

Cardiovascular risk screening of Australian Volunteer Firefighters

Jace Drain¹, Alex Wolkow¹, Peter Langridge², Kevin Netto¹, Jeff Green², David Nichols² and Brad Aisbett¹.

¹School of Exercise and Nutrition Sciences, Deakin University, Burwood, VIC; ²Country Fire Authority, Burwood, VIC.

Overview

Intense work bouts may put some firefighters at a high risk of a cardiac event (eg; heart attack, stroke, angina) during a bushfire shift.¹ Identifying firefighters with increased cardiovascular (CV) risk is important for the health and safety of themselves and their crew.

Physical Demands of Bushfire Suppression

Bushfire suppression involves long periods of low intensity work interspersed with brief periods of vigorous work.^{2, 3}

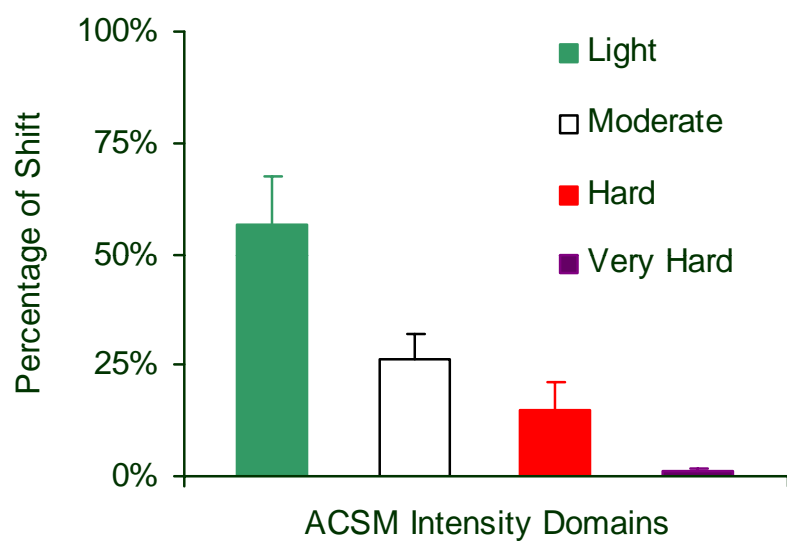


Figure 1. Physical demands of bushfire suppression.²

Guidelines

American College of Sports Medicine (ACSM) and Sports Medicine Australia (SMA) recommend that prior to undertaking vigorous exercise or work, individuals undergo CV screening for risk factors such as high blood pressure, high cholesterol and obesity.

Individuals (i.e. firefighters) with **two or more risk factors** should undertake medically supervised CV tests (**\$150+ per test**) before gaining clearance to undertake vigorous work.



Bushfire Fighter CV Health

Figure 2 shows that 65% of the firefighters tested (240 males, 62 females, from 19 brigades) have two or more risk factors - moderate CV risk.

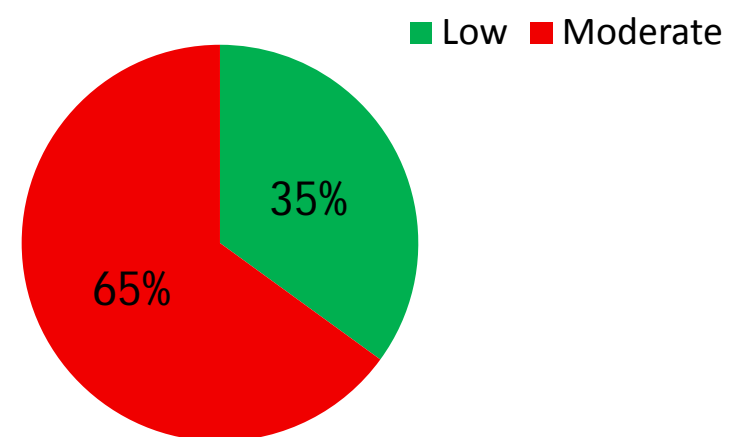


Figure 2. Firefighters with low or moderate CV risk.

ACSM / SMA would recommend they undertake medically supervised CV tests before gaining clearance to undertake vigorous work (including firefighting).

For an agency of 50,000 volunteers, the CV tests for 32,500 volunteers could cost up to \$5 million.

Other findings;

- 24 to 31% were hypertensive (high blood pressure)
- 37% had high total cholesterol
- 53% had high LDL ("bad") cholesterol
- 40% ♂ and 33% ♀ had high risk waist circumference
-**these results are similar to the Australian population**

Discussion

- Strict application of ACSM / SMA CV risk screening protocols could represent substantial financial cost to Australian fire agencies.
- Australian fire agencies should explore health and well-being programs to reduce CV risk in their personnel.
- Internationally, health and well-being programs have been shown to improve firefighters' cardiovascular health and reduce compensation costs⁴.

1. Balady et al. Recommendations for cardio-vascular screening, staffing and emergency policies at health/fitness facilities. *Circulation* 1998; 97:2283-93.
 2. Phillips et al. Work demands of tanker based bushfire suppression. AFAC Annual Conference, Hobart, Tasmania, 2007.
 3. Budd et al. Physiological and subjective responses of men suppressing wildland fires. *Int J Wildland Fire* 1997; 7:133-44.
 4. Duffy et al. The Fire Services Joint Labor Management Wellness-Fitness Initiative. 2008, Third Ed. 66 p.