

KEY FINDINGS

- Southwestern Ontario firefighters have high rates extremity musculoskeletal disorders and spinal pain.
- Length of service and age contribute to higher prevalence of musculoskeletal disorders, suggesting that prevention should focus on reducing exposures and maintaining physical capability over time.

Context

- Work-related injuries impose a significant health and economic burden and contribute to lost productivity.¹
- Firefighters have high rates of work-related injuries due to high physical demands of their job tasks.^{2,3}
- Regional specific information to support targeted workplace interventions and musculoskeletal disorders (MSDs) prevention strategies is lacking.

Objective

- To describe the prevalence of self-reported MSDs; and how the prevalence and severity of MSDs varies by age, tenure, height and weight.

Methods

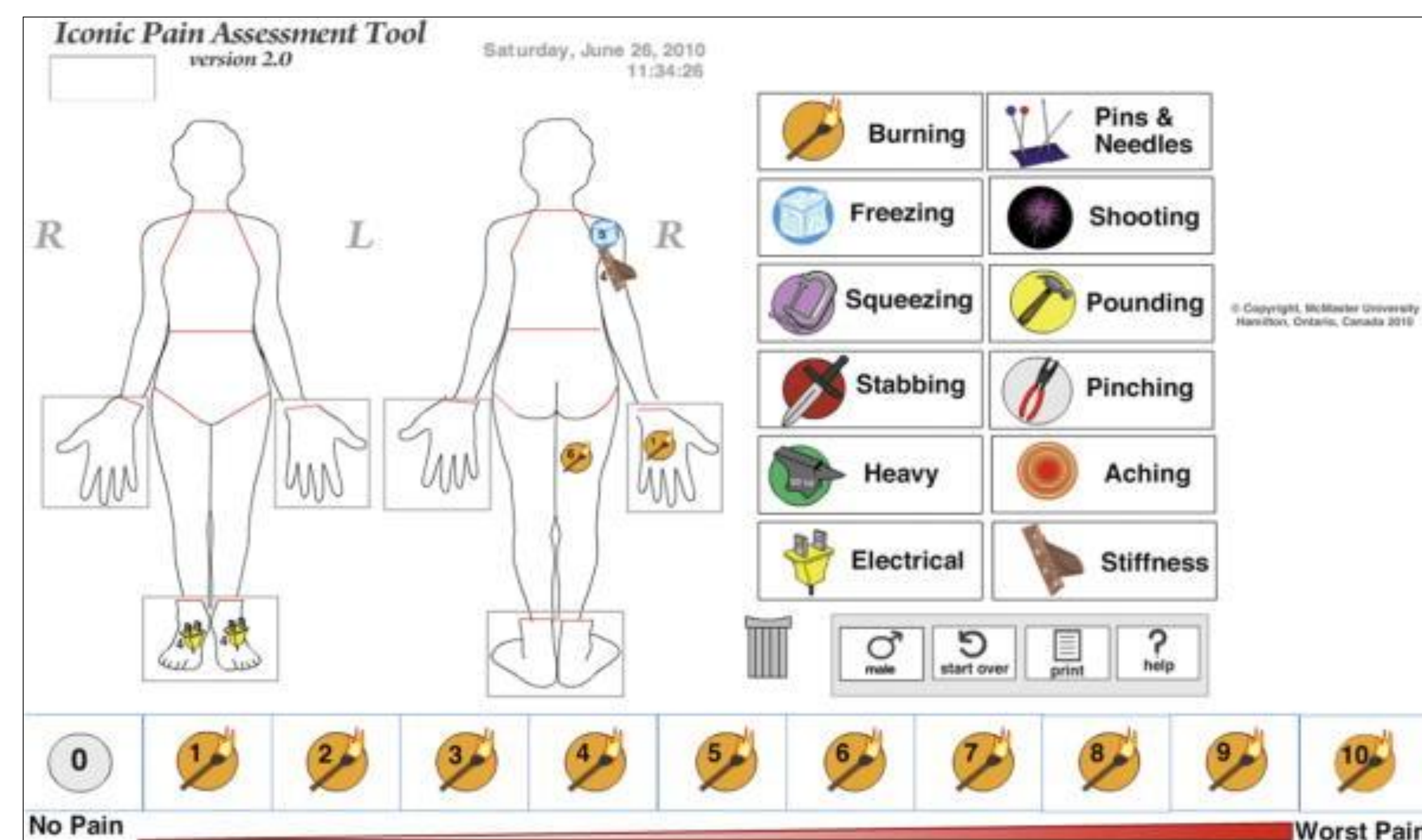
Study design: Cross-sectional

Setting: Firefighters were recruited from the City of Hamilton Fire Service

Data collection:

- Demographics and anthropometry (age, gender, height and weight, duration of firefighting service).
- On a body diagram of the Iconic Pain Assessment Tool (IPAT)⁴, firefighters marked the location(s) of the pain they felt on their body within the past week.
