

# Spotsylvania County Department of Fire, Rescue and Emergency Management Firefighter Physical Ability Test (PAT)



## Applicant Information Package

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# Spotsylvania County Department of Fire, Rescue and Emergency Management

## Physical Ability Test

The Spotsylvania County Department of Fire, Rescue and Emergency Management (FREM) welcomes all qualified applicants to compete for the position of firefighter. In order for you to better prepare for a position in this demanding occupation, we are providing you with this self-test fitness package so you can determine your readiness for taking our entry-level physical ability test and make improvements, if necessary.

Employment with FREM has many rewards. Foremost is a great sense of satisfaction in serving our communities and in creating, through your actions, an environment where life and property are safe and secure.

Firefighting is an exciting and rewarding career. However, it is also one of the most physically demanding professions in the United States. Unlike other labor intensive jobs that are designed around the capabilities of the workforce, firefighting responds to the demands of the emergency situation. This means that a high level of physical fitness in all firefighters is absolutely essential.

The duties of a firefighter are many and varied. The work environment is often hot, smoky and extremely hazardous. While the protective equipment worn by firefighters is vitally important, it is also heavy and severely limits performance. On the job, while wearing their protective gear, firefighters often carry heavy objects, including litters, that weigh well over 200 pounds. That is why being in top physical condition is a prerequisite for employment. An equally important reason for staying in top physical condition is that it is the best possible protection against on the job injuries. Physical fitness also increases longevity and enhances your quality of life.

Much of what firefighters do in emergency situations requires both muscular and aerobic fitness. A commitment to lifelong fitness is an essential part of being a firefighter. Said another way, while it is important to have a high level of fitness to compete for a firefighter job in FREM, it is even more important to maintain fitness once on the job.

Our purpose for this information packet is to provide you with an overview of FREM's entry-level physical ability test to better help you prepare for a challenging career in the fire service. Considerable research has been conducted to measure accurately the necessary levels of fitness needed to perform properly and safely the duties of a firefighter. High levels of anaerobic and aerobic fitness have been consistently identified as important determinates of job performance.

There is no such thing as a "standard" fire. Fires vary significantly in size, intensity, and duration. A physical ability test has been designed to provide FREM with a list of prospective employees who possess the highest probability of success as a firefighter over a 20+ year career. Your level of fitness will be the primary determinate in how long it takes you to complete the test. Research has shown that the fastest performers have the highest levels of fitness. Also, individuals with the highest fitness have the greatest level of reserve when performing tasks that don't necessarily require high levels of fitness.

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While it may be difficult to practice precisely each test evolution or task, if you maintain a high level of fitness by training with weights and engaging in regular cardiovascular conditioning you will increase your likelihood of passing the test and obtaining a high score.

**Note of Caution**

FREM does not assume responsibility for any medical consequences that may arise from participating in the applicant testing process. Firefighting requires that you be in top physical shape; an existing medical condition might preclude your participation. Prior to taking the test, it is recommended that you visit your personal physician and have him or her verify your current health status.

If, for any reason, you feel that you might have a pre-existing medical condition that could cause injury, lead to illness or result in a health emergency during physical ability testing, you are strongly urged to share this information with your physician. If while training for or performing the physical ability test you experience shortness of breath, dizziness, nausea, severe muscular pain, vomiting or chest pain, you should stop all activity immediately and seek medical advice before continuing.

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**The Physical Ability Test**

FREM's Physical Ability Test (PAT) was designed after an exhaustive job task analysis conducted by Health Metrics, Inc., one of the country's leading authorities on public safety job standards development. The test accurately reflects the physical demands of a number of fire suppression activities. You might think of the test as a "sample, of a number of fireground tasks necessary for the safe and effective performance of the duties of a firefighter. You should pace yourself as you move from test task to test task. However, firefighters need to move with dispatch, so it is advisable to perform the evolutions as quickly as possible. However, running on the test course is not allowed except during the Hose Advance evolution.

