# Heat exhaustion among firefighters

## Abstract

Due to the hazardous nature of firefighting, heat exhaustion is a common occurrence. Since heat exhaustion accounts for some of the highest figures of deaths among the firefighters, it is important to understand how heat exhaustion can be managed. This paper finds the recommendations of NFPA, which include drinking water frequently before the beginning of the shift and during the shift, wearing breathable loose fitting clothing, gradually building up to heavy work, scheduling training during the coolest parts of the day among others as well as monitoring the signs and symptoms to be very important in managing heat exhaustion.

## Introduction

Firefighting is a hazardous occupation, and whether on training or during the actual firefighting task, firefighters are often exposed to extreme temperatures of more than 100°C. The effects of heat exposure may occur from radiant heat, hot air, contact with hot surfaces, as well as from the endogenous heat produced by the body during the firefighting exercise (Patel, Rao, & Saha, 2006). Therefore, a firefighter in his/her duty is often faced with a constant threat of heat exhaustion; thus it is important to analyze the question of what is the most appropriate ways through which firefighters can manage heat exhaustion?

## Heat exhaustion among firefighters

Among the majority of municipal firefighters, exposure to extreme heat situations occurs in limited, short doses. Nevertheless, there are several instances when firefighters face long periods of heat exhaustion, including among career firefighters who have been involved in the training exercise or repetitive call during high-temperature conditions and among wildland firefighters who operate for long hours in high-temperature conditions and may not be able to retreat to climate-controlled facilities. According to the National Fire Protection Association (NFPA), heat exposure is the leading cause of death among the firefighters, accounting for 59% of deaths among the firefighters and is associated with sudden cardiac death, internal trauma/crushing, as well as burns. It is thus important for the firefighting departments to equip their employees with appropriate mechanisms for avoiding or minimizing the incidents of heat exhaustion as a way of increasing the safety and efficiency of firefighting profession (Cuddy & Ruby, 2011).

Humans are warm-blooded; thus the human body tries to maintain a normal level of heat (98°F on average), a person would be impaired if the body temperature increases past 105°F, resulting in a cardiac arrest. Nevertheless, an individual’s physical condition impacts on how he/she handles the heat stress, making physical health and personal protective equipment some important factors for consideration in managing heat exhaustion among the firefighters. Moreover, to prevent incidents of heat exhaustion among the fire fighters, the NFPA recommends for fire fighters to; drink water frequently before the beginning of the shift and during the shift as a way of preventing dehydration during the shift, wear breathable loose fitting clothing to help sweat evaporate, gradually build up to heavy work as a way of becoming acclimated to the hotter weather, and to schedule training especially during the coolest parts of the day.

The NFPA equally recommends that firefighters take more breaks in extreme heat and humidity environments, avoid drinks with caffeine, large amount of sugar and alcohol as a way of minimizing core temperature and to monitor the physical condition of self and that of the co-worker. Practicing of the precautionary recommendations have been instrumental in the prevention of heat exhaustion and heat injuries among the firefighter. However, there is still a high incidence of heat exhaustion in the firefighting service.

One of the most predominant symptoms of heat exhaustion among the firefighters is heat syncope, which usually occurs in individuals who are not accustomed to hot environments and those who usually undergo prolonged standing. Owing to extreme heats during firefighting incidents, blood vessels are dilated, resulting to the pooling of blood in the lower extremities, which leads to reduced blood flow to the brain, contributing to the fainting incidents. The firefighters must thus be adequately trained in first aid skills as well as CPR to ensure that they effectively respond to their co-workers who experience the harmful effects of heat exhaustion like fainting. Moreover, firefighters can be taught to be on the continuous move during firefighting incidents to facilitate the movement of blood throughout the body as a way of preventing fainting (Son, Lee, & Tochihara, 2013).

Heat cramps is another significant symptom of heat exhaustion. As a result of extreme heat during firefighting, the body produces a lot of sweat, which results in the loss of electrolytes, especially sodium. Cramps affect the voluntary muscles of extremities and abdominal wall in some cases. In as much as heat cramps respond well to rest in cold environments and replacement of oral fluids, they are a warning sign of potentially more serious situation, thus during firefighting, the firefighters should be able to consume oral saline solution to prevent adverse effects of electrolyte loss.

## Conclusion

Heat exhaustion is a particular danger to both the physical and mental health of the firefighters. It is thus important for the firefighters to use appropriate protective measures, undergo relevant training, be in a position to monitor the signs and symptoms of heat exhaustion as well as maintain a healthy physic to prevent or minimize the effects of exposure to extreme temperatures. It is thus a call for the fire service departments to equip their servicemen with modern state of the art equipment as a way of reducing the number of mortalities associated with heat exhaustion (Patel et al., 2006).

## References

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