



## ***FIREFIGHTER APPLICANT PHYSICAL APTITUDE EVALUATION INFORMATION PACKAGE***

The physical evaluation program is administered by the Faculty of Physical Education and Recreation at the University of Alberta. **Please read the following information carefully in order to prepare for the tests.**

### **GENERAL INFORMATION**

Testing will be completed at the University of Alberta in Edmonton. You will be provided with a copy of your personal results when you finish the tests. Your results will also be forwarded directly to the relevant fire department as soon as possible after the tests are completed.

The testing program runs on a strict schedule, so you must be on time. If you are not familiar with the University of Alberta campus, please allow yourself a little extra time since the nearest parking is at least a block away from the test location. You can access maps of the University of Alberta (look for the Van Vliet Complex on the North Campus) at <http://www.campusmap.ualberta.ca>

**IF YOU HAVE ANY QUESTIONS** regarding your testing appointment, please contact the Work Physiology Lab by email at [firetest@ualberta.ca](mailto:firetest@ualberta.ca). If urgent, on your test day, you can phone the lab at 780-492-1859.

### **TESTING LOCATION**

The tests are conducted at the **Work Physiology Laboratory** (3-450) in the Universiade Pavilion (usually called the "Butterdome") at the University of Alberta. This large yellow building is part of the Van Vliet Complex and is located near the northwest corner of the intersection of 87 Avenue and 114 Street. The main entrance is on the east side between the Butterdome and the new climbing centre. From the main entrance a sign will direct you upstairs to the Work Physiology Laboratory.

There are male and female locker rooms on the lower level where you may change and shower. You should bring your own towel and a lock with you to put on a "day-use" locker, since we have no provision for securing your valuables.

Pay parking is available at the Education Carpark and the Jubilee Auditorium lot which are on the northeast and southwest corners of the intersection of 87 Avenue and 114 Street, respectively. Additional parking is available at Stadium Carpark, located on the north side of the Van Vliet Complex, near the Student Union Building.

### **DESCRIPTION OF THE PHYSICAL APTITUDE TESTS**

This program is designed to evaluate the physical work capacities of healthy, physically active individuals. Each test requires a maximal effort. All of the tests are completed while wearing firefighting personal protective equipment (PPE) that weighs approximately 23 kg (51 lb), depending

on size. This ensemble includes: helmet, flash-hood, leather work gloves, coveralls, pants, boots, jacket and self-contained breathing apparatus (SCBA). You will not breathe from the SCBA, but you must carry it. For safety during the treadmill test, running shoes are substituted for firefighting boots.

After completing the treadmill test, you will rest for 60 minutes before starting an orientation to the job-related performance tests. The orientation to the job-related tests consists of a “walk-through” session to practice each of the tasks. This will take approximately 30 minutes and will familiarize you with testing procedures and provides a suitable warm-up for the demanding tests that follow.

Each job-related test is followed by a rest period of exactly 3 minutes for recovery and, if necessary a small drink of water. You are not permitted to leave the testing area or remove the PPE during the rest periods. The tests are described briefly on the following pages.

### ***Aerobic Endurance***



Peak oxygen uptake ( $VO_{2peak}$ ) will be measured during a progressive, incremental exercise test to exhaustion on a treadmill.

After a standardized 5-minute warm-up, you will walk at a speed of 3.5 mph and 10% grade for 8 minutes. This is called the constant work rate phase.

Once the constant work rate phase is completed you will immediately progress to the incremental phase. During this phase the treadmill speed remains at 3.5 mph but the grade increases 1% every minute to a maximum of 15%. Subsequently, the speed will increase by 0.5 mph each minute while the grade remains at 15% until you can no longer continue. The duration of this test depends on your fitness level and motivation, but usually lasts about 16 minutes. Generally, the longer the duration of the test, the better the  $VO_{2peak}$  score. Aerobic endurance will be evaluated from two test outcomes: total time on the treadmill; and, your  $VO_{2peak}$  score.

