

Understanding the Dynamics of Stress & Decision-Making to Enhance Human Performance

BY NICHOLAS PAPA

The impact of stress on firefighter performance is one of the single-most overlooked and marginalized factors in the fire service (Photo 1). The term “tactical athlete” to describe firefighters has become a buzz word; creating a hybrid analogy comparing firefighting to both combat and sports. Despite the similarities of those arenas, firefighting is in a class all of its own. For firefighters, there is no off-season or -cycle. There is no training camp or work up. There is no advance notice providing the details of the game or the mission and the opportunity to prepare specifically for the event. And to solidify the disparity, our senses are significantly impaired; particularly our vision (the primary sensory input).¹

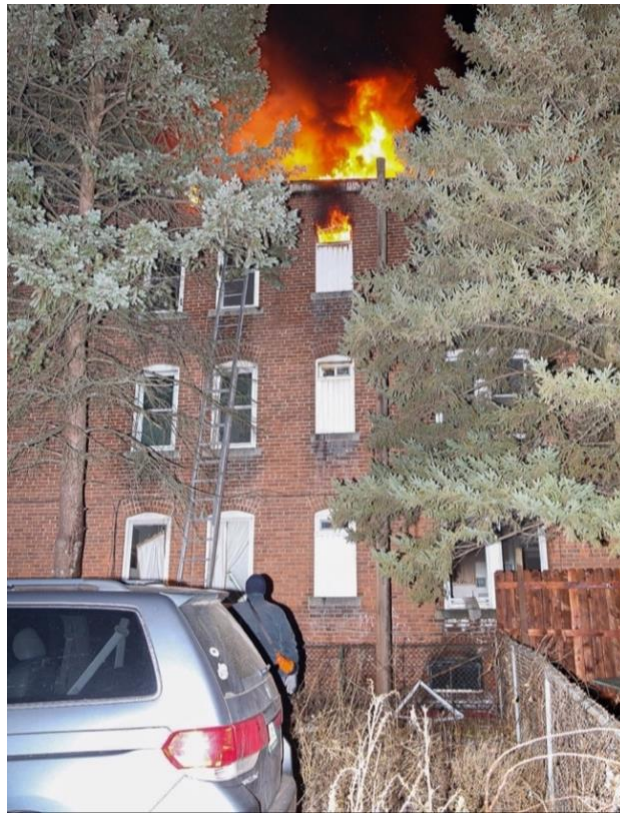


Photo 1: Maintaining the level of composure needed to perform in a high-stakes environment, such as entrapment under advanced fire conditions, will demand deliberate practice and intuitive execution (courtesy of Pat Dooley).

The acute stress response is a primal survival mechanism, designed to protect us in moments of peril. It is a powerful response that can drive us to perform incredible feats. This power, however, must be harnessed; as an unbridled response can counterproductively jeopardize our performance. This requires an understanding of how it works, as well as the decision-making process, and the measures we can take to regulate and refine them. As Navy

¹ Jason Brezler, Jimmy Lopez, Jake Dutton, lectures, *FDNY Mental Performance Initiative 13*, November 14, 2023.

Sea, Air, and Land (SEAL) Teams Commander Jocko Willink (ret.) stated, “Don’t think of stress as something you need to fight against. Think of it as something you need to work with.”²

When the limbic system—responsible for regulating our emotional and behavioral responses—is triggered by a perceived threat, the sympathetic division of the autonomic nervous system (ANS) is activated. The ANS, which regulates the involuntary physiological processes of the body, operates like a dial to modulate between the sympathetic division, and its counterpart, the parasympathetic. The sympathetic is a catabolic (pro-inflammatory) mechanism—releasing energy through the breakdown of complex molecules into simpler ones—for the purpose of priming the body for immediate action (also known as fight, flight, or freeze). The parasympathetic, conversely, is an anabolic (anti-inflammatory) mechanism—consuming energy through the production of complex molecules from simpler ones—for the purpose of restoring the body (also known as rest and digest/feed and breed).³ A simple analogy for this dynamic is the gas and brake pedals of a car: the sympathetic being the gas and parasympathetic being the brake for accelerating and decelerating the body’s level of arousal, respectively.⁴