It may not be possible to provide you with an opportunity to use the equipment at the testing site prior to the administration of the actual test. However, to familiarize you with the test items, a complete description follows, along with specific training regimens that can help you prepare for the test and improve your performance. The test requires no learned skills and has been specifically designed to assess only those physical capacities necessary for successful firefighting.

**Conditions**

Each applicant should wear sweat pants (or other heavy-duty long pants), a t-shirt with sleeves (sweat shirts will be permitted if the temperature is below 65°F) and athletic shoes. After registering at the test site, each applicant will be outfitted with a self-contained breathing apparatus (SCBA) without a face piece, turn-out coat, gloves and helmet (<50 pounds) which will be worn while taking the firefighter test. Part I of the test is a continuously timed exercise. Each applicant must finish Part I in 4 minutes or less in order to complete successfully. Applicants may rest at any time during the performance of the test, but the clock continues to run. If Part I is successfully completed, Part II will be attempted and is untimed. Research has shown that more fit individuals with greater cardiovascular reserve and muscular strength/endurance can perform the tasks faster than less fit individuals. **(Participants are encouraged to bring and utilize their own turnout coat, helmet and gloves)**

**Part I**

**First Task: Hose Load Carry/Stair Climb**

The most basic aspect of firefighting is positioning equipment on the fire scene. At structural fires, carrying a hose load is one of the universal suppression activities. In the FREM's fire protection area of responsibility, most buildings have driveways or are otherwise positioned off the road so that equipment must be hand carried to the fire scene before extinguishment operations can begin.

In addition, there is a frequent need to carry equipment up stairs for rescue, EMS or extinguishment operations where the only means of transport is by foot. In such instances, each firefighter must move and/or climb while wearing his/her protective gear and carrying assigned equipment.

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Fires in multi-story structures represent one of the gravest threats to life and property. Emergency operations involving commercial buildings, multifamily residential units and even single family (detached) dwellings often have climbing and carrying requirements of two stories or more. The requirement to move personnel and equipment to the floor of the fire for extinguishment operations or rescue of people on that floor is an essential function for structural firefighters.

For this task, you will be required to pick up a standard high-rise pack of hose weighing approximately 64 pounds and carry it up 22 stairs in the Marshall Center (you will ascend and descend twice, a total of 44 stairs ascended and descended, a vertical distance of 48 feet). You will drop the high-rise pack at bottom of the stairs after your second descent. The high-rise pack may be carried on either the right or left shoulder, under the arm, or across the chest. Stairs may be taken in multiples on the ascent, but every stair must be used when descending. At the bottom you will walk approximately 29 feet to the second task, the Confined Space Crawl.

**Second Task: Confined Space Crawl**

During fire extinguishment operations, it is common for firefighters to work in very hot, smoke-filled buildings or spaces. Since heat and smoke rise, the only areas with relatively clear visibility are near the floor. Thus, in many situations firefighters must crawl while fighting structural fires.

For this task you will be required to get on your hands and knees and crawl 47 feet around roof-support posts on a concrete pad adjacent to the stairwell used for the Task Two. This is an out-and-back course so you will start and finish at the same place. When you get to the crawl finish line, stand and walk approximately 20 feet to the next task –the Fan Carry.

**Third Task: Fan Carry**

In order to extinguish a fire, rescue victims, or provide emergency medical care, firefighters are frequently required to lift and carry heavy objects in addition to the load imposed on them by their protective clothing and breathing apparatus. These actions all require upper body strength and endurance.

For this task you will lift-and-carry an 80-pound vent fan 100 feet by walking 50 feet along the sidewalk and returning to the start point. The fan will be located on top of a 36" square box that is 25" in tall. You will lift the fan off the box and hold it, carry it as you walk 50 feet, put the fan on the ground, pick it up again, turn and again carry the fan as you walk another 50 feet and replace the fan on top of the box before proceeding to the next evolution. When finished you will walk approximately 63 feet to task four - the Hose Advance.

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**Fourth Task: Hose Advance**

Use of large and small diameter hoses to extinguish fires is universal. The carrying, dragging, and advancing of charged and uncharged hose lines is an essential function for firefighters. The weight of water is 8.3 pounds per gallon. Larger hose diameters, when charged, represent weights approaching 400 lbs. per 100 foot section.

