



CITY OF
TUCSON

Tucson Fire Department

Candidate Physical Ability Test
(CPAT)



Orientation Guide

FIRE SERVICE JOINT LABOR MANAGEMENT WELLNESS-FITNESS INITIATIVE

CANDIDATE PHYSICAL ABILITY TEST, ORIENTATION & PRACTICE SESSION GUIDE

This candidate physical ability test (CPAT) consists of eight separate events. The CPAT is a sequence of events requiring you to progress along a predetermined path from event to event in a continuous manner. This test was developed to allow fire departments to obtain pools of trainable candidates who are physically able to perform essential job tasks at fire scenes. This is a pass/fail test based on a maximum total time of 10 minutes and 20 seconds.

As a condition of hire test, the fire department utilizing CPAT must ensure that all candidates are provided full and equal access to a CPAT orientation and practice program. The orientation and practice program must commence at least eight (8) weeks before commencement of the official CPAT test date. This program is composed of two phases.

The fire department will provide each candidate a full and equal opportunity to perform at least two (2) orientation sessions during which candidates will receive “hands-on” familiarity with the CPAT test equipment. These required orientation sessions will be provided by certified Peer Fitness Trainers, fitness professionals and/or CPAT-trained fire fighters (proctors). These individuals will familiarize each candidate with each CPAT task and the test equipment. They will advise all candidates concerning specific conditioning regimens and techniques to help each candidate prepare for the CPAT test.

The fire department will provide each candidate a full and equal opportunity to perform at least two (2) timed practice runs of the CPAT, using CPAT apparatus. These required practice runs must occur within thirty (30) days before the commencement of the official CPAT test dates. Following each practice session, certified Peer Fitness Trainers, fitness professionals, and/or CPAT-trained fire fighters (proctors) shall help the candidates understand the test elements and how they can improve their performance and conditioning.

This two-phased orientation and practice program is a mandatory condition for candidates taking the CPAT test. However, it is recognized that some individuals may be capable of passing CPAT without participation in these programs. These individuals may excuse themselves from this mandatory condition upon the receipt by the fire department of a written and signed waiver, acknowledging that the fire department made available these programs on an equal basis and that the candidate knowingly and voluntarily waived participation in the orientation and practice sessions.

In these events, you wear a 50-pound (22.68-kg) vest to simulate the weight of self-contained breathing apparatus (SCBA) and fire fighter protective clothing. An additional 25 pounds (11.34 kg), using two 12.5-pound (5.67-kg) weights that simulate a high-rise pack (hose bundle), is added to your shoulders for the stair climb event.

Throughout all events, you must wear long pants, a hard hat with chin strap, work gloves and footwear with no open heel or toe. Watches and loose or restrictive jewelry are not permitted.

All props were designed to obtain the necessary information regarding your physical ability. The tools and equipment were chosen to provide the highest level of consistency, safety and validity in measuring your physical abilities. A schematic drawing of the CPAT is included in this orientation material; however, the course layout may vary in order to conform to the fire department’s test area. The events and distances between events are always the same.

The events are placed in a sequence that best simulates fire scene events while allowing an 85-foot (25.91-m) walk between events. To ensure the highest level of safety and to prevent exhaustion, no running is allowed between events. This walk allows you approximately 20 seconds to recover and regroup before each event. If you run between events you will receive one warning. A second infraction constitutes a disqualification, the test time is concluded and you fail the test.

To ensure scoring accuracy by eliminating timer failure, two stopwatches are used to time the CPAT. One stopwatch is designated as the official test time stopwatch, the second is the backup stopwatch. If mechanical failure occurs, the time on the backup stopwatch is used. The stopwatches are set to the pass/fail time and count down from 10 minutes and 20 seconds. If time elapses prior to the completion of the test, the test is concluded and you fail the test.

EVENT 1 STAIR CLIMB

EQUIPMENT

This event uses a StepMill stair climbing machine. The machine is positioned with one side up against a wall and an elevated proctor platform on the side opposite the wall. A single handrail on the wall side is available for you to grasp while mounting and dismounting the StepMill. Additional steps are placed at the base of the StepMill to assist you in mounting the StepMill.

