

PRE-CONDITIONING HANDBOOK
FOR GRFD
FIREFIGHTER CANDIDATES



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FOR GRAND RAPIDS FIRE DEPARTMENT

FIREFIGHTER CANDIDATES

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PHYSICAL AGILITY TEST

PHYSICAL PERFORMANCE EXERCISES

All exercises are completed wearing bunker coat, helmet, firefighting gloves, and a self-contained breathing apparatus (SCBA). No face piece is used during the test. Fire suppression Turn-Out Gear will be provided.

The full physical agility test is a timed event consisting of eight (8) evolutions or exercises which represent typical fireground evolutions. The time starts at the beginning of the first evolution and stops at the completion of the last evolution.

There are three (3) thirty (30) second rest periods scheduled into the sequence. **These are mandatory and must be observed by each participant.**

To successfully complete the test, an applicant must complete all eight (8) evolutions and the three (3) rest periods in a total time of **ten (10) minutes.**

The evolutions of the physical agility test are:

EVOLUTION 1

Remove a ladder (weight 50 pounds) from a holding bracket 6 feet 6 inches high. Carry the ladder 25 feet across the room, raise it against the wall, and position the ladder for climbing. **While removing the ladder, from the brackets, the individual must grasp each of the marked rungs with one hand only. Dragging of the ladder will not be permitted at any time.**

EVOLUTION 2

Stand at the starting line, pick up the nozzle, and walk as rapidly as possible pulling the 2 ½" hose and nozzle for a distance of one hundred fifty (150) feet to a designated point.

EVOLUTION 3

Drag a dry 2 ½" fire hose (with nozzle attached) through a simulated tunnel 25 feet in length and 36 inches high. The nozzle on the hose line must clear the tunnel. Then drag a dummy (110 lbs.) back through the tunnel until it has completely passed the mark on the floor.

A MANDATORY 30 SECOND REST PERIOD MUST BE TAKEN BETWEEN EVOLUTIONS 3 AND 4.

EVOLUTION 4

Beginning at a designated starting point, pick up a folded length of 2 ½” fire hose and place it on your shoulder. Walk to the simulated open joist arrangement. Step on the simulated joists and walk to the opposite end. Then, without stepping off, turn around and walk back to the original starting point. **If you step off the joists during the turn-around, you must step back on and repeat the turn-around. If you step off the joists two (2) times during the exercise, you will be required to start from the beginning again.** After completing the joist walk, carry the hose to the fourth floor balcony using interior (48 steps) stairway. Then place the hose down on the balcony landing.

A MANDATORY 30 SECOND REST PERIOD MUST BE TAKEN BETWEEN EVOLUTIONS 4 AND 5.

EVOLUTION 5

Using a rope and a hose roller, pull a 2 1/2 “ hose line, with nozzle attached, up and over the hose roller until 50 feet of the hose is on the top landing of the fire escape.

EVOLUTION 6

Hoist the mounted ladder to the top lock it in. Lower ladder using a hand over hand method; don't let the lanyard slide thru your hands and lock it back in at the bottom.

A MANDATORY 30 SECOND REST PERIOD MUST BE TAKEN BETWEEN EVOLUTIONS 6 AND 7.

EVOLUTION 7

Grasp the pike pole and step behind the orange mark on the floor. Reach as high as possible and pull downward on the pike pole (which raises a 50 lb. weight) **until your highest hand goes below your chin.** You must make thirty (30) pulls to complete this evolution. **Improper pulls will not be counted toward the required thirty (30).**

EVOLUTION 8

Pick up the CO2 extinguisher, walk 22 feet to the 4 step box, climb over the box and walk 22 feet further to the traffic cone on the floor. Then, going around the cone, return the smoke ejector to the starting point via the same path. Repeat this procedure with a smoke ejector (fan), a 50' roll of 2 ½” fire hose, and finally a 50' roll of 1 ½” fire hose.

ANALYSIS OF TEST EVOLUTIONS

EVOLUTION 1. LADDER PLACEMENT AND RETURN TO BRACKET

Tests upper body strength and grip strength, especially when lifting the ladder off and onto the brackets by gripping the rungs. Hand, arm, back and some leg strength are involved.

EVOLUTION 2. NOZZLE AND HOSE PULL

Tests leg, arm, and back strength. The load or drag increases as you pull more of the hose.

EVOLUTION 3. HOSE LINE AND DUMMY DRAG

Tests leg, arm, back, and grip strength as well as agility in being able to move effectively in confined spaces.

