

THE EFFECT OF HEAT ON FIREFIGHTERS' WORK BEHAVIOUR AND PHYSIOLOGY DURING SIMULATED FIREFIGHTING SHIFTS

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BACKGROUND

Over the last decade there has been unprecedented fire activity across Australia, and experts in the field suggest this is likely to continue in the coming years. The escalating annual fire threat increases the workload and risks for Australia's volunteer and salaried firefighting work force.

Whilst hot temperatures and firefighting go hand in hand, data collected post the Ash Wednesday and Black Saturday disasters suggest that firefighters were often performing important work in neutral environmental temperatures of around 15 degrees. Understanding the firefighters responses and work demands in varying climatic conditions will enable agencies to preserve the health and safety of their personnel across a range of temperatures.



WHAT DO WE KNOW?

- There is a huge body of work surrounding heat and exercise physiology
- The majority of this work has been conducted in a **rigorously controlled lab setting**
- Researchers **manipulate the variable of interest** (e.g., temperature) and **control all other variables** to ensure results are directly attributed to the manipulated variable
- **The problem** with using this research to inform **fireground workplace practices?** It utilises **different**:
 - Modes of exercise
 - Work : rest ratios
 - Work durations
 - Work intensities



WHAT DON'T WE KNOW?

- There is little research that investigates the effect of ambient temperatures on **long-duration manual handling work**, such as firefighting
- The small pool of research in this area has been conducted in a **field setting**
- Field research has too many **confounding variables** to clearly quantify the effect of heat on the worker
- There is no quality research that looks at how the **actual work** is affected
- Quantifying the effect of heat on the **performance of fireground duties** is extremely important given the role firefighters play in **safeguarding our country**



MY RESEARCH

- Aims to bridge the gap between these two types of research by investigating firefighters performing **firefighting tasks**, but in a **rigorously controlled simulated setting**

WHY IS THIS IMPORTANT?

- We can assess the **effect of heat on the firefighter** when compared to a neutral environment, but also the effect that heat has on the **performance of fireground tasks**
- The results from this research can then confidently inform the fire industry of the effect of heat on both the worker and the work
- These results could lead to the implementation of **valid workplace practices** that optimize the **effectiveness of our fire personnel**