PURPOSE OF EVALUATION

This event is designed to simulate the critical tasks of climbing stairs in full protective clothing while carrying a high-rise pack (hose bundle) and climbing stairs in full protective clothing carrying fire fighter equipment. This event challenges the candidate's aerobic capacity, lower body muscular endurance and ability to balance. This event affects the aerobic energy system as well as the following muscle groups: quadriceps, hamstrings, glutes, calves, and lower back stabilizers.

EVENT

During this event, the candidate is required to wear two 12.5-pound (5.67-kg) weights on the shoulders to simulate the weight of a high-rise pack (hose bundle). Prior to the initiation of the timed CPAT, the candidate has a 20-second warm-up on the StepMill at a set stepping rate of 50 steps per minute [Level 3]. During this warm-up period, the candidate is permitted to dismount, grasp the rail or hold the wall to establish balance and cadence. If the candidate falls or steps off the StepMill during the 20-second warm-up period, the candidate is required to remount the StepMill and restart the entire 20-second warm-up period. The candidate is allowed to restart the warm-up period twice. There is no break in time between the warm-up period and the actual timing of the test. The timing of the test begins at the end of this warm-up period when the proctor calls out "START." For the test, the candidate is required to walk on the StepMill at a set stepping rate of 60 steps per minute [Level 4] for 3 minutes. This concludes the event. The two 12.5-pound (5.67-kg) weights are removed from the candidate's shoulders. The candidate walks 85 feet (25.91 m) within the established walkway to the next event.

The following practices are allowed:

- The candidate is allowed to *briefly* touch the handrails or wall for balance
- The candidate is given up to two warnings for grabbing the handrails or bearing their body weight on the handrails / wall
- The candidate is allowed to restart the warm-up period twice

The following practices constitute a failure:

- The candidate falls or voluntarily dismounts the Step Mill three times during the warm up.
- The candidate falls or voluntarily dismounts the Step Mill after the start of the test.
- The candidate receives a third infraction for grasping the handrails or bearing weight on the handrails / wall after the start on the test.

Reasons for failure:

- Falling demonstrates poor balance or muscular endurance and could cause injury to the candidate.
- Using the handrails or wall for weight bearing gives the candidate a mechanical advantage that may not be available to them on the fire ground or demonstrates poor balance, conditioning or muscular endurance.

EVENT 2 - HOSE DRAG

EQUIPMENT

This event uses an uncharged fire hose with a hoseline nozzle. The hoseline is marked at 8 feet (2.24 m) past the coupling at the nozzle to indicate the maximum amount of hose you are permitted to drape across your shoulder or chest. The hoseline is also marked at 50 feet (15.24 m) past the coupling at the nozzle to indicate the amount of hose-line that you must pull into a marked boundary box before completing the test.

PURPOSE OF EVALUATION

This event is designed to simulate the critical tasks of dragging an uncharged hoseline from the fire apparatus to the fire occupancy and pulling an uncharged hoseline around obstacles while remaining stationary. This event challenges the candidate's aerobic capacity, lower body muscular strength and endurance, upper back muscular strength and endurance, grip strength and endurance, and anaerobic endurance. This event affects the aerobic and anaerobic energy systems as well as the following muscle groups: quadriceps, hamstrings, glutes, calves, lower back stabilizers, biceps, deltoids, upper back, and muscles of the forearm and hand (grip).

EVENT

During this event, the candidate grasps an automatic nozzle attached to 200 feet (60 m) of 1 3/4-inch (44-mm) hose. The candidate places the hoseline over the shoulder or across the chest, not exceeding the 8-foot (2.44-m) mark. The candidate is permitted to run during the hose drag. The candidate drags the hose 75 feet (22.86 m) to a prepositioned drum, makes a 90° turn around the drum and continues an additional 25 feet (7.62 m). The candidate then stops within the marked 5 foot x 7 foot (1.52 m x 2.13m) box, drops to at least one knee and pulls the hoseline until the hoseline's 50-foot (15.24-m) mark is across the finish line. During the hose pull, the candidate must keep at least one knee in contact with the ground and knee(s) must remain within the marked boundary lines. This concludes the event. The candidate walks 85 feet (25.91 m) within the established walkway to the next event.