EVOLUTION 4. HOSE CARRY ON JOISTS AND FIRE ESCAPE

Tests balance and general ability to carry an uneven weight on special footings and up several flights of stairs. Back and leg strength are put to a test in this exercise.

EVOLUTION 5. HOSE AND NOZZLE PULL ONTO THE FIRE ESCAPE

Tests back, arm, and **grip strength**. This exercise can consume a lot of time if you are not successful on the first try.

EVOLUTION 6. LADDER HOIST

Tests upper body strength. Arm, shoulder, back, abdominal, and **grip strength** are involved.

EVOLUTION 7. PIKE POLE PULL

Tests arm, back strength and stamina and **grip strength**.

EVOLUTION 8. EQUIPMENT CARRY

Tests arm, leg, back and **grip strength** as well as coordination and endurance.

SPECIAL CONDITIONING AND STRENGTH TRAINING

In an effort to increase the likelihood of your successfully completing the Physical Agility Test, the Grand Rapids Fire Department has developed some specific recommendations for you to consider in preparing for the test.

This handbook contains a series of recommended exercises that can be conducted at home with makeshift equipment.

There is ample time to substantially improve both your physical strength and endurance before the test.

This means that the muscles utilized in the recommended exercises will be those that you will need most to complete the test successfully.

While these exercises can definitely be expected to improve your capabilities, the amount of your improvement is directly related to the effort which you put forth.

RECOMMENDED ACTIVITIES

It is recommended that you be involved in an **aerobic** workout lasting thirty to sixty minutes in duration at least three times a week. This can be running, racquetball, high impact aerobics class, or any other strenuous exercise which substantially raises your pulse for extended periods of time.

You should also participate in **strength training** workouts at least three times a week, but these three workouts should be on alternating days if possible. The strength training workout should take you to the point of muscular failure such that your muscles will not have enough energy to then take you through a strong aerobic workout.

It is therefore recommended that if you must do both type workouts on the same day that the aerobic workout precedes the strength training efforts.

DETAILS OF THE STRENGTH TRAINING ELEMENT

Weight training efforts should utilize both the universal machine and free weights. There is value to using both. The universal machine will enhance muscular endurance while free weights are better for actual strength development.

In most cases, a good goal will be to perform six sets of six repetitions of each exercise working your way from 70% to 110% of your maximum. As an example, your maximum is determined by increasing the weights you bench press until you reach a weight level where you can only do one lift of that weight or you cannot even lift that weight at all.

If your maximum was 100 pounds, then you would start with lifting 70%, or in this case, 70 pounds six times etc. and keep working your way up in weight until you cannot lift the next level.

Especially with free weights, spotters are extremely important for both safety and to permit you to maximize your efforts including the negative aspect of the lift, i.e. the lowering of the weight in the bench press and similar exercises.

As not noted previously in this Handbook, the Physical Ability Test involves many different muscle groups.

Pre-conditioning must attempt to exercise each of these.

Flexibility refers to the range of motion in a joint or series of joints. It is a key element to the successful completion of the agility test.

Flexibility can be maintained and improved by stretching exercises. Proper stretching will improve performance and reduce the risk of injury.

Muscle soreness can also be prevented by stretching before and after the exercise session.

Specific stretching exercises for both males and females are shown in Appendix.

Stretches should be done slowly and gently (avoid bouncing which actually makes tissue contract more than stretch). Hold the stretch for 10 seconds or more and then relax. Tissue has been stretched far enough when a slight pull or tingling discomfort has been felt.

Be sure to work the entire body when stretching. A series of eight to 10 stretches should accomplish a full warm-up. This series should also be done following the completion of the workout.

Because of the quick movements required during the Physical Performance Test, you will need to be flexible to help meet the demands of your muscular system.

Several different common exercises or lifts would be beneficial including:

*# Bench Press

* Incline Press

*# Shoulder Press

* Upright Row

*# Varying Bicep and Tricep Exercises

*# Forearm Lifts

*# Wrist Curls

* Lungs

* Step Ups

Lat Pulls

Push Press

* Clean and Jerk

*# Front Deltoid Raise

Chin Ups

Pull Ups

Push Ups

Sit Ups

Abdominal Crunches

* **FREE WEIGHTS**

UNIVERSAL MACHINE

Remember, it is important to do the exercises correctly with a deliberate purpose and to do them safely.

EXERCISING AT HOME

Many beneficial exercises can be conducted at home and without special equipment.

