



CANADIAN INTERAGENCY FOREST FIRE CENTRE INC.  
CENTRE INTERSERVICES DES FEUX DE FORÊT DU CANADA INC.

## **CANADIAN PHYSICAL PERFORMANCE EXCHANGE FITNESS STANDARD FOR TYPE 1 WILDLAND FIRE FIGHTERS (WFX-FIT)**

### **SIX WEEK TRAINING PROGRAM**

**SIX WEEK TRAINING PROGRAM FOR THE TYPE 1 WILDLAND FIRE FIGHTER**  
**NATIONAL EXCHANGE FITNESS STANDARD**

(Includes Discrete Muscular Strength & Endurance Exercises and the WFX-FIT Circuit Training Program)

|        | Monday                                 | Tuesday                                | Wednesday                              | Thursday               | Friday        | Saturday | Sunday |
|--------|--|--|--|------------------------|---------------|----------|--------|
|        | Day 1                                  | Day 2                                  | Day 3                                  | Day 4                  | Day 5         | Day 6    | Day 7  |
| Week 1 | Muscular Strength & Endurance, Stretch | Aerobic training 25 minutes; Stretch   | Muscular Strength & Endurance, Stretch | <u>WFX-FIT</u><br>(x1) | (make up day) | Rest     | Rest   |
| Week 2 | Circuit Training                       | Aerobic training 25 minutes; Stretch   | Muscular Strength and Endurance        | <u>WFX-FIT</u><br>(x1) | (make up day) | Rest     | Rest   |
| Week 3 | Aerobic training 30 minutes; Stretch   | Muscular Strength & Endurance, Stretch | Circuit Training                       | <u>WFX-FIT</u><br>(x1) | (make up day) | Rest     | Rest   |
| Week 4 | Muscular Strength and Endurance        | Circuit Training                       | Aerobic training 35 minutes; Stretch   | <u>WFX-FIT</u><br>(x1) | (make up day) | Rest     | Rest   |
| Week 5 | Circuit Training                       | Aerobic training 40 minutes; Stretch   | Muscular Strength and Endurance        | <u>WFX-FIT</u><br>(x1) | (make up day) | Rest     | Rest   |
| Week 6 | Aerobic training 45 minutes; Stretch   | Muscular Strength and Endurance        | Circuit Training                       | <u>WFX-FIT</u><br>(x1) | (make up day) | Rest     | Rest   |

Sample Aerobic Training Session on a Treadmill: you would continue repeating the cycle for a total of approximately 25 to 45 minutes as indicated in the weekly plan above.

One Cycle:     2 minutes     walk at 3 mph     -     2 % elevation  
                   2 minutes     jog at 5 or 6 mph     -     4 % elevation  
                   2 minutes     run at 7 or 8 mph     -     6 % elevation \*\*\*\*\*  
                   2 minutes     run at 7 or 8 mph     -     8 % elevation \*\*\*\*\*

For example, if you were able to complete the full 8 minutes outlined above you would then complete the cycle 3 times for a total of 24 minutes. The cycles are completed continuously.

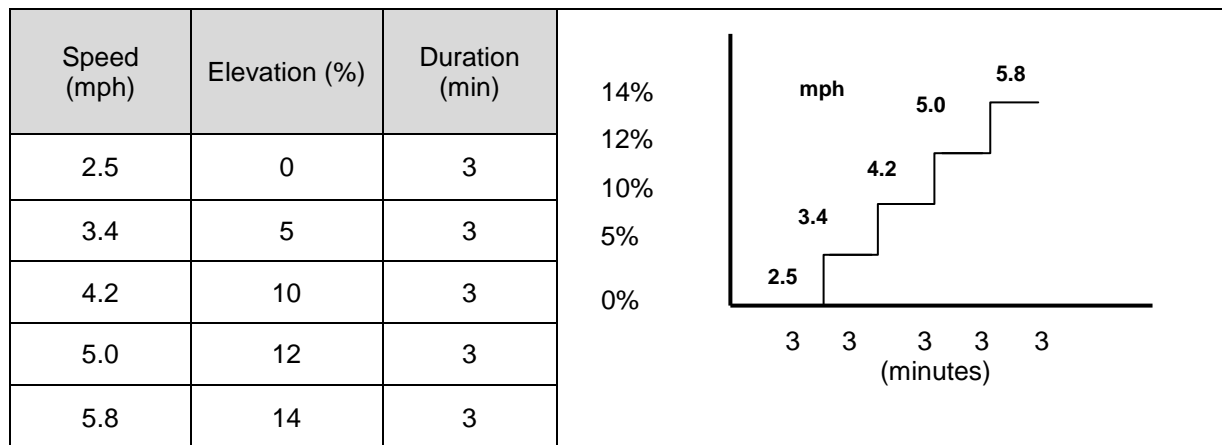
Note: The final two workloads are quite challenging. During the first two weeks you may only be able to complete the first two workloads in the cycle, after which you would repeat the cycle until the desired duration has been completed. During the third week add another workload to the cycle and then repeat the cycle until the desired duration has been completed. By the fourth week (and the remainder of the training program) you should be able to complete the four workloads in the cycle and then repeat the cycle until the desired duration has been completed.