The following practices are allowed:

- The candidate is given one warning to keep one knee down.
- The candidate is given one warning to keep the knees in bounds.
- The candidate is given one warning for taking one step out of the box.
- The candidate is permitted to run during the hose drag

The following practices constitute a failure:

- The candidate fails to go around the drum.
- The candidate travels outside of the marked path.
- The candidate takes two steps out of the back of the box
- The candidate receives a second infraction for not keeping one knee in contact with the ground.
- The candidate receives a second infraction for the knees being outside of the marked boundary.

Reasons for failure:

- Running beyond the marked path gives the candidate a mechanical advantage by decreasing the distance required to pull the hose by hand. This advantage may not be available on the fire ground. This demonstrates a lack of upper body strength by using lower body strength to compensate.
- By not keeping their knee on the floor a candidate could compensate for a deficiency in grip and upper body strength by standing up.

EVENT 3 EQUIPMENT CARRY

EQUIPMENT

This event uses two saws and a tool cabinet replicating a storage cabinet on a fire truck.

PURPOSE OF EVALUATION

This event is designed to simulate the critical tasks of removing power tools from a fire apparatus, carrying them to the emergency scene and returning the equipment to the fire apparatus. This event challenges the candidate's aerobic capacity, upper body muscular strength and endurance, lower body muscular endurance, grip endurance, and balance. This event affects the aerobic energy system as well as the following muscle groups: biceps, deltoids, upper back, trapezius, muscles of the forearm and hand (grip), glutes, quadriceps, and hamstrings.

EVENT

During this event, the candidate removes the two saws from the tool cabinet, one at a time, and places them on the ground. The candidate then picks up both saws, one in each hand, and carries them while walking 75 feet (22.86 m) around the drum, then back to the starting point. The candidate is permitted to place the saw(s) on the ground and adjust the grip. Upon return to the tool cabinet, the candidate places both

saws on the ground, then picks up each saw one at a time, and replaces the saw in the designated space in the cabinet. This concludes the event. The candidate walks 85 feet (25.91 m) within the established walkway to the next event.

The following practice is allowed:

- The candidate is given one warning for running.
- The candidate is allowed to set the tools on the ground to adjust and re-establish the grip.

The following practices constitute a failure:

- The candidate drops either saw during the carry.
- The candidate receives a second infraction for running with the saws.

Reasons for failure:

- Dropping the saws could injure the candidate and demonstrates poor grip strength or muscular endurance.
- Running with saws could cause injury if the candidate trips.

EVENT 4 LADDER RAISE AND EXTENSION

EQUIPMENT

This event uses two 24-foot (7.32-m) fire department ladders. For your safety, a retractable lanyard is attached to the ladder that you raise.

PURPOSE OF EVALUATION

This event is designed to simulate the critical tasks of placing a ground ladder at a fire structure and extending the ladder to the roof or window. This event challenges candidate's aerobic capacity, upper body muscular strength, lower body muscular strength, balance, grip strength, and anaerobic endurance. This event affects the aerobic and anaerobic energy systems as well as the following muscle groups: biceps, deltoids, upper back, trapezius, muscles of the forearm and hand (grip), glutes, quadriceps, and hamstrings.

EVENT

During this event, the candidate walks to the top rung of the 24-foot (7.32-m) aluminum extension ladder, lifts the first rung at the unhinged end from the ground, and walks it up until it is stationary against the wall. This must be done in a hand over hand fashion, using each rung until the ladder is stationary against the wall. The candidate must not use the ladder rails to raise the ladder. The candidate immediately proceeds to the pre-positioned and secured 24-foot (7.32-m) aluminum extension ladder, stands with both feet within the marked box of 36 inches x 36 inches (91.44 cm x 91.44 cm) and extends the fly section hand over hand until it hits the stop. The candidate then lowers the fly section hand over hand in a controlled fashion to the starting position. This concludes the event. The candidate walks 85 feet (25.91 m) within the established walkway to the next event.

The following practices are allowed:

- The candidate is given one warning for missing any rung during the raise.
- The candidate is given one warning for a boundary violation during the ladder extension.