The most commonly employed attack lines are 1½, 1¾, and 2½ inches in diameter. Usually the attack scenarios include teams, while preliminary set-up involves a single firefighter stretching uncharged lines. However, all firefighters will frequently pull charged attack lines for short distances.

For this evolution, you are required to pull an "S" laid, charged 1¾ inch attack line a distance of 100 feet, using an over-the-shoulder grip. While walking forward at a rapid pace, pull the line forward. When the nozzle crosses the 100 ft. line, place the nozzle and hose on the ground and walk approximately 68 feet to the victim rescue task.

**Fifth Task: Victim Rescue**

The most critical task expected of firefighters is the rescue of a member of the community or another firefighter in a one-on-one situation. The importance of this task transcends all others and is directly responsive to the mission of the fire service: the protection of life and property. This task represents an essential function and is one of the most demanding common requirements of firefighters.

The potential weight to be dragged or carried is equivalent to the average weight of the adult American male, about 185 pounds. However, there is one class of people who are present at every fire: firefighters. With an average body weight of nearly 200 pounds nationally, when you add the weight of turn-out gear and SCBA, the total weight of many firefighters approaches 230 pounds or more. In the best-case scenario, a rescue is accomplished through a team effort; however, there is reasonable expectation for a single firefighter to accomplish this task, particularly if operating as a member of a two-person team in which one member goes down.

In this task you are required to drag a 185 pound rescue mannequin 100 feet. After walking a designated course from the end of the Hose Advance, you will approach the simulated victim from the head end. To lift the mannequin, squat slightly and grasp the 'victim' under its arms, locking your hands against its chest. Raise the mannequin's upper torso and lift the victim by standing. This technique uses the large muscles of the legs rather than those in the lower back. Then drag the victim by walking backward a distance of 100 feet. In addition, the method of rescue may include the use of a rescue strap placed underneath the armpits of the mannequin. Dragging the prone rescue mannequin by use of the strap method is acceptable. The test is over when the mannequin's feet cross the finish line.

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**Part II (Untimed Events)**

After successful completion of the timed portion of the PAT, you will be provided with a 15 minute rest and rehydration period. Following the rest period, you will be required to execute two untimed events: an Aerial Ladder Climb and an SCBA Confined Space Orientation.

You will complete the Aerial Ladder Climb on a ladder extended 75 feet at 65 degrees. The aerial ladder will be positioned in the northernmost portion of the Marshall Center parking lot.

You will complete the SCBA Orientation with a blacked-out face piece. You must walk around a room, and have the blacked out face piece on for at least 5 minutes.