- Firefighters completed the relevant region-specific surveys:
 - Neck Disability Index (NDI)⁵
 - Roland Morris Disability Questionnaire (RMDQ)⁶
 - Lower Extremity Functional Scale (LEFS)⁷
 - Short Form of Disabilities of the Arm, Shoulder and Hand (Quick DASH)⁸.

Figure 1: The Iconic Pain Assessment Tool Version 2



Analysis

- Descriptive statistics of personal factors (e.g., age, gender).
- The scores of region-specific surveys (NDI, RMDQ, LEFS, Quick DASH) were analyzed separately amongst each of the 4 variables (age, weight, height and tenure) between two groups using Mann-Whitney test.
- The frequencies of regional MSDs were compared among the two groups for each of the four variables using logistic regression.

Results

- 294 out of 471 firefighters were recruited

Table 1: Demographic Characteristics

	Mean (SD)/ Frequencies
Gender:	
Male	283
Female	8
Age	42.6 (9.7)
Weight (KG)	91.8 (13.4)
Height (CM)	180.4 (10.7)
Duration of service (years)	15.1 (10.1)
NDI (Min = 0, Max = 50 [†])	6.5 (3,10) * (n = 58)
QDASH (Min = 0, Max = 100 [†])	9.1 (4.5,18.2) * (n = 129)
LEFS (Min = 0 [†] , Max = 80)	73 (66,78) * (n = 132)
RMDQ (Min = 0, Max = 24 [†])	1 (1,3) * (n = 96)

