# A literature review of musculoskeletal injuries in firefighters

We wanted to know the extent and nature of the published research regarding bone and joint injuries in firefighters.

## What is the problem?

Firefighters frequently encounter environmental and workplace hazards in unpredictable situations, where overexertion or accidents may lead to bone and joint or musculoskeletal (MSK) injury. Previous studies have focused on burns and inhalation injuries, but few have specifically examined MSK injuries. Recent studies indicate that MSK injuries are a major problem in firefighters. The purpose of this study is to describe the extent and nature of the published scientific literature on MSK injuries in firefighters, including: 1) injury frequency and patterns, 2) prevention and rehabilitation interventions.

## How did the team study the problem?

We searched different biomedical, allied health and behavioural science databases of published literature on MSK injuries in firefighters. Two raters independently screened 1164 articles for inclusion in our literature review. A total of 29 studies reporting on MSK injury frequency and patterns or prevention and rehabilitation interventions for firefighters were included.

## What did the team find?

More than half of the published firefighter research was done in the U.S. The majority of existing literature were studies that observed the frequency and patterns of MSK injuries (as a subset of all injuries) in groups of firefighters. The most commonly examined MSK injuries were sprains and strains (21 studies). The most commonly reported causes of MSK injuries were "slips, trips, and falls" and "lifting or bending" (9 studies). Several studies highlighted the occurrence of MSK injuries during on-the-job fitness training. We did not find any studies on MSK injury prevention in firefighters. Due to their small numbers, female firefighters were often excluded from the samples.

## How can this research be used?

Our literature review identified a need for future studies on specific MSK injuries such as rotator cuff tears or low back pains, as well as research that focuses on female firefighters. Researchers can use the reported mechanisms of injuries to design interventions to prevent MSK injuries in firefighters.

## Cautions

We only searched English literature from published sources. Based on the search strategy and selected keywords we used to describe injuries or interventions, we may have missed some studies; however, we ran variations of searches to check for missing studies. Finally, we excluded studies that may have included firefighters as a small subset of the general population.

**Reference:** Braun A, Hempstock G, Perruzza S. (Supervisors: MacDermid J & Sinden K). A scoping review of musculoskeletal injuries in firefighters: Epidemiology, and primary/secondary prevention. McMaster University Research Evidence-Based Practice Symposium. Hamilton, Ontario. July 25, 2017.

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