Alternatively, should you wish to use a different protocol, the energy expenditure of the 20m shuttle run may be replicated. Below are the speed equivalents for 10 stages of the shuttle run. Each stage is two minutes in duration. In your exercise sessions you should increase the speed of the treadmill continuously following the speed equivalents listed for each stage of the shuttle run.

| Speed km/hr | Speed mph | 20m Shuttle Run stage | METS | Predicted VO <sub>2</sub> max |
|-------------|-----------|-----------------------|------|-------------------------------|
| 8.5         | 5.3       | 1                     | 6.7  | 23.5                          |
| 9.0         | 5.6       | 2                     | 7.6  | 26.6                          |
| 9.5         | 5.9       | 3                     | 8.5  | 29.8                          |
| 10.0        | 6.2       | 4                     | 9.3  | 32.6                          |
| 10.5        | 6.5       | 5                     | 10.2 | 35.7                          |
| 11.0        | 6.8       | 6                     | 11.0 | 38.5                          |
| 11.5        | 7.1       | 7                     | 11.9 | 41.7                          |
| 12.0        | 7.5       | 8                     | 12.7 | 44.5                          |
| 12.5        | 7.8       | 9                     | 13.6 | 47.6                          |
| 13.0        | 8.0       | 10                    | 14.5 | 50.8                          |

Keep the treadmill elevation at 1-2%. If you are only able to run continuously for 4 stages, then walk for 2 minutes and repeat the process again until your total time is completed for that session.

To simulate the inclination of the WFX-FIT protocol an alternative to the above protocols may be performed.



Aerobic Training Session on a track or outdoors: Indoor tracks are generally 200 meters and outdoor tracks are generally 400 meters such that to cover approximately 1 mile you will have to complete 4 or 8 laps respectively. Should you not have access to a treadmill, your aerobic training days can be performed on a track or any other outdoor route measured by your car odometer. Follow the schedule for the appropriate time goal. Record your distance covered for

the training session (number of laps and distance). Your goal for the following week should be to increase both time, as per the schedule, and the pace at which you are running.

### **DETAILED MUSCULAR STRENGTH AND ENDURANCE PROGRAM:**

#### **Discrete Muscular Strength and Endurance Exercises:**

This program consists of 9 exercises, each of which is chosen specifically as they relate to the motions and forces required to complete the WFX-FIT test. These exercises can be performed one at a time with adequate rest between each of them or in a circuit format. The circuit format means that one set of each exercise would be completed with minimal rest in between followed by a repetition of the entire circuit according to the prescribed number of reps and sets. Each time you perform weight repetitions your aim is to reach the target number of repetitions listed in the chart below, where the last repetition performed is the most difficult. This circuit format is recommended because during the emergency response circuit there are no breaks and a variety of different muscle groups are used immediately following one another.

#### **Sets, Reps, Weight, Rest:**

Weeks 1-4 are targeted as the strength development stage. Perform 3 sets for each exercise, incrementally increasing the weight by 5-10 lbs depending on the exercise for each set. The number of reps decreases from 12 to 10 to 8 as the sets and weight progress. Rest: 45 to maximum 60 seconds between sets.

Weeks 5 & 6 are targeted as the strength and muscle endurance stage. Perform 4 sets X 10 repetitions. The weight stays constant, and is usually the same weight used to perform the first set (12 RM set) of the initial strength development stage. Rest: 30 seconds maximum between sets.

Warm-Up: should be dynamic and similarly reflect those exercises included in the routine (for example; push-ups, pull-ups, travelling lunges). Including an aerobic component, the warm-up should last 3-5 minutes.

Cool-Down: each strength training session should conclude with a brief cool-down before stretching. This includes 5 minutes of easy aerobic activity. The mode is not significant as any form of aerobic activity will suffice.