When the incremental phase is completed, there is a mandatory 5-min cool-down (slow walk on a flat treadmill). In order to pass the treadmill test, you **MUST** complete the 5-min warm-up, the 8-min constant work rate phase and the 5-minute cool-down (for a total of at least 18 minutes).

During the test, expired gases are monitored with an automated metabolic measurement system to calculate the rate of oxygen consumption. Heart rate is monitored continuously with a telemetry system.

### ***Familiarization to Job-related Tests***

After the treadmill test, there is a 60 minute rest period before the start of an orientation to the job-related performance tests. The orientation to the job-related tests is standardized and must be completed according to the instructions of the testing staff.

### ***Equipment Carry/Vehicle Extrication***



You will lift and carry small (20 kg or 44 lb) and large (36 kg or 80 lb) vehicle extrication tools (the “Jaws of Life”) from the starting point and place them in designated places on the floor 15 m (50’) away.

Next, you will pick up the smaller (20 kg) tool, carry it 7.6 m (25’) and set it down in front of a vehicle door mock-up.

The smaller tool must be held in a level position at right angles to the door mock-up with the “jaws” in firm contact with each of three flat metal discs that are similarly oriented to the three “pins” that

must be broken to remove a car door. The tool must be held in the correct position for 30 s on each disc. The tool is set down between each hold, and you must stand erect before lifting the tool and moving on to the next point of contact.

After this sequence is completed, you will return both tools to the starting point. The total walking distance is 105 m (345’).

This test evaluates the muscular strength and endurance required to lift, carry and use heavy tools in rescue situations. In order to pass the test, you must complete all aspects of the simulation safely and with correct form in 225 seconds or less.

### ***Charged Hose Advance***



From a standing position facing forward, you will bend and pick up a nozzle connected to 3 lengths of charged 44 mm (1.75”) hose. The test time starts when you move to pick up the hose. Holding the nozzle and hose securely with two hands over the preferred shoulder, you will advance the hose to the finish line. The hose is advanced a distance of 30 m (100’) while walking as quickly as possible (running is not permitted). The test time stops when you place both feet securely on a rubber mat.

This test assesses lower body strength and power for pulling and dragging. The test must be completed correctly and safely in 27 seconds or less.

### ***Weighted Sled Pull***



Starting from an erect position facing forward, straddling the rope on the floor, you will bend and pick up a length of static 16 mm (5/8") nylon rope attached to a weighted sled. The test time begins when you begin to reach for the rope.

Keeping your feet securely in place, you will use the rope to pull the sled over the floor a distance of 15.24 m (50'). You will then walk 15.24 m (50') and repeat the pull, walk back 15.24 m (50') and repeat the pull for the third and final time. The test time stops when the sled has completely crossed the line for the third time.

This test assesses upper body strength, power, and endurance for pulling and hoisting. The test must be completed correctly and safely in 110 seconds or less.

### ***Forcible Entry Simulation***



Starting from a standing position, you will pick up the 4.5 kg (10 lb) sledge hammer and use it to strike the mechanically-braked target surface of the forcible entry apparatus.

The test clock starts as soon as you reach for the hammer which is standing on the floor directly in front of the apparatus, and stops as soon as a buzzer goes off, indicating the end of the test.

This test assesses muscle strength and power for striking. The test must be completed correctly and safely 19 seconds or less.

### ***Victim Rescue***



Starting from an erect position, you will bend to grasp a rescue harness and drag a mannequin weighing approximately 83 kg (183 lb) through a simple serpentine obstacle course. You will turn around a traffic cone at 15 m and return to the start for a total distance of 30 m (100'). The test time starts when you move to pick up the mannequin and ends when the mannequin's feet are completely across the finish line. No part of your body or the mannequin may touch the traffic cones during the test.

This test assesses upper and lower body muscle strength and endurance for pulling and dragging. The test must be completed correctly and safely in 57 seconds or less.

