

## KEY FINDINGS

### Exercise Injury

- Exercise injuries account for 27–33% of all on-duty injuries in the fire service
- Shoulder and back were the most common injury sites — reported in 83% and 73% of practitioner cases
- Exercise injuries average \$8,031 per incident in medical and workers' compensation costs

### How the Study Was Done

- 14 licensed healthcare practitioners interviewed — athletic trainers, physical therapists, physicians, and nurse practitioners
- All with experience treating firefighter exercise injuries within the past year
- Approximately 89,000 combined treatment encounters with firefighter patients
- Interviews identified injury locations, risk factors, and mechanisms

### What's At Stake

- Poor exercise technique is correctable — but only if it's identified and addressed
- Shoulder and back injuries directly compromise fireground performance and career longevity
- Firefighters who exercise regularly are half as likely to sustain a non-exercise occupational injury — the answer is better technique, not less training



## Etiology of Exercise Injuries in Firefighters: A Healthcare Practitioners' Perspective

### SUMMARY:

#### Why This Matters to You

The people treating your exercise injuries have seen the patterns. Researchers interviewed 14 healthcare practitioners who regularly treat firefighter injuries to find out exactly why firefighters get hurt while training. Their findings are specific and actionable — most exercise injuries come down to how you move, how recovered you are, and whether anyone is teaching you proper mechanics.

## Why Firefighters Get Hurt Training: What Practitioners Are Seeing

### FINDINGS:

#### The Most Important Things to Know

- Resistance training is the primary injury mechanism: It was identified as the leading cause of exercise injuries in 51% of practitioner excerpts — with poor lifting technique specifically driving 44% of all identified injury mechanisms. Most of those injuries landed at the shoulder and back.
- Immobility leads directly to injury: Practitioners consistently described how limited range of motion impairs movement proficiency — tight muscles produce compensatory patterns, which produce injury. Mobility must be addressed before loading any movement.
- Age creates risk in both directions: Younger firefighters tended to overexert and compete during training; older firefighters accumulated wear-and-tear from years of unaddressed movement deficits. Both pathways lead to the same injury sites — shoulder and back.
- Fatigue, sleep, and recovery are underrated risk factors: Fatigue and inadequate recovery were cited in 21% of injury excerpts — directly degrading movement quality during training and setting the stage for injury even in experienced firefighters.

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## Big Picture: What Actually Works

### FIRE STATION TALKS

- Exercise injuries are common but predictable. They account for up to a third of all on-duty injuries — and most come down to poor lifting technique and immobility-driven movement deficits. Both are correctable with the right instruction.
- The shoulder and back are your most vulnerable areas. Reported as injury sites in 83% and 73% of practitioner excerpts — protecting them starts with how you train, not after you're already hurt.
- Resistance training without movement education is a liability. Firefighters who received fitness training plus movement education improved in both — while the training-only group actually declined in movement proficiency.
- Overexertion is the other major mechanism. Too much load, too soon, too often, without adequate recovery is a consistent injury pattern — cited across all age groups and exercise types.

## Key Actions: To Train Without Getting Hurt

### TAKEAWAYS

- Master lifting mechanics — and maintain them. Poor resistance training technique was the single most identified injury mechanism. Technique is the ongoing discipline that keeps experienced firefighters healthy and on the job.
- Work on mobility before you load movement. Immobility was the consistent precursor to poor mechanics. Prioritize hip, thoracic, and shoulder mobility — especially before resistance training sessions.
- Adjust training when you're fatigued or sleep-deprived. Fatigue directly degrades movement quality — that's when technique breaks down and injuries happen. Don't train at the same intensity post-shift or after a bad night.

## Data Sources:

EASTMAN, A.Q., ROUS, B., LANGFORD, E.L., TATRO, A.L., HEEBNER, N.R., GRIBBLE, P.A., LANPHERE, R., & ABEL, M.G. (2023). ETIOLOGY OF EXERCISE INJURIES IN FIREFIGHTERS: A HEALTHCARE PRACTITIONERS' PERSPECTIVE. HEALTHCARE, 11, 2989.

## What Chiefs Can Do: About Injury Prevention

### TAKING THE LEAD

- Bring in a qualified strength and conditioning practitioner. Practitioners consistently called for qualified professionals to teach and monitor proper mechanics — not just peer trainers or self-directed gym time. Technique requires instruction.
- Add movement screening to your fitness program. Identifying deficits early is more efficient than treating injuries after the fact.
- Build programming that combines fitness and movement education. Training without movement quality instruction can decrease movement proficiency. Fitness gains built on poor mechanics produce injuries.
- Make proper technique a department standard. Poor lifting form was the top identified injury mechanism — and it is correctable with education and accountability.
- Create conditions for adequate recovery. Fatigue was a significant risk factor cited by practitioners. Shift schedules, sleep environments, and workload policies all directly affect recovery.
- Track exercise injuries as their own category. At an average of \$8,031 per incident, exercise injuries are a measurable cost. Tracking them separately reveals patterns that general injury surveillance misses and makes the case for prevention investment.

## Conclusion

EXERCISE INJURIES ACCOUNT FOR UP TO A THIRD OF ALL ON-DUTY FIREFIGHTER INJURIES — AND MOST ARE PREVENTABLE. POOR RESISTANCE TRAINING TECHNIQUE IS THE LEADING MECHANISM. THE SHOULDER AND BACK ARE THE PRIMARY TARGETS. IMMOBILITY, POOR MOVEMENT QUALITY, AND FATIGUE SET THE STAGE. QUALIFIED INSTRUCTION, MOVEMENT SCREENING, AND DELIBERATE TECHNIQUE ARE THE ANSWER. TRAIN SMART, MOVE WELL, AND PROTECT THE BODY YOU NEED FOR THE JOB.

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