### Intensity and Volume:

|        | Target Number of Repetitions | Sets | Resistance   |
|--------|------------------------------|------|--|
| Week 1 | 12, 10, 8                    | 3    | A light weight that can be easily lifted. Proper technique should be emphasized      |
| Week 2 | 12, 10, 8                    | 3    | Weight increased to a point where the last rep is difficult to perform.              |
| Week 3 | 12, 10, 8                    | 3    | Weight increased to a point where the last rep of each set is difficult to perform.  |
| Week 4 | 12, 10, 8                    | 3    | Weight maintained from the previous week.  |
| Week 5 | 10                           | 4    | Weight maintained to a point where the last rep of sets 3-4 is difficult to perform. |
| Week 6 | 10                           | 4    | Weight maintained from the previous week.  |

Note that the determination of initial weights is essential. Learning proper form and perfecting technique is the main goal of the first week and therefore weights that are easy to lift should be used while mastering proper technique.

Refer to a book such as "*Strength Training Anatomy, F. Delavier, Human Kinetics*" for explanations and descriptions of each exercise.

### **Lower Body Exercises:**

- 1. Dumbbell Squats:** Rationale: to strengthen the anterior muscles of the leg. Quadriceps strength and endurance is important for covering the total distance travelled over the WFX-FIT circuit and in particular the repetitive ramp climbs. Holding free weights will also provide improved grip strength needed to perform the medium pump carry in hand, the hose pack lift and the charged hose advance.
- 2. Dumbbell Lunges**  
Rationale: to strengthen the anterior muscles of the leg and gluteus. Holding free weights will also improve grip strength.
- 3. Stiff-Legged Dead Lifts**  
Rationale: to strengthen the posterior muscles of the leg and gluteus. Holding heavier weights will also provide improved grip strength. The hamstrings and gluteus become dominant when covering the total distance travelled over the circuit carrying equipment and in particular the repetitive ramp climbs in the WFW-FIT circuit.
- 4. Step Ups**  
Rationale: to strengthen the anterior muscles of the leg while simulating the repetitive stair climbs. Holding free weights will also improve grip strength.

## Upper Body Exercises:

### 5. Seated Row

Rationale: to strengthen the posterior muscles of the upper body. This motion will assist performing the hose pack lift, the medium pump carry in hands and the charged hose advance.

### 6. Bent Row (Underhand grip)

Rationale: to strengthen the posterior muscles of the upper body. This motion will assist performing the hose pack lift, the medium pump carry in hands and the charged hose advance.

### 7. Lateral Dumbbell Raises

Rationale: to strengthen the musculature forming the shoulder girdle (Deltoids, Trapezius). This motion will also assist performing the hose pack lift and the medium pump carry in hands, noting that these job tasks are performed with an out-stretched arm at or below shoulder height.

### 8. Front Raises

Rationale: to strengthen the musculature forming the shoulder (Deltoids, Trapezius, Pectoralis Major). This motion will also assist performing the hose pack lift, the medium pump carry in hands and the charged hose advance.

### 9. Incline Dumbbell Press

Rationale: to strengthen the musculature forming the shoulder girdle (Deltoids, Pectoralis Major, Triceps). This motion will help improve general upper body strength and provide symmetry to a pull-dominant program.

### 10. Core Strengthening

Rationale: to strengthen the musculature forming the abdomen. The exercises selected should simulate the motion performed during the hose pack lift, the medium pump carry in hands. 'Lumber-Jacks', 'overhead medicine ball slams', and 'lateral medicine ball slams' are recommended.

**Stretching Program:** Refer to a book such as "*Stretching Anatomy*, A. Nelson & J. Kokkonen, *Human Kinetics*" for explanations and descriptions of each exercise.

Stretch #1: Knee Flexion (Hamstrings: Raised Leg Knee Flexor Stretch)

Stretch #2: Knee Extension (Quadriceps: Kneeling Knee Extensor Stretch)

Stretch #3: Gastrocnemius / Soleus (Plantar Flexor Stretch)

Stretch#4: Back Flexion (Seated Lower-Trunk Extensor Stretch)

Stretch #5: Shoulder Extension (Extensor, Adductor and Retractor Stretch)

Stretch #6: Chest (Shoulder Flexor Stretch)

**Note:** Each stretch is static in nature and should be held for 20-30 seconds considering any local muscle discomfort post exercise. Ensure that both the left and right sides of the body are equally satisfied.