Every second, our senses are inundated with over 11 million pieces of information. With sight being our primary source of sensory input, our eyes take in roughly 10 million alone. Thankfully, the thalamus (the information relaying part of the brain) parses through the sensory inputs (except smell) to filter out those which are unrelated or nonessential. The amygdala, also known as the watchdog or sentinel of the brain, scans the sensory information for threats. When a potential threat is detected, it sends a signal that produces a cascade of changes in the body: heart rate is increased, blood vessels are constricted to increase blood pressure (vasoconstriction), blood flow to the organs and muscles required for survival is prioritized, the amount of glucose in the bloodstream is increased, and non-essential functions are temporarily slowed or stopped altogether. This sympathetic response is triggered by a series of hormones and neurotransmitters (e.g., cortisol, epinephrine, norepinephrine), released along the hypothalamic-pituitary-adrenal (HPA) axis; the driver of the endocrine system. The hypothalamus (the regulating part of the brain), providing a bidirectional link between the endocrine system and the ANS, signals back to the amygdala, as well as to the neocortex (the thinking part of the brain), simultaneously. The pathway to the amygdala, however, is shorter and allows the signal to arrive there in roughly half the time it takes to reach the neocortex (occurring in thousandths of a second).⁵

Because of this accelerated rate, the amygdala will react to the sensory stimulus before the neocortex can determine its validity, if it comparatively associates a cue or pattern with a past event stored in the hippocampus (responsible for long-term memory). The circuit between the hypothalamus and the amygdala, however, only transmits a fraction of the signal, while the bulk is directed to the neocortex. These factors make the amygdala susceptible to a false match, which can initially generate an inaccurate response. Acting as a check and balance to those impulsive reactions, the neocortex, specifically the prefrontal cortex (responsible for decision-making, problem-solving, and working memory) and the inferior temporal (IT) cortex (responsible for visual object recognition and processing), which also works in concert with the hippocampus,

² Jocko Willink, *Jocko Underground Podcast*, Episode 70 (August 4, 2023).

³ Joel Jamieson, *Understanding Heart Rate Variability: Improving your Health & Performance*, The Dr. Gabrielle Lyon Show, May 27, 2025.

⁴ Rob Wilson, *Look. Is Your “Check Engine” Light On*, Jocko Podcast: Episode 495, June 18, 2025.

⁵ Daniel Goleman, *Emotional Intelligence: Why It Can Matter More Than IQ* (Bantam, 2005); American Psychological Association, *Stress Effects on the Body* (October 21, 2024); Harvard Health Review, *Understanding the Stress Response* (April 3, 2024).

verifies and regulates the signals of the amygdala's activation to ensure the response is appropriate for the issue being confronted.⁶

Containing over 500 million neurons (greater than the quantity within the spinal cord), the gut possesses its own complex nervous system that plays a role in this process as well. Known as the enteric nervous systems (ENS), it is the "most complex neural network outside of the brain."⁷ While it operates as a component of the ANS, the ENS also has a limited ability to operate independently; earning it the nickname 'the second brain.' The ENS serves as the link between the neurons in the gut and those within the brain, forming the gut-brain axis. The connection allows for bidirectional communication, transmitted along the vagus nerve, which signals activation of either the sympathetic or parasympathetic nervous system. The trillions of bacteria microbes found within the gut (the microbiome) produce neurotransmitters that are involved in sending those signals to the brain. The physiological sensations experienced (commonly described as 'gut feelings') have the power to influence mood, cognition, and behavior. These experiences are often inexplicable (at least in the moment), manifested at the subconscious level, and can drive our decision-making (also known as 'gut intuition').⁸

The degree of stress precipitated from a perceived threat, and the subsequent psychological and physiological response it generates, is directly correlated to the level of performance. Stress is a necessary evil, as it is required for us to perform optimally, stimulating our body and mind for action (known as eustress). Too much stress (known as distress) or even too little stress, however, can negatively impact performance. The stress–performance bell curve, known as the Yerkes-Dodson Law, visually demonstrates that high performance occurs at an intermediate stress level (Figure 1). When we are experiencing this moderate level of stress, we are energized and dialed in. Our actions are automatic and feel natural, almost effortless, also known as being in the zone or flow state. Low stress can fail to capture our attention, producing a lack of focus and urgency, leading to carelessness and complacency. High stress can trigger anxiety, frustration, exhaustion, and panic, causing a breakdown of our faculties.