**Please Note:**

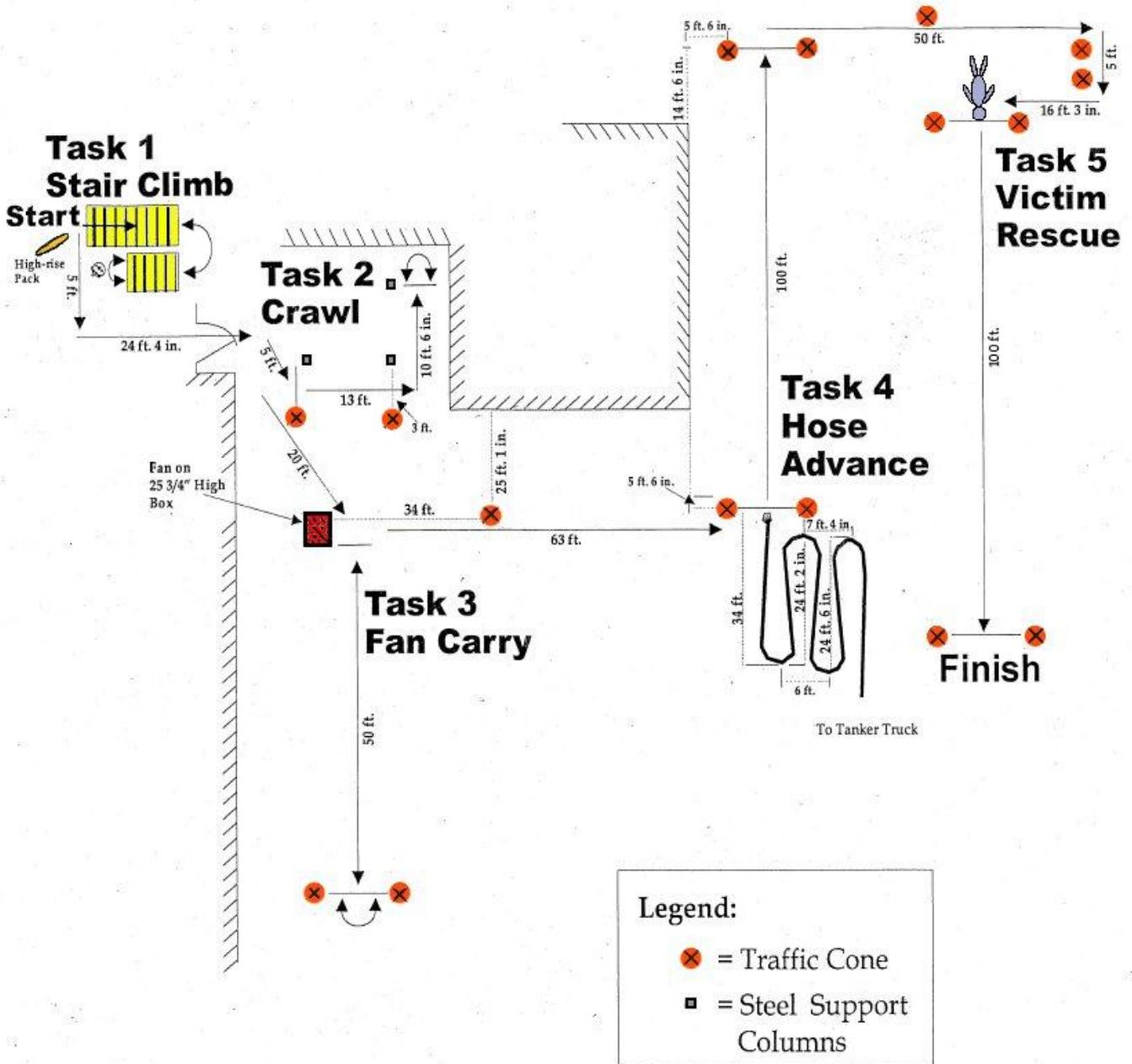
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**TEST SCHEMATIC**



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**Some Training Tips**

One activity that will improve performance on the physical ability test is climbing stairs while carrying heavy weights in a backpack or similar configuration. Remember to go about your training safely with gradual increases in load and intensity while keeping this concept in mind: train, don't strain! You can add 5 pounds or increase your training pace about once a week. Do not do both in any single week. Instead alternate. Increase the weight one week and pick up the pace the next week. Increasing pace too quickly or adding too much weight too soon is a recipe for injury. Be sure to take some days off from training every week so your muscles can recover.

**Self-Testing for Aerobic Fitness**

1.5-Mile Run Self-Test

A good way to determine if you have an adequate level of cardiovascular fitness is to assess yourself on the 1.5 mile run (6 laps around a standard ¼ mile track). Run as fast as you can on a sustained basis for the entire 1.5 miles and record your time.

Use the data in Table I (below) to score yourself on this pre-test and to assist in structuring a running program designed to help you improve your performance on this very critical dimension of fitness. Select a training program and follow the recommendations listed in Table 2.

