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A Profile of Injuries Sustained by Firefighters: A Critical Review

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Background and aims

Due to the unpredictable, varied, and physical nature of firefighting duties, firefighters are at a high risk of work-related physical injury, suffering over three times the rates of those reported in the private sector. In addition, firefighters are required to carry external loads whilst performing key tasks.

Injuries to firefighters incur costs to the individual and the firefighting organisation, in the form of resource, personnel and capability costs.

The aim of this critical narrative review was to identify, critically appraise and synthesise key findings from recent literature investigating firefighting musculoskeletal injuries to inform injury reduction programs.

Methods

- The methodological approach was registered in advance with PROSPERO and was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.
- Study quality was assessed using the Downs and Black checklist with scores graded according to the Kennelly grading system.
- Levels of evidence were ranked according to the Australian National Health and Medical Research Council.

Musculoskeletal injuries affect up to seven out of ten firefighters.

Musculoskeletal disorders are reported to be the main contributor to medical and compensation cost of injuries.



Results

Of the 8231 studies identified, 17 met the criteria for inclusion.

The methodological quality of the studies was 'fair' with a level of evidence of III-2.

Musculoskeletal injury rates ranged from 9% to 74%.

Most common sites of injuries:

- Back (20.0% to 32.0%)
- Knee (8.2% to 22.6%)
- Ankle (8.2% to 10.7%)

Most common nature of injury:

- Sprains and strains (16.0% to 74%)
- Wounds, cuts and bleeding (42.3%)
- Lacerations and contusions (28.9%)

Leading mechanisms of injury:

- Slips, trips, and falls (18.0% to 21.3%)
- Bending, lifting, and squatting (23.2%)

Type of activity associated with injuries

- General activities at the fire station (31% to 37.9%)
- Physical training (26.6% to 28%)
- Firefighting (10.2%)

Conclusion and implications

There appear to be similarities between the injuries presenting in firefighters and those of other tactical populations. Mitigating and rehabilitating these injuries may be of benefit across the tactical spectrum.

This review may inform injury reduction strategies, and safety processes to mitigate injuries may be of benefit across tactical populations.