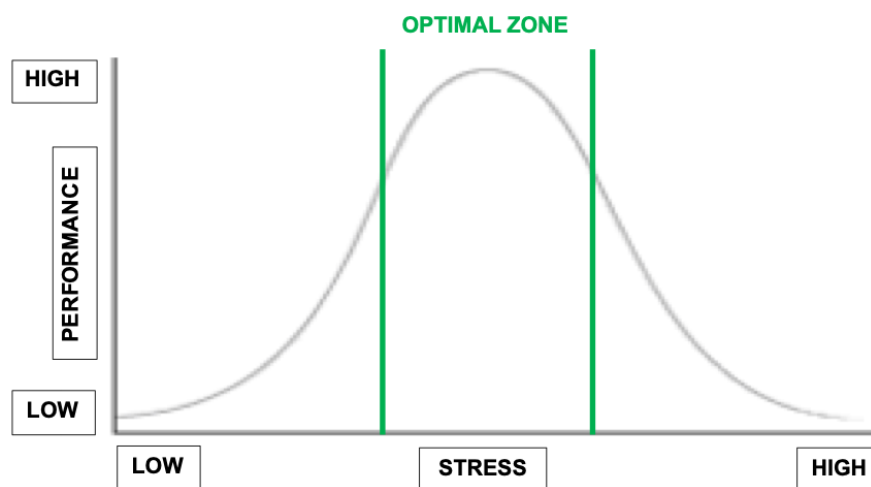


Figure 1: The stress-performance bell curve representing the Yerkes-Dodson Law.

⁶ Goleman, *Emotional Intelligence*; Rich Diviney, *The Attributes*.

⁷ The Cleveland Clinic, *The Gut-Brain Connection* (September, 20, 2023).

⁸ The Cleveland Clinic, *The Gut-Brain Connection*; Dr. Diego Bohórquez, *The Huberman Lab Podcast: The Science of Your Gut Sense & the Gut-Brain Axis* (May 27, 2024).

Exceeding the positive threshold of stress is a state also known as going off the backside of the curve or being right of center (referring to the aforementioned bell curve).⁹ The more overwhelmed we become, the greater the effect it will have on our cognitive and physical abilities. Once our level of arousal reaches that point of diminishing return—hormonally induced from emotional stress in response to the situation and the environment, not just physical stress and exertion—we will start to become impaired. Despite being largely stationary on the exterior, two of the most stressful positions on the fireground are the pump operator of the first arriving engine company and the incident commander. These individuals possess a tremendous amount of responsibility and are being inundated with emotional stress, particularly en route and in the first few minutes of an incident. They also have the disadvantage of not having a physical outlet to offload their arousal and having to work independently. Hyperarousal can interfere with the activation of the prefrontal cortex, due to sustained hormone production (the glucocorticoid cortisol); inhibiting rational thinking and working memory (also known as amygdala hijack). When this occurs, we become the most primitive version of ourselves; reacting on the impulse of survival. The physiological effects of hyperarousal that impact performance are as follows:¹⁰

- Tunnel vision (narrowing of the visual aperture)
- Auditory exclusion (dampening of sounds)
- Perceptual distortion (time and space)
- Motor skills deterioration (fine → complex → gross)
- Speech impairment

The principal triggers of hyperarousal are perceived danger, uncertainty, friction, and complexity, which collectively generate pressure. The higher the stakes (e.g., occupant entrapment or a mayday) and the more ambiguous, novel, or challenging the situation is, the greater the stress potential, and therefore, the likelihood of hyperarousal.

There are measures that can be taken to counteract the negative effects of stress prior to, during, and after an operation (also known as “Prime → Reset → Recover”):¹¹

- Stress Inoculation (“crawl → walk → run” model)
- Mental Rehearsal (performance imagery and Tactical Decision-Making Games)
- Routines (response rituals and mantras)
- Tactical Breathing (Box, 4-7-8, and Coherent Breathing and Cyclic Sighing [Figure 2])
- Resets (“stop → breathe → think → act”)
- Self-Talk & Mindset (constructive and process-oriented)
- Reflection & Refinement (debriefs and prescriptive training)
- Recovery & Wellness (nutrition/hydration, fitness, and sleep)

⁹ Grossman, *On Combat*; Robert Brown, “Auditory Exclusion and How the Sympathetic Response Affects Our Operational Performance on the Fireground,” *WNYF*, 2016; Robert Brown, “Smart Venting Using the SA Cycle,” *WNYF*, 2014; Jonathan Fader, *Life as Sport: What Top Athletes Can Teach You About How to Win* (Da Capo Press, 2016); Eric Nurnberg and Michael Asken, *Fire Psyche: Mental Toughness and the Valor Mindset for the Fireground* (Mind Sighting, 2014); Goleman, *Emotional Intelligence*.

