

RHABDO CAN KILL YOU. MOST FIREFIGHTERS HAVE NEVER HEARD OF IT.

FIREFIGHTER
HEALTH SERIES
— EXERTIONAL RHABDO



OVEREXERTION — IN ACADEMY EVOLUTIONS, FIREGROUND OPERATIONS OR OFF-DUTY EXERCISE — CAN CAUSE A SERIOUS MUSCLE INJURY THAT RANGES FROM LOCALIZED PAIN TO MULTI-ORGAN FAILURE AND DEATH.

WHAT IS IT?

Exertional rhabdomyolysis (ER): severe muscle injury caused by strenuous physical activity that leads to the release of muscle cell contents into the bloodstream, where they can cause kidney damage, multi-organ failure and death.

50%

Some reports suggest 50% of ER cases may progress to acute kidney injury.

10

Rhabdo cases out of 19 reported heat-related illnesses, spanning 11 cadet classes from 2013–2019.

26

confirmed wildfire rhabdo cases from 2008–2016, plus 5 compartment syndrome cases.

HOW BAD CAN IT GET?

Severity ranges from sore muscles to death:

MILD	SYMPTOMATIC	KIDNEY INJURY	COMPARTMENT SYNDROME	FATAL
MILD	Muscle soreness, elevated creatine kinase (CK). Often brushed off as normal training pain. Full recovery with rest — but continuing to push risks progression.			
	SYMPTOMATIC	Severe pain, swelling, possible dark urine. Needs removal from training, aggressive hydration and medical monitoring.		
	KIDNEY INJURY	Hospitalization required. Some patients need dialysis. Renal damage can be permanent if not treated quickly.		
	COMPARTMENT SYNDROME	Surgical emergency. Pressure buildup in muscle compartments. May require fasciotomy. Risk of permanent nerve damage, chronic pain or amputation.		
FATAL	Multi-organ failure. Driven by delayed recognition, continued exertion after symptoms appear, severe heat and dehydration.			

WHO'S MOST AT RISK



Academy Recruits

High-volume novel exercise, heat, limited recovery and cultural pressure to push past limits. Most known ER deaths in the fire service happen in training — not on the fireground.



Wildfire Firefighters

Consecutive operational periods, steep terrain, heavy gear, smoke reducing oxygen to muscles, and remote locations that delay recognition and treatment.



Anyone Working in Heat

Heat stress and dehydration multiply kidney risk dramatically. Personal Protective Equipment (PPE) accelerates heat buildup. Any firefighter doing prolonged heavy work in high temps is at risk.



Energy Drink and Stimulant Users

Pre-workout supplements, energy drinks and high-dose caffeine increase ER risk — especially combined with heat and exertion. Common in training environments.



Sickle Cell Trait Carriers

Significantly elevated ER risk. Individuals with sickle cell trait should monitor closely for early signs during strenuous training and disclose to medical staff.

WARNING SIGNS

- Muscle pain out of proportion to effort
- Swelling, stiffness, reduced movement
- Dark, cola-colored urine — act now
- Unusual weakness or fatigue
- Tingling, numbness, confusion
- Arrhythmia — get to a hospital

HOW TO REDUCE THE RISK



SCREEN BEFORE TRAINING

Pre-academy medical screening per National Fire Protection Association 1580, *Standard for Emergency Responder Occupational Health and Wellness*. Flag sickle cell trait, prior ER and medications that increase risk during heat exertion.



PROGRESS GRADUALLY

Never jump straight to high-rep calisthenics or heavy circuits. Individualize load. Build in recovery between sessions — and between days.



HYDRATE and COOL

Scheduled water breaks, electrolyte replacement for prolonged work, shaded rest and active cooling. Use urine color as a daily check.



ACT EARLY

Train cadres to recognize symptoms. Don't normalize pain. Transport when warning signs appear — do not wait for dark urine to confirm.

READ THE FULL REPORT AT <https://www.usfa.fema.gov/downloads/pdf/publications/exertional-rhabdomyolysis.pdf>

KNOW THE SIGNS. KNOW THE RISK. KNOW IT CAN HAPPEN TO YOU.



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