The following exercises are suggested to be done as a home workout in preparing for the Physical Performance Test administered by the Grand Rapids Fire Department. The exercises simulate some of the components of the test.

Prior to performing any of the suggested exercises a sequence of warm-up stretches should be executed for safety purposes. Following the suggested exercises a warm-down should be done to prevent injury and muscle soreness. (see Appendix for suggested stretches).

To simulate actual testing conditions, exercises may be performed with gloves and a weighted backpack.

Test Evolution(s) SUGGESTED EXERCISES

1. Attach a weighted jug or sand bag to a sturdy rope and walk on a cement surface approximately 150 feet.

EQUIPMENT: Sturdy rope, sand bag or empty milk jug filled with sand or water

2. Place two weighted milk jugs overhead on a surface approximately four feet apart. Raise your arms overhead, grasp the milk jugs and carry them at a chest level 25 feet. Walk to the starting platform and raise them overhead to the original surface.

EQUIPMENT: Two gallon milk jugs with handles, sand or water to fill

3. On a tile floor, get on your hands and knees. Pull a weighted rope approximately 25 feet. When you reach this point pull a weighted blanket or sand bag back to the starting point. (Put bricks or heavy books in the middle of an old blanket or towel).

EQUIPMENT: Rope, blanket or towel, weight, knee pads optional

4. Place two sand bags (approximately 20 pounds each) over your shoulder and carry up and down a flight of stairs four times.

EQUIPMENT: Sand bags, strap to carry over shoulder

5. Attach a weight to a rope. Set the weighted end at the bottom flight of stairs. Walk to the top of the stairs with the rope and pull the weight up using a hand over hand motion.

EQUIPMENT: Sturdy rope, weight, monkey bar or clothes line

6. Grip weighted object (sand filled milk jug) with both hands. Raise overhead and swing in a downward motion striking a knee high padded surface.

EQUIPMENT: Weight (filled milk jug), and stacked pillows or blankets.

7. Attach a weight to the end of a ten foot rope. Firmly tie so it does not slip. Attach the free end of the rope to the end of a broom stick or stick. Put the rope over a bar and pull on the stick with a downward motion.

EQUIPMENT: Rope, weight (filled milk jug), broom handle, monkey bar or clothes line.

8. Fill a crate or box with weight (books, bricks, etc.). Bend knees and pick up the crate. Carry the crate 25 feet; turn and walk back to the starting point. Repeat procedure four times. Lessen the weight on the last two attempts.

EQUIPMENT: Box or crate, books, bricks, etc.

ALL: Pull-ups

Wrist roller

Squeeze tennis or racquetball

Push-ups

Triceps using chairs

Chin-ups

NUTRITIONAL CONSIDERATIONS

As with any form of exercise or exercise program, good nutrition should be recognized as an important element of achieving maximum success in your efforts. Without the proper nutrition to fuel the body, a negative chain reaction will start causing weakness, decreased mental capability, and increase risk of injury.

Although there are many facets to a full scale nutrition program, a few key concepts are worthy of your consideration in trying to improve your abilities in preparation for the Grand Rapids Fire Department Physical Agility Test.

Current information indicates that the “balanced diet” recommended for an individual on an exercise program would include 45 to 65 percent carbohydrates, 15 to 35 percent protein, and less than 25 percent fats. A relatively high carbohydrate diet, with emphasis on high quality complex carbs such as fruits, vegetables, cereal, juices, and whole grain products will provide the fuel necessary for the physical requirements. It is not recommended for firefighters to begin a high fat/high protein low carb diet such as the Keto or Atkins diets due to the fact emergency events cannot be scheduled and firefighters must always be ready and fueled.

Minimizing consumption of fried foods, fast food, and whole fat dairy products will also assist your conditioning efforts. A natural well balanced multi-vitamin, multi-mineral supplement is something you may wish to consider, but not necessary with a well-balanced diet.

It is important to note that nutrition and strength training are related because muscle building requires increased intake of calories and protein. In fact the protein requirements for optimal development of both speed and power during a special exercise program like this one are probably greater than what would be the RDA (Recommended Daily Allowance) of protein for someone merely in a maintenance mode.

Dietary changes are definitely indicated as an important element to improve your conditioning for and your performance on the GRFD Physical Agility Test. **Uses of protein or amino acid supplements are not recommended.** It is recommended, however, that you eat a balanced diet, with a relatively high percentage of carbohydrates.

To avoid dehydration, drinking water before, during, and after exercise is suggested. Also consider avoiding or minimize high caffeine and sugary sports drinks as well as alcohol which may lead to dehydration.