¹⁰ Goleman, *Emotional Intelligence*; Psychological Association, *Stress Effects on the Body*; Harvard Health Review, *Understanding the Stress Response*; Jason Brezler, Jimmy Lopez, Jonathan Fader, and Jeff Facinelli, lectures, *FDNY Mental Performance Initiative 13*, November 14, 2023.

¹¹ Harry Moffitt, *The Fourth Pillar: Modern Stoicism and the Philosophy of High Performance* (Pan Macmillan Australia, 2025); Brezler, Lopez, Fader, and Facinelli, *FDNY Mental Performance Initiative 13*; Dan Shaw and Doug Mitchell, *Command and Control*, lecture, October 14, 2023.

The practices used during an operation, aim to actively downregulate the level of arousal, when experiencing a heightened sympathetic response. The common physiological cues of hyperarousal are as follows:

- Racing/bounding heart
- Rapid breathing
- Muscle tension (e.g., clenched fists or jaw)
- Dry mouth
- Sweating
- Internally hot
- Jittery/anxious

Because they are unique to each person, you must identify how your body responds to stress.

Preparation and readiness are among the best ways to proactively combat the negative effects of stress and achieve high performance; addressing the mental, physical, and tactical domains (known as the Performance Triad).¹² Training must consistently focus on the fundamental principles and practices to develop a “brilliance in the basics.” High performance is forged in commitment; requiring the ability to work through the boredom and monotony of repetition. Drilling must be relevant and practical, and reinforce the established processes. The context of the operation and its relationship to the fireground at large must also be provided to ensure comprehension and proper application. Incorporating stress inoculation in a controlled and progressive fashion is necessary to prepare for the pressure of the fireground. By developing our competence, we build our confidence, which collectively promotes composure on the fireground. As we gain automaticity in our processes, the more we can conserve our mental (and physical) capacity, and build our resilience. Increasing our cognitive bandwidth allows us to better pick up on the subtle details and changes occurring around us, in addition to channeling our focus in the right direction. The more proficient we are with our processes and the more in tune we are with our environment, the more comfortable we will be.

Upon recognizing you are experiencing symptoms of hyperarousal, ground yourself in the moment by first pausing and controlling your breathing. The lungs contain nerves that connect them to the ANS. To shift the activation from the sympathetic to the parasympathetic division, the breath should be slow, deep, and diaphragmatic; occurring horizontally through the abdomen versus vertically through chest. The inhales should come through the nose and the exhales should come through the mouth. Tactical breathing places emphasis on slowing the rate of breathing by extending the exhale (and incorporating either a breath-hold or an extra inhale). Because Box, 4-7-8, and Coherent Breathing techniques involve lengthy cycles and maintaining a count, they can be difficult to perform during an operation; making them better suited for responding to and following an incident. Cyclic Sighing, however, is simple and quick, which is preferred when actively engaged. When en route to an incident, possessing a response ritual (e.g., staging/donning your equipment and taking a drink of water or chewing gum) can serve as an intentional trigger for that process (Photo 2). The latter two of those routines are also functional, as saliva secretion is inhibited during sympathetic activation, which is the cause for dry mouth. You can also build this trigger into your operational practices, such as when scanning with the thermal imager; “take a look and take a breath.”

¹² Brezler, Lopez, Fader, and Facinelli, *FDNY Mental Performance Initiative 13*; Dan Shaw and Doug Mitchell, *Command and Control*, lecture, October 14, 2023.

Your eyes and their focus are also linked to the ANS. Intentionally softening your gaze to take a more panoramic field of view can also activate a parasympathetic response; combating the sympathetic ‘tunnel vision’ effect.¹³ Zooming out allows you to detach by breaking from any fixations. By widening your line of sight, you also broaden your perspective. This global lens provides an opportunity to assess your environment and then refocus on the area of greatest importance. Much like the aperture of a camera is dynamic, constantly adjusting to the lighting changes, so must the focus of your eyes during an operation. The ability to modulate your focus, zooming out and in, is essential to maintaining composure and situational awareness.¹⁴

