

KEY FINDINGS

- Firefighters emphasized high demands in all domains.
- Finding salient, clear, and broadly applicable items is challenging given the diversity of firefighter work roles.

Background

- Previous validation of a generic Work Limitations Questionnaire tested in firefighters indicated problems with floor effects—likely arising from the unique and challenging nature of firefighting work.¹
- We concluded that the existing generic tools could not be used to assess firefighter work limitations.

Objective

- To develop a firefighter-specific work limitations questionnaire using a mixed-methods approach.

Methods

Instrument Design

Item Generation (Qualitative)

- Twenty-one firefighters (15 males, 6 females) from across Canada (Alberta, British Columbia, Nova Scotia, Ontario, Prince Edward Island, Quebec) were interviewed using a semi-structured guide to assess areas of work limitation.
- The phone interviews were recorded and transcribed verbatim.
- Nominal group exercises were conducted with 20 firefighters at a provincial firefighter conference.
- Items generated from the firefighter interviews and nominal activities were categorized into the 5 domains.

Item Selection (Quantitative)

- Fifty-three firefighters completed a content analysis survey evaluating the relevance of the items and the frequency with which they were performed.
- From this analysis, items were classified as strong potential, questionable, or not appropriate.
- The strong and questionable items were further reduced and clarified by a panel of expert measurement experts working with firefighters.






Domain	Example Items
Physical 	<ul style="list-style-type: none"> • Wearing personal protective equipment and self-contained breathing apparatus • Using and manipulating tools (e.g., saws, ladders, extrication tools, hoses) in awkward positions (e.g., crouching, squatting, kneeling or overhead) • Working at heights
Social/Interpersonal 	<ul style="list-style-type: none"> • Working as a team with fellow firefighters • Meet expectations of your peers, senior officer in charge, the public, and employer • Living with people at the fire station • Dealing with the public
Cognitive 	<ul style="list-style-type: none"> • Able to remain alert for tasks that arise late in shift or in the middle of the night • Deal with changing priorities at an emergency situation • Paying attention to detail and policy
Emotional 	<ul style="list-style-type: none"> • Able to manage stress when going from quiet to emergency conditions • Keeping out distracting thoughts or memories while doing tasks. • Maintain calm and in control during critical events
Routine/Time Management 	<ul style="list-style-type: none"> • Perform tasks when sleep deprived • Maintaining firehouse routines (e.g., truck and equipment checks, general maintenance) • Complete tasks as efficiently as possible – with level of urgency required

Table 1. The 5 domains of the firefighter-specific work limitations questionnaire.

Results

- Descriptive content analysis identified 5 themes: physical, social/interpersonal, cognitive, emotional, routines/time management (Table 1).
- A beta version of a firefighter at-work limitations questionnaire was developed with five subscales, with each subscale containing 3 to 6 items.
- Firefighters endorsed the new measure as relevant to their work.
- Content validity index for a subset of items and the resulting overall scale was high (> 80%).
- Additional psychometric properties of the questionnaire are underway.



Conclusion

- A firefighter-specific work limitations questionnaire prototype was developed to assess the impact of health problems (e.g. cancer, PTSD, physical injury) on ability to perform firefighting.
- This type of instrument may also be useful in identifying early concerns with job abilities or planning return to work.
- Psychometric validation is needed.

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