BEST PRACTICES RECOMMENDATIONS

The following are best practices recommendations for reducing musculoskeletal disorders during EMS incidents, on-duty physical training, apparatus design and handling large-diameter hose.

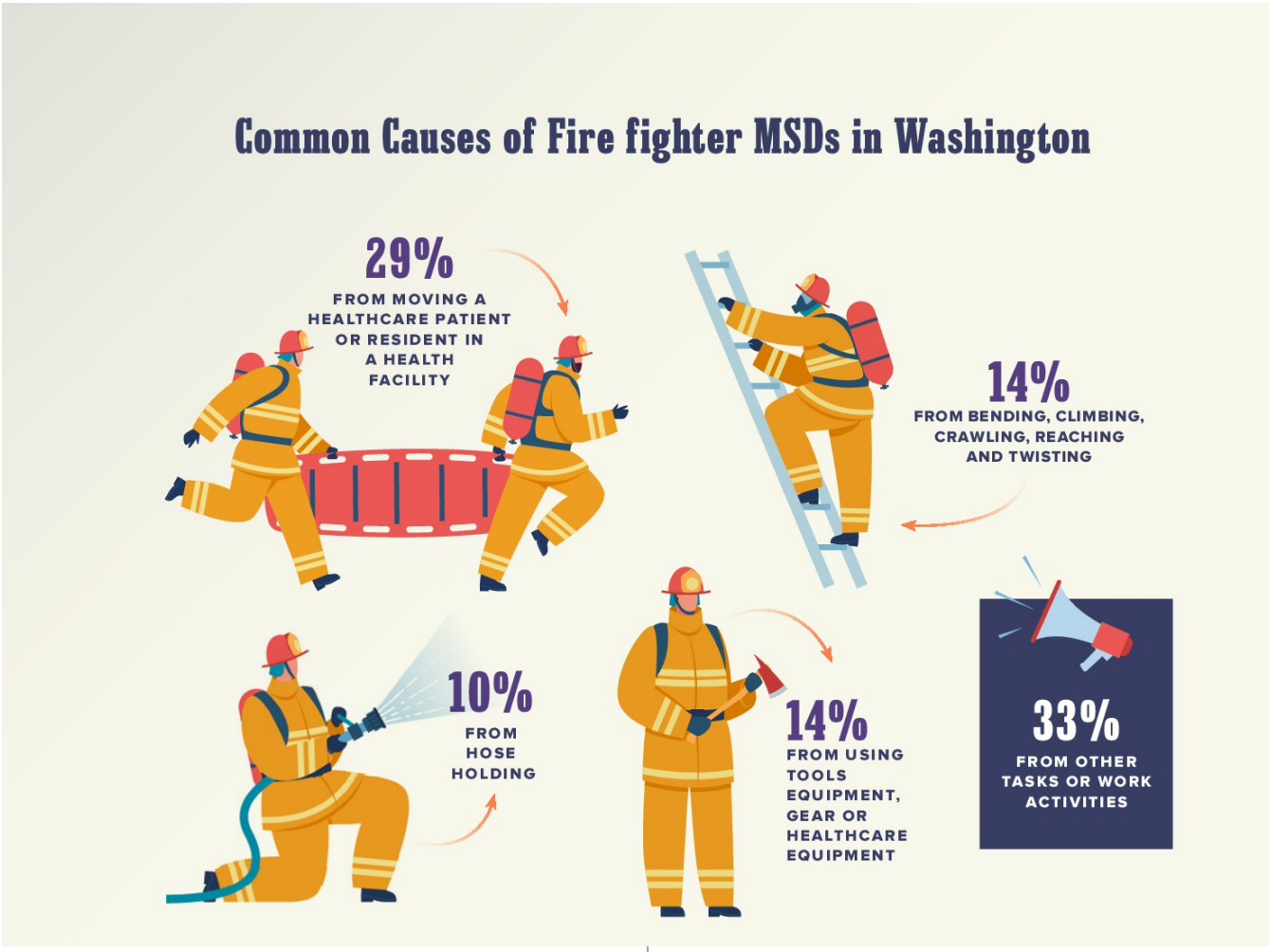
EMS INCIDENTS

POWERED STRETCHERS AND LOADERS

One out of four EMS workers will suffer a career-ending back injury in the field within their first four years, primarily due to lifting (Sanders, 2011). Some of these injuries occur while the patient is being loaded onto the stretcher, while others are due to lifting the stretcher and loading the patient into the ambulance. Powered stretchers and loaders significantly reduce the physical back and shoulder strain placed on fire and EMS personnel during repetitive lifting and lowering of the stretcher, and repetitive loading and unloading of patients during EMS incidents and transports. Patients, EMS equipment and stretchers are heavy. Powered stretchers assist fire and EMS personnel with lifting and lowering a gurney through a battery-powered hydraulic system, which raises and lowers the stretcher with the push of a button. Powered loaders improve personnel and patient safety by allowing loading and unloading into the ambulance without manually lifting and supporting the weight of the stretcher and patient during the process. Powered stretchers and loaders make transfers and transports not only safer, but easier for both first responders and the patient.

STRETCHER STATISTICS

Using powered stretchers may decrease compression forces on spinal discs by approximately 50% and shear forces by approximately 46% compared with manual stretchers (Fredericks, 2013). One study done in Canada compared injury rates of two different organizations during EMS incidents. One organization used powered stretchers and loaders while the other used manual stretchers. One year after introducing powered stretchers, occupational injuries dropped 78%. Meanwhile, injuries increased 37% over the same period when using manual stretchers (Armstrong, 2017). An analysis of costs and benefits revealed that investing in powered stretcher and load systems would yield a return on investment within the operational lifespan of the system. This return would be achieved through decreased expenses related to workers' compensation claims. (Armstrong, 2017).



STAIR CHAIRS

Stair chairs allow fire and EMS personnel to carry patients up and down stairs and in other tight spaces when using a stretcher is not an option. Navigating a patient on a blanket, backboard, scoop stretcher or even a Reeves™ Sleeve Dragable stretcher through narrow areas and corners can be challenging, requiring personnel to put their bodies in awkward and compromising positions to remove a patient from their home. Well-designed stair chairs are equipped with wheels, tracks and extending handles to aid first responders with moving a patient safely down a hallway, a set of stairs or even a few steps. The tracks allow responders to lower and move patients down stairs without having to lift the patient, increasing safety for both first responders and the patient. The weight of the patient and the equipment is transferred through the tracks and onto the stairs, creating a braking force that controls the descent, improves ergonomics, and reduces strain, fatigue, and injuries (Lavender, 2007). Stair chairs equipped with tracks allow gliding on stairs, and adjustable handles help personnel stand more upright. The gliding movement significantly reduces back compression forces and decreases the physical demands placed on the worker when compared to traditional chairs.

CARDIOPULMONARY RESUSCITATION (CPR)

Mechanical chest compression devices can significantly reduce first responder fatigue and subsequent injury risk while maintaining consistent chest compressions to patients during CPR emergencies (Lucas, 2023). First responders are often required to do manual chest compressions while standing on a gurney or standing while unrestrained in the back of an EMS unit during a priority transport. Mechanical chest compression devices reduce fatigue, awkward positions, and tripping, slipping or falling incidents during CPR. Furthermore, mechanical chest compression devices increase personnel safety when prolonged CPR is required during patient transport.

LEFT: *LUCAS® Chest Compression System*