Water supply established		
First hose line in-service		
Second hose line in-service		
Second hose line in-service stops the time		

Figure 6-7