### ***Ladder Climb***



Starting from a standing position facing the ladder, you will climb 10 rungs (3.45 m) up and down a 7.2 m (24') ladder. This is repeated 5 times as quickly as possible.

A repetition begins with both feet on the floor at the base of the ladder. You will climb and place two feet on the 10<sup>th</sup> rung (weight-bearing step is required), reverse direction and climb down until both feet are again on the floor to complete the repetition.

The test time starts when you move to start climbing and ends when both feet are on the floor after the 5<sup>th</sup> repetition.

You must maintain three points of contact on the ladder at all times, and must climb the ladder rung by rung, without missing any of the rungs. The test must be completed correctly and safely in 97 seconds or less. This test evaluates the leg strength and endurance required for climbing under load.

## EFFECTIVE PREPARATION FOR THE TESTS

In order to do your best, you should come to the laboratory on your testing day well-nourished and well rested. You should not do strenuous exercise on the days immediately before your tests. Sleep well the night before and try to be as relaxed as possible.

Avoid alcoholic beverages the day before and definitely on the day of your test. Do not smoke or drink beverages with caffeine (tea, coffee, hot chocolate, cola, etc.) for at least two hours prior to your test.

Do not eat for at least two hours before your test appointment. However, it is important to be well nourished and well hydrated. The tests are very demanding and most individuals are extremely tired at the end of each test.

If your appointment is first thing in the morning, do not skip breakfast. You should eat a light meal (e.g., fruit, toast or cereal, and juice) about three hours before your test.

## WHAT DO I NEED TO BRING?

### Medical Clearance Form

You must bring the Medical Clearance Form, signed by your physician, to verify that you are medically cleared to complete the test. **It is your responsibility to make sure that the physician signs the form and that the clinic or office details are included. Most physicians (and medical clinics) have a stamp that includes contact information. You will not be allowed to proceed with the test unless this form is completed correctly.**

### Identification

Government-issued photo identification (*e.g.* drivers licence) must be presented upon your arrival at the Work Physiology Laboratory in order to verify your identity. **You will not be allowed to proceed with the test without suitable identification.**

### Clothing

Bring the following items of clothing with you: **shorts, two T-shirts, running shoes, extra socks, and warm-up clothing.** Your T-shirt will be wet from sweat after the treadmill test. You should change into a dry shirt and then put on your warm-up gear to keep warm during the 60-minute rest period. We will provide you with PPE for the testing session, including boots. While we have a good selection of firefighting boots, getting an exact fit may not always be possible. In order to get the best fit, bring several pairs of socks (thin and thick sport socks).

### Towel and Lock

You may use the locker room and shower facilities at the University to shower after your test. We recommend that you bring a lock to use on a “day locker” and you must provide your own towel.

### Water and Snacks

You should bring a water bottle or sports drink (*e.g.*, Gatorade). Avoid “energy drinks” like Red Bull.

You *may* want to eat a **small** snack (*e.g.*, banana or Power Bar) during the rest period between the treadmill test and the job-related tests. Do not try anything (Gatorade, Power Bar, etc.) for the first time during your test appointment. You should know how your body reacts to your nutritional plan well in advance of your appointment.

Be careful to practice in advance so that you know how much to eat and drink during 3+ hours of intermittent, extremely strenuous exercise combined with some degree of heat stress from the protective clothing. If you eat or drink too much you will feel sick and do poorly. If you eat and drink too little, you will get dehydrated and do poorly.

Optimal nutrition and hydration strategies tend to be very individual. Work this out for yourself. Don't follow someone else's advice unless you have had the chance to make sure it works for you under the kind of conditions you will experience during these tests.

**Accommodation in Edmonton**

We suggest the following choices for reasonably priced accommodation near the University of Alberta:

Campus Tower Hotel: 1-800-661-6562

Tower on the Park Hotel: 780-488-1626

Varscona Hotel: 1-888-515-3355

There are a limited number of guest rooms available at U of A Student Housing: 780-492-4281

**GOOD LUCK!**