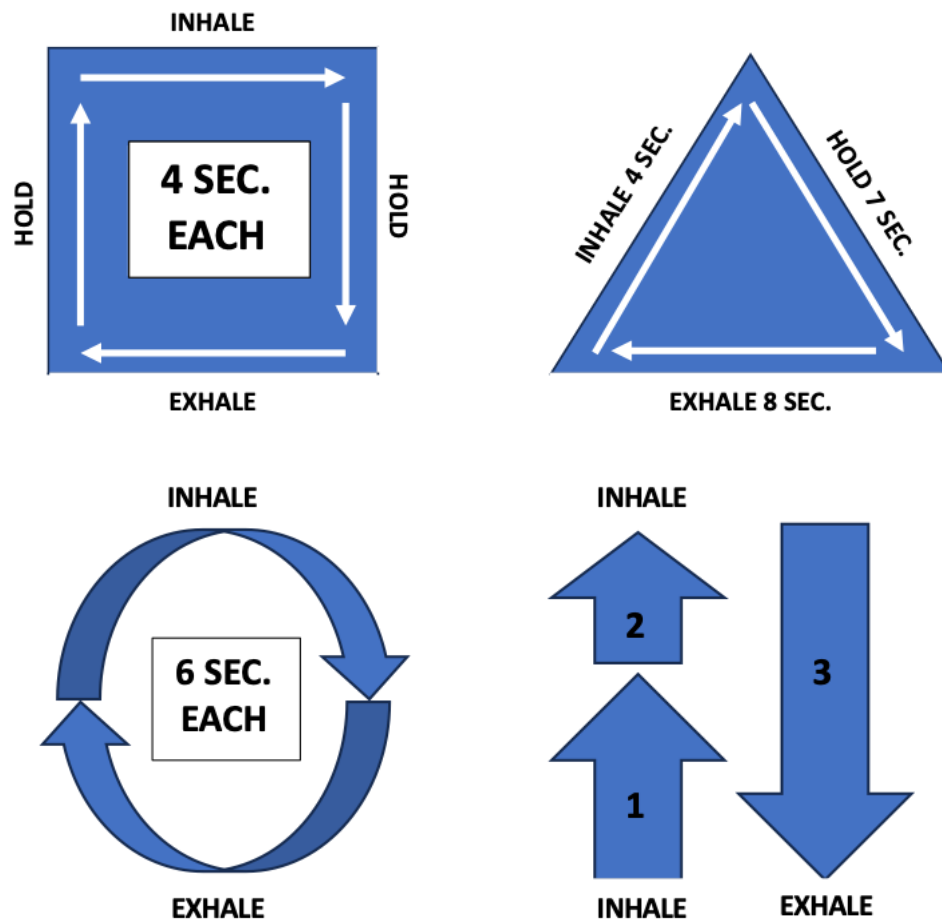


Figure 2a and 2b: The process for Box Breathing, 4-7-8 Breathing, and Coherent Breathing, which should be repeated for 4-5 cycles, ideally. Cyclic Sighing is less structured and simply requires a standard inhale, followed by a second rapid inhale to fill the lungs, and then a slow exhale to empty the lungs.

You can reset yourself during an operation to manage your level of arousal by briefly pausing to assess yourself and the environment. Identify the knowns and controllables of the

¹³ Rich Diviney, *Masters of Uncertainty: The Navy SEALs Way to Turn Stress into Success for You and Your Team* (Amplify Publishing Group, 2025); Jason Brezler, Jimmy Lopez, Jeff Facinelli, and Mike Rudasill, *NBFD Optimizing Human Performance 2* (January 15, 2025); Jerry Smith, *NBFD Optimizing Human Performance 3* (November 3, 2025).

¹⁴ Dan Dworkis, *The Emergency Mind: Wiring your Brain for Performance Under Pressure* (Sangford Press, 2021); Jocko Willink, *A Masterclass on Solving Problems Right Every Time*, YouTube: Echelon Front (June 25, 2024).

situation, and focus on the opportunities versus the obstacles. The key to effectively integrating these resets is the ability to sense the “rhythm” of an environment and recognize the fleeting moments of calm (similar to the pauses in music) where you can leverage that time and space.¹⁵ There are three things you can control within yourself to influence the outcome (the “3 As”): your attitude; your attention; and your actions. Utilize these insights to swiftly recalibrate yourself and take corrective action (Figure 3).