The following practices constitute a failure:

- The candidate receives a second infraction for missing any rung during the raise.
- The candidate allows the ladder to fall to the ground during the raise.
- The candidate releases their grip on the ladder and the safety lanyard activates.
- The candidate receives a second infraction for not remaining within the marked boundary during the ladder extension.
- The candidate does not control the halyard in a hand over hand manner.
- The candidate allows the halyard to slip in an uncontrolled manner.

Reasons for failure:

- Skipping rungs would give a taller candidate an advantage over a shorter candidate and is therefore not permitted. It would also allow the candidate to throw the ladder up in the air which is both unsafe and unavailable to the candidate at a fire scene when the base of the ladder is not hinged to the ground.
- Failure to completely raise the ladder demonstrates poor grip and muscular strength.
- A candidate could gain an advantage by walking the halyard backward to compensate for poor upper body strength. This compensation is not available on the fire ground where the ladder is not bolted to the fire structure.
- Failure to control the ladder indicates poor grip strength as well as muscular strength and endurance.

EVENT 5 FORCIBLE ENTRY

EQUIPMENT

This event uses a mechanized device located 39 inches (1 m) off the ground that measures cumulative force and a 10-pound (4.54-kg) sledgehammer.

PURPOSE OF EVALUATION

This event is designed to simulate the critical tasks of using force to open a locked door or to breach a wall. This event challenges the candidate's aerobic capacity, upper body muscular strength and endurance, lower body muscular strength and endurance, balance, grip strength and endurance, and anaerobic endurance. This event affects the aerobic and anaerobic energy systems as well as the following muscle groups: quadriceps, glutes, triceps, upper back, trapezius, and muscles of the forearm and hand (grip).

EVENT

During this event, the candidate uses a 10-pound (4.54-kg) sledgehammer and strikes the measuring device in the target area until the buzzer signal is activated. The candidate's feet must remain outside the toe-box. After the buzzer is activated, the candidate places the sledgehammer on the ground. This concludes the event. The candidate walks 85 feet (25.91 m) within the established walkway to the next event.

The following practice is allowed:

- The candidate is given one warning for stepping inside the toe-box.

The following practices constitute a failure:

- The candidate fails to maintain control of the hammer while swinging.
- The candidate receives a second infraction for stepping inside the toe-box.

Reason for failure:

- Failure to maintain control of the hammer indicates poor grip strength and muscular endurance and could cause injury to the candidate and proctors.

EVENT 6 SEARCH

EQUIPMENT

This event uses an enclosed search maze that has obstacles and narrowed spaces.

PURPOSE OF EVALUATION

This event is designed to simulate the critical task of searching for a fire victim with limited visibility in an unpredictable area. This event challenges the candidate's aerobic capacity, upper body muscular strength and endurance, agility, balance, anaerobic endurance, and kinesthetic awareness. This event affects the aerobic and anaerobic energy systems as well as the following muscle groups: muscles of the chest, shoulder, triceps, quadriceps, abdominals, and lower back.

EVENT

During this event, the candidate crawls on hands and knees through a tunnel maze that is approximately 3 feet (91.44 cm) high, 4 feet (121.92 cm) wide and 64 feet (19.51 m) in length with two 90° turns. At a number of locations in the tunnel, the candidate navigates around, over and under obstacles. In addition, at two locations, the candidate crawls through a narrowed space where the dimensions of the tunnel are reduced. The movement is monitored/listened to as the candidate advances through the maze. If for any reason, the candidate chooses to end the event, the candidate calls out or raps sharply on the wall or ceiling and the candidate is then assisted out. Upon exit from the maze, the event is concluded. The candidate walks 85 feet (25.91 m) within the established walkway to the next event.

The following practices are allowed:

- The candidate can return into the tunnel if they exit through the entrance.

The following practices constitute a failure:

- The candidate requests assistance from the proctor requiring the opening of an escape hatch or the entrance/exit covers.

Reasons for failure:

- Failure to finish the event indicates a lack of confidence in dark or confined spaces.

EVENT 7 RESCUE

EQUIPMENT

This event uses a weighted mannequin equipped with a harness with shoulder handles.