Remember, sound and controlled nutritional habits will definitely improve your chances of achieving and maintaining both strength and endurance.

GENERAL INFORMATION

It is important to remember that all of the evolutions in the Physical Agility Test are conducted in full firefighting turnout gear except for turn out pants and fire boots.

This includes helmet, coat, gloves, and self-contained breathing apparatus which can add up to in excess of fifty pounds.

It is important to become familiar with this gear and how it will affect your performance. The scheduled sessions at the Fire Department Training Center represent a good opportunity to become accustomed to this equipment.

It also is important to recognize that grip strength and upper body strength, especially the forearms play a crucial part in the duties of a firefighter. The Physical Agility Test measures for this in nearly every one of the evolutions.

A final word of caution before undertaking this special pre-conditioning program involves being sure that you are in satisfactory health before engaging in these activities.

If there is any doubt in your mind about your health, be sure to contact your personal physician before commencing any of the elements in this program.

POST AGILITY TEST REQUIREMENTS:

Grand Rapids Fire Department requires an additional two evolutions to be completed within the first two weeks of the recruit academy. These evolutions are separate from the Agility Test time limit. They have set time limits, and specified rules of their own, these will be discussed with the recruit on the first day of employment.

1. AERIAL LADDER CLIMB

(The purpose of this evolution is to determine if the Candidate has an abnormal fear of heights, and is capable of performing above ground fire evolutions.)

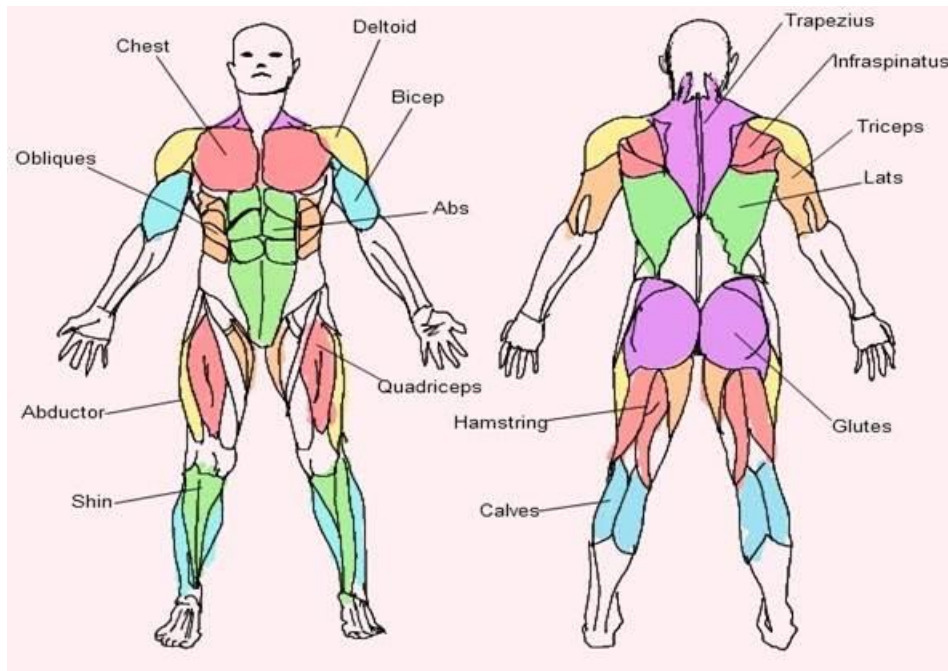
Wearing full turnout gear and an approved safety belt, the applicant will proceed up an aerial ladder to a height of 100 feet. **(This evolution will be assisted with a safety rope attached to the applicant during ascent and descent).** When the 100 ft. level has been reached the applicant will descend back to the ground. **This evolution must be completed within a 5 minute period.**

2. RESCUE MAZE

(The purpose of this evolution is to determine if the Candidate is claustrophobic and capable of performing search and rescue techniques in an unfamiliar and uncontrolled atmosphere.)

Wearing full turnout gear and a blackened out face piece, the applicant will proceed into a darkened enclosed room. He/She shall be asked to perform a thorough ground search for an infant sized doll hidden somewhere within the confines of the room. This exercise shall be limited to a 10 minute time period.

STRETCHING



Start in a standing position with feet shoulder width apart. Have knees slightly flexed and toes pointing straight ahead. Bend forward at the hips and let your arms relax in front until you feel a comfortable stretch in your hamstrings and lower back.