**Table 1**

**Categories for Aerobic Fitness  
Based Upon 1.5 Mile Run Time**

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14:00	Minutes	Very Poor
13:00 - <14:00	Minutes	Poor
12:00 - <13:00	Minutes	Fair
11:00 - <12:00	Minutes	Good
10:00 - <11:00	Minutes	Excellent
<10:00	Minutes	Superior

Symbols:

> = Greater than

>= Equal to or greater than

< = Less than

<= Equal to or less than

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**Table 2**  
**JOGGING AND RUNNING PROGRAMS**

IF YOU ARE	START	GOAL 1	GOAL 2	GOAL 3
VERY POOR CATEGORY	Able to jog 3 miles in 31 minutes, reduce time by 30 seconds each week for 6 weeks. Run 3 times per week.	Able to jog 3 miles in 28 minutes, reduce time by 30 seconds each week for 6 weeks. Run 4 times per week	Able to jog 3 miles in 25 minutes. Add ¼ mile to run each week for 4 weeks. Continue running 4 times per week	Able to run 4 miles in 34 minutes. Reduce time by 15 seconds per week for 8 weeks. Run a minimum of 4 times per week.
POOR CATEGORY	Able to jog 3 miles in 29 minutes, reduce time by 30 seconds each week for 6 weeks. Run 3 times per week.	Able to run 3 miles in 26 minutes. Reduce time by 30 seconds each week for 6 weeks. Run 4 times per week	Able to run 3 miles in 23 minutes. Add ¼ mile to run each week for 4 weeks. Continue running 4 times per week	Able to run 4 miles in 32 minutes. Reduce time by 15 seconds per week for 8 weeks. Run a minimum of 4 times per week.
FAIR CATEGORY	Able to jog 3 miles in 27 minutes, reduce time by 30 seconds each week for 6 weeks. Run 3 times per week.	Able to run 3 miles in 24 minutes. Reduce time by 20 seconds each week for 6 weeks. Run 4 times per week	Able to run 3 miles in 22 minutes. Add ¼ mile to run each week for 4 weeks. Continue running 4 times per week	Able to run 4 miles in 30 minutes. Reduce time by 15 seconds per week for 8 weeks. Run a minimum of 4 times per week.
GOOD CATEGORY	Able to jog 3 miles in 25 minutes, reduce time by 30 seconds each week for 6 weeks. Run 3 times per week.	Able to run 3 miles in 22 minutes. Reduce time by 20 seconds each week for 6 weeks. Run 4 times per week	Able to run 3 miles in 20 minutes. Add ¼ mile to run each week for 4 weeks. Continue running 4 times per week	Able to run 4 miles in 27 minutes. Reduce time by 10 seconds per week for 6 weeks. Run a minimum of 4 times per week.

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**Muscular Endurance Self-Test**

Simple tests such as push-ups and sit-ups can be very helpful in predicting performance on the physical ability test. It is recommended that applicants be capable of performing at least 30 push-ups and 45 sit-ups. To increase your performance on these measures of muscular endurance, test yourself to failure (do as many sit-ups as you can in two minutes and push-ups as you can until you can't do any more repetitions). Take the number of sit-ups and push-ups you did and divide each by two. Add one to each number and perform three sets of this number of repetitions of both sit-ups and push-ups every other day. Test yourself each week to measure your improvement and adjust the number of sit-ups and push-ups you do for training.

**Muscular Strength**

Having high levels of muscular endurance is desirable, but you also need muscular strength. For this reason, supplementing your muscular endurance program with strength development is a good idea. In general, you will want to execute a series of weight lifting exercises with heavier weights and a low number of repetitions. Weight exercises that will build strength appropriate for the physical ability test include: lat pull downs, curls, and squats.

While a comprehensive guide to strength training is beyond the scope of this information packet, seeking the advice and assistance of a conditioning specialist or personal trainer is recommended before embarking on a program of weight training. You should ask the trainer to conduct an "IRM Assessment" for you on the weight exercises listed above. Once the IRM assessment is complete, ask the trainer to design a strength building program for you using the resistance exercises above. Remember not to neglect your legs! Leg strength is very important for almost every firefighter physical task.

**Summary**

The components of the physical ability test require muscular strength and endurance of the arms, torso and legs. Top performance on the physical ability test has been positively correlated with high levels of muscular strength and aerobic fitness. So, improving your muscular strength and cardiovascular fitness are excellent methods of maximizing your performance on the physical ability test and increase your chances of being hired as a Spotsylvania County Firefighter.