PURPOSE OF EVALUATION

This event is designed to simulate the critical task of removing a victim or injured partner from a fire scene. This event challenges the candidate's aerobic capacity, upper and lower body muscular strength and endurance, grip strength and endurance, and anaerobic endurance. This event affects the aerobic and anaerobic energy systems as well as the following muscle groups: quadriceps, hamstrings, glutes, abdominals, torso rotators, lower back stabilizers, trapezius, deltoids, latissimus dorsi, biceps, and muscles of the forearm and hand (grip).

EVENT

During this event, the candidate grasps a 165-pound (74.84-kg) mannequin by the handle(s) on the shoulder(s) of the harness (either one or both handles are permitted), drags it 35 feet (10.67 m) to a pre-positioned drum, makes a 180° turn around the drum, and continues an additional 35 feet (10.67 m) to the finish line. The candidate is not permitted to grasp or rest on the drum. It is permissible for the mannequin to touch the drum. The candidate is permitted to lower the mannequin to the ground to adjust their grip. The entire mannequin must be dragged past the marked finish line. This concludes the event. The candidate walks 85 feet (25.91 m) within the established walkway to the next event.

The following practices are allowed:

- The candidate receives one warning for grabbing or resting on the drum.
- The candidate is permitted to grab either one or both handles when dragging the mannequin
- The candidate is permitted to lower the mannequin to the ground to adjust their grip

The following practices constitute a failure:

- The candidate receives a second infraction for grabbing or resting on the drum.

Reasons for failure:

- Use of the drum by either grasping or resting on it indicates a lack of muscular strength and endurance.

EVENT 8 CEILING BREACH AND PULL

EQUIPMENT

This event uses a mechanized device that measures overhead push and pull forces and a pike pole. The pike pole is a commonly used piece of equipment that consists of a 6-foot long pole with a hook and point attached to one end.

PURPOSE OF EVALUATION

This event is designed to simulate the critical task of breaching and pulling down a ceiling to check for fire extension. This event challenges the candidate's aerobic capacity, upper and lower body muscular strength and endurance, grip strength and endurance, and anaerobic endurance. This event affects the aerobic and anaerobic energy systems as well as the following muscle groups: quadriceps, hamstrings, glutes, abdominals, torso rotators, lower back stabilizers, deltoids, trapezius, triceps, biceps, and muscles of the forearm and hand (grip).

EVENT

During this event, the candidate removes the pike pole from the bracket, stands within the boundary established by the equipment frame, and places the tip of the pole on the painted area of the hinged door in the ceiling. The candidate fully pushes up the 60-lb hinged door in the ceiling with the pike pole three times. The candidate then hooks the pike pole to the 80-lb ceiling device and pulls the pole down five times. Each set consists of three pushes and five pulls. The candidate repeats the set four times. The candidate is permitted to stop and, if needed, adjust the grip. Releasing the grip or slipping from pike pole handle, without the pike pole falling to ground, does not result in a warning or constitute a failure. The candidate may re-establish the grip and resume the event. If the candidate does not successfully complete a repetition (i.e. complete the up and down motion), the proctor calls out "MISS" and the candidate must push or pull the apparatus again to complete the repetition. The event and the total test time ends when the applicant completes the final pull stroke repetition as indicated by the proctor who calls out "TIME".

The following practices are allowed:

- The candidate receives one warning for dropping the pike pole on the ground.
- The candidate receives one warning for stepping out of bounds.
- The candidate is permitted to stop and to re-establish grip

The following practices constitute a failure:

- The candidate receives a second infraction for stepping outside of the boundary marked by the testing apparatus.
- The candidate receives a second infraction for dropping the pike pole.

Reasons for failure:

- Stepping out of bounds creates an advantage that may not be available to the candidate on the fire ground, which would allow the candidate to compensate for poor upper body strength
- Failure to maintain control of the pike pole indicates poor grip strength and muscular endurance.

TEST FORMS

You must present valid identification and sign a number of forms before taking the CPAT. Prior to the start of the CPAT you must complete the Sign-in Form. You are provided an opportunity to review a video detailing the CPAT and the failure points. It is your responsibility to ask questions if you do not understand any parts of the test events or procedures. You are required to complete the Waiver and Release Form. At the conclusion of the CPAT, you must sign the CPAT Evaluation Form. Additionally, prior to leaving the rehabilitation area, you must complete and sign the Rehabilitation Form. If you fail to complete and sign any of these forms you fail the CPAT. ■