



### The effects of age and gender on Canadian firefighters' fitness levels

We wanted to know if Canadian firefighters' fitness levels are affected by age and gender.



#### What is the problem?

Firefighting is a physically demanding profession so firefighters are believed to be fitter than the healthy population. Physical fitness can be measured by the maximum amount of oxygen that our body uses during exercise (aerobic capacity) and muscle strength levels. Previous research found that the firefighters' aerobic capacities decrease with age, but their strength levels remain unchanged. We wanted to know if Canadian firefighters' fitness levels are affected by age and gender.

#### How did the team study the problem?

A group of 49 firefighters and 40 healthy participants who were matched by age underwent the Modified Canadian Aerobic Fitness Test. The results of the fitness test was used to calculate the participants' aerobic capacities. The firefighters' upper and lower body strength levels were measured by grip strength test and static floor lifting test, respectively. We used statistical analyses to compare the aerobic capacities of the firefighters and healthy participants. We also used a different statistical technique to see if relationships existed between firefighters' aerobic capacities and upper and lower body strength levels.

#### What did the team find?

The FIREWELL team found that the aerobic levels among firefighters were similar to other healthy people. In both groups, age had an impact on aerobic levels. The firefighters' aerobic capacities decreased with age, while upper and lower body strength levels remain unaffected. Gender affected the firefighters' strength levels, but not their aerobic capacity.

#### How can this research be used?

The study results could potentially be used by fire services to develop a minimal aerobic capacity and body strength level requirements for firefighting recruits. They can also use these results to develop suitable conditioning programmes to that will help improve the fitness levels of Canadian firefighters.

#### Cautions

This study only investigated the fitness levels of Hamilton firefighters who may perform different duties than other fire services. In addition, it is important to note that our male to female ratio was 15:1 so our findings about females are unstable until we test more women.

**Reference:** Nazari G, MacDermid JC, Sinden K, Overend T. Comparison of Canadian firefighters and normal controls based on the submaximal fitness testing and strength considering age and sex. *Int J Occup Saf Ergon*. 2017 Sep 7:1-29. [Epub ahead of print].

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