* Median (Inter-quartile range)
[†] Poorer Scores

Figure 2: Percentages of regional MSDs in firefighters

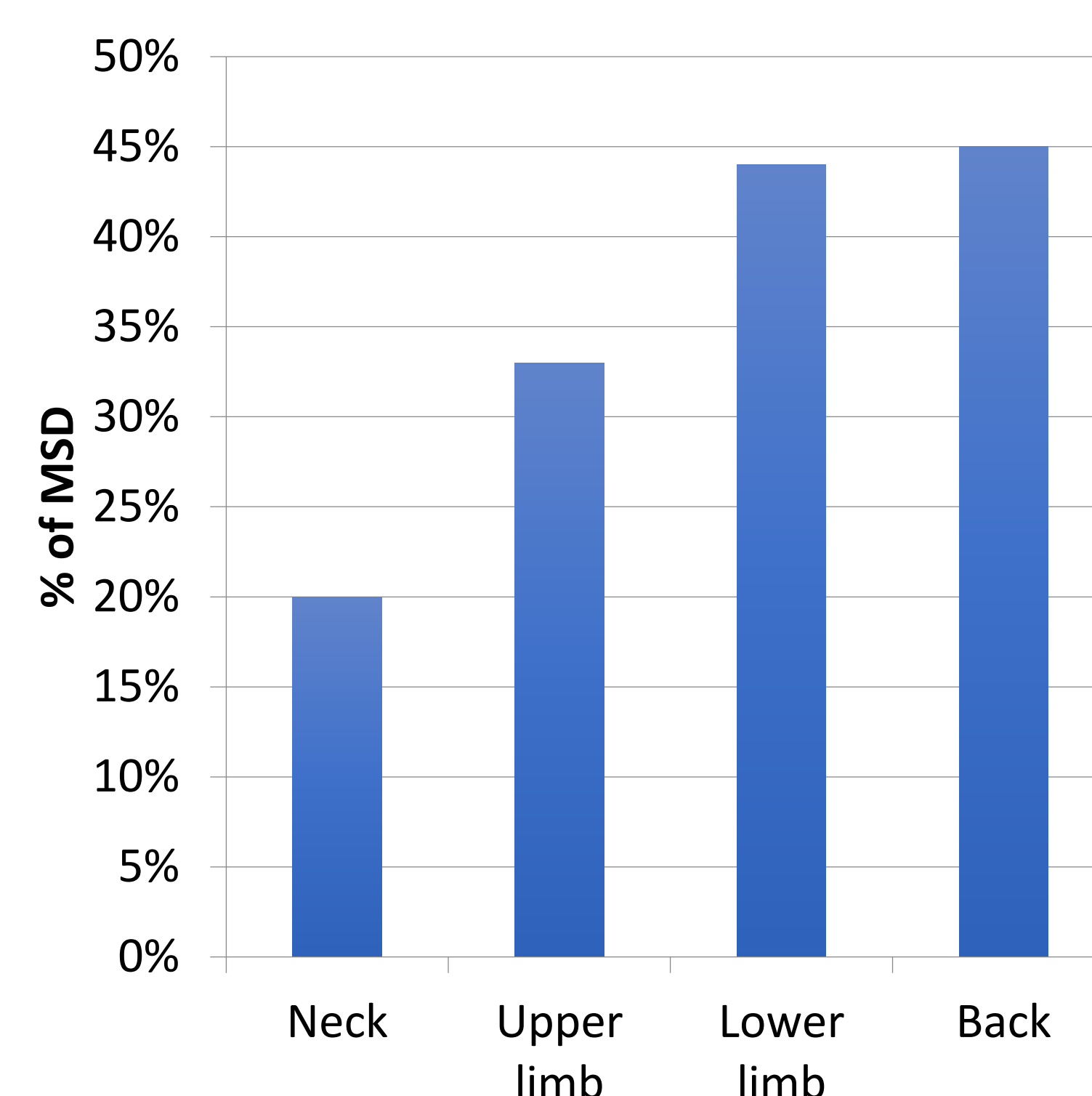


Table 2: Regional self-reported questionnaires between firefighters ≥42 and <42 years old

	Firefighters ≥ 42 years old (n = 179)	Firefighters < 42 years old (n = 115)
Median (inter-quartile range)		
NDI	8 (3,10)	4 (3,9)
QDASH	11.4 (4.5,18.2)	9.1 (4.5,15.9)
LEFS	71 (65,77)	75.5 (69.5,78.5)*
RMDQ	2 (1,3)	1 (0,2)*

Table 3: Regional self-reported questionnaires between firefighters with ≥ 15 years of service and < 15 years of service

	Firefighters ≥ 15 years of service (n = 160)	Firefighters < 15 years of service (n = 134)
Median (inter-quartile range)		
NDI	8 (3.5,11.5)	4.5 (3,8)
QDASH	11.4 (4.5,18.2)	9.1 (2.3,11.4)
LEFS	71 (64,77)	76 (70,79)*
RMDQ	2 (1,4)	1 (0,2)

Figure 3: Regional MSDs frequencies in firefighters with ≥ 15 years of service and < 15 years of service

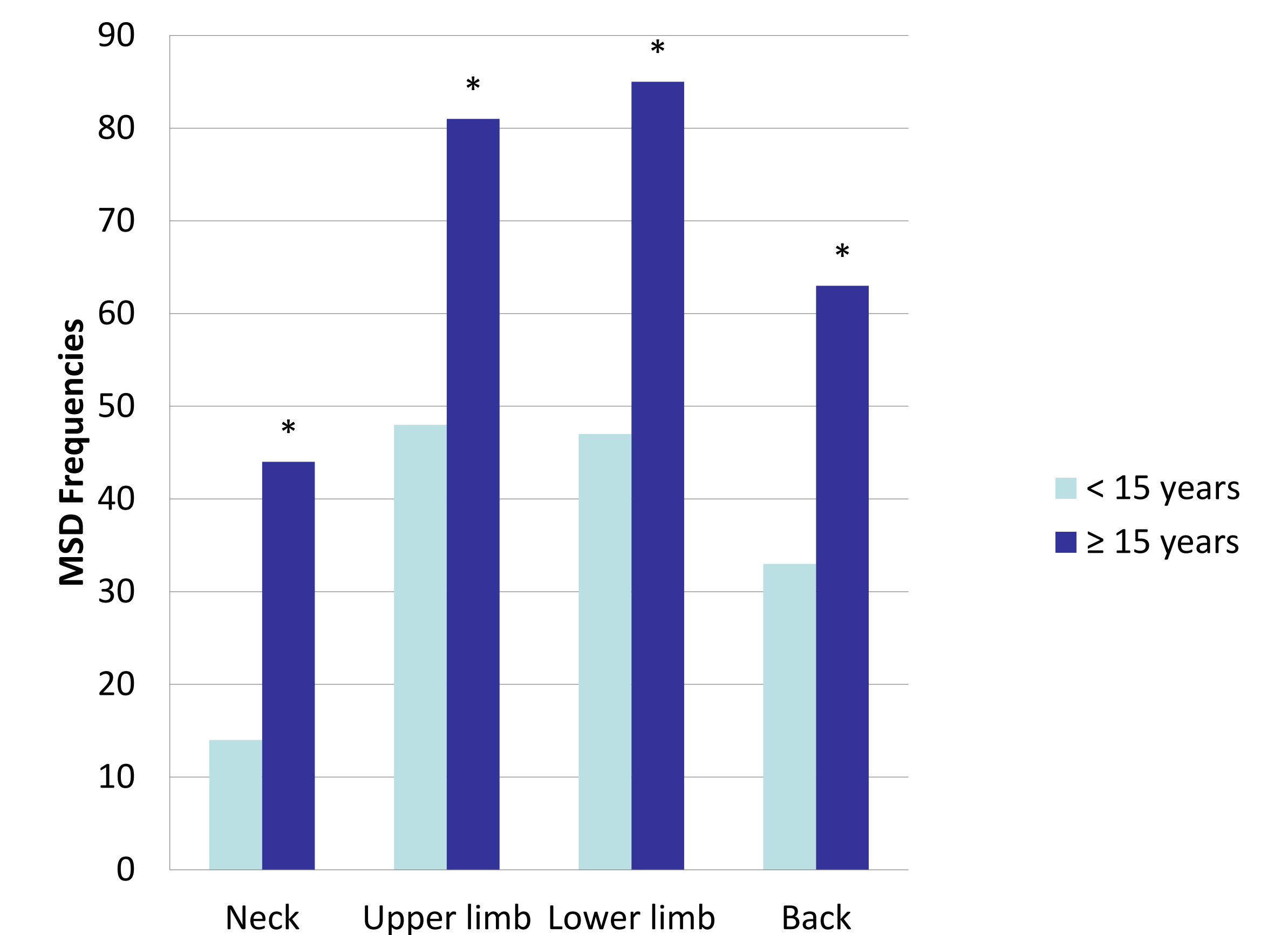
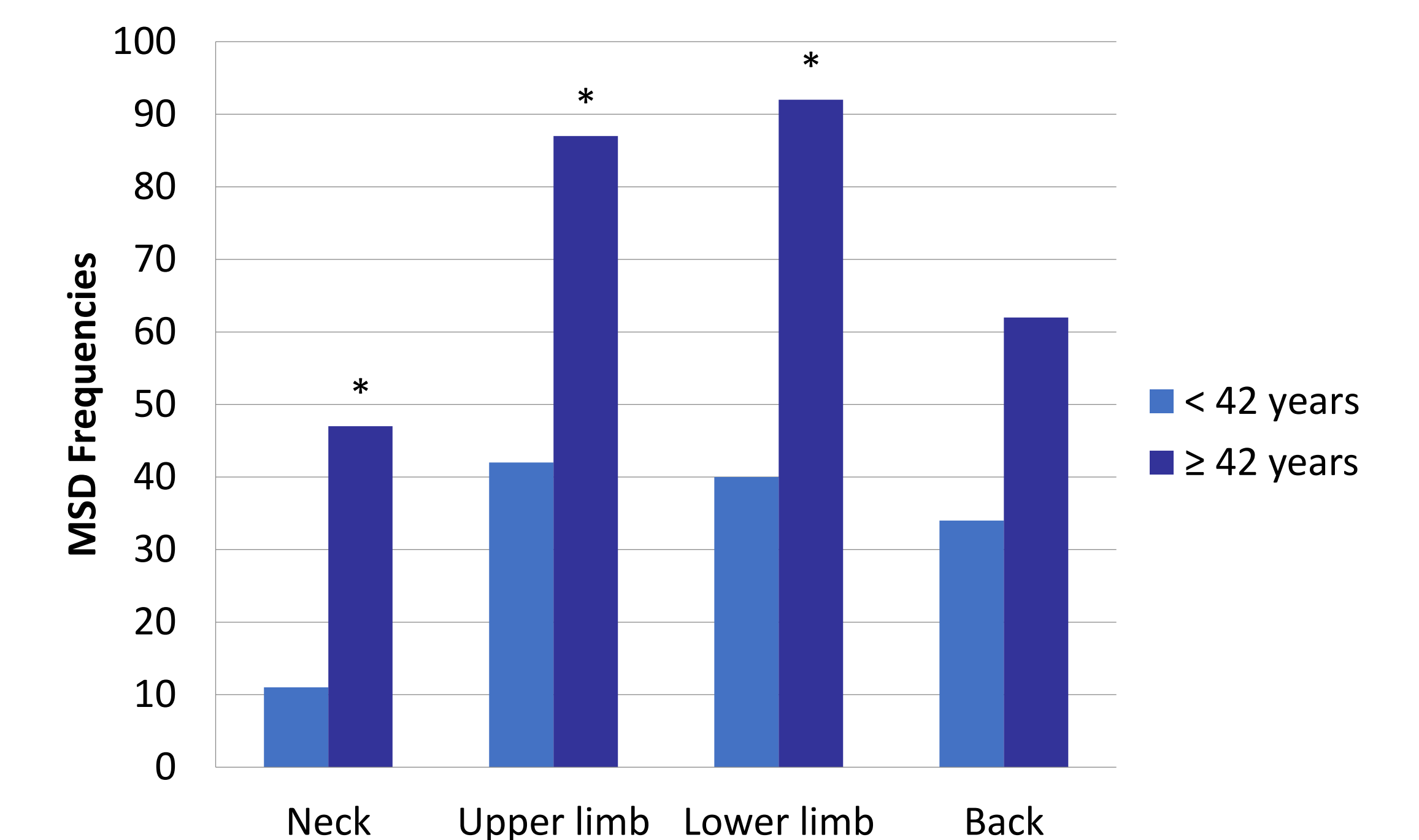


Figure 4: Regional MSDs frequencies in firefighters ≥42 and <42 years old



Discussion

- This is the first study to determine the prevalence of MSDs in Canadian firefighters and compare the severity and prevalence of MSDs among younger and older firefighters.
- The current study confirmed the need for primary and secondary injury prevention programs for firefighters.
- Our findings indicate that new scales that capture disability or MSDs in firefighters are needed.

Conclusion

- This study indicates that southwestern Ontario firefighters have a high prevalence of extremity MSDs and spinal pain.
- Tenure and age contribute to higher prevalence of MSDs suggesting that prevention should focus on reducing exposures and maintaining physical capability over time.