Maintain an optimistic mindset, and utilize positive self-talk to coach yourself, especially when encountering friction (internal or external); ensuring it is instructional and motivational. Internal dialogue is a powerful force, as your brain is directly influenced by what you tell yourself; making confidence fragile. The running total of your thoughts is like a mental bank account—the deposits being optimistic thoughts and the withdrawals being pessimistic ones.¹⁶ Optimism can activate the sense of safety in the prefrontal cortex and suppress the sense of fear in the amygdala.¹⁷ Because pessimism has the inverse effect, negative thoughts must be filtered out immediately. “Your conscious thought will influence your perception of the circumstances, triggering your unconscious emotion and physical state in response to the stimuli, and ultimately, determine your level of performance; creating a feedback loop.”¹⁸ Performance psychologist Dr. Nate Zinsser proposes the following three steps, with accompanying internal responses, when experiencing pessimism: 1) Acknowledge It (“Okay, I hear you.”); 2) Silence It (“Stop!”); and 3) Replace It (“Refocus and Go.”).¹⁹ The use of simple mantras in your routine (e.g., “You’ve got this.” or “You’ve done the work.”) can help reaffirm your functional confidence by validating your capabilities; recalling your preparation and past successes.²⁰

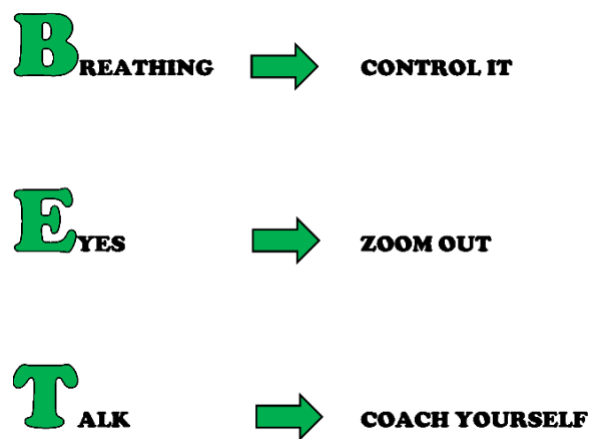


Photo 2: A pack of gum staged on the console, which serves as a routine that triggers tactical breathing and a reset to downregulate arousal when responding to a high-stress incident of consequence.

Figure 3: A simple acronym to serves as a mnemonic for the techniques of self-regulating your level of arousal. When the chips are down, “BET” on yourself.²¹

¹⁵ Dworkis, *The Emergency Mind*.

¹⁶ Nate Zinsser, *The Confident Mind: A Battle-Tested Guide to Unshakable Performance* (Mariner Books: January 25, 2022).

¹⁷ Andy Morgan, *NBFD Optimizing Human Performance 3* (November 3, 2025).

¹⁸ Nate Zinsser, *NBFD Optimizing Human Performance 3* (November 3, 2025).

¹⁹ Zinsser, *The Confident Mind*.

²⁰ Zinsser, *NBFD Optimizing Human Performance 3*.

²¹ Joanne Mariano and Kevin O’Connor, *NBFD Optimizing Human Performance 3* (November 3, 2025).

Firefighters must remain opportunistic and focus on their processes when executing critical tasks. However, they must also expect to face obstacles and be ready with contingency plans that are just as well-established and -practiced. By integrating them into the process, the employment of a contingency is not deemed a failure, “but as an opportunity to succeed using an alternate approach.”²² These processes must be simple and distilled down into a set of easily recallable steps (e.g., “Gap → Set → Force” for forcible entry); a strategy known as chunking. As FDNY Deputy Chief Jeff Facinelli asserts, “Simplicity is the answer to complexity.”²³ Processes must be forged and honed through deliberate practice and preparation.

When mistakes are made and setbacks are encountered, be sure to control the internal narrative. Dr. Zinsser offers three ways in which to frame negative experiences: 1) Temporary (“It’s just this one time.”); Limited (“It’s just this one place.”); and 3) Non-representative (That’s not the truth about me.”).²⁴ Keep repeating those steps until you achieve the desired end state. This iterative process can create a stream of small, yet progressive victories.²⁵ Generating this positive momentum can lead to the body releasing the neurotransmitter and hormone dopamine (responsible for pleasure and motivation); providing the drive to keep you moving forward.²⁶ When the parasympathetic nervous system is activated, the neurotransmitters and neuromodulators acetylcholine and, subsequently, nitric oxide are released; slowing the heart rate and dilating the blood vessels to decrease blood pressure (vasodilation). The release of nitric oxide into the blood is also stimulated by nasal breathing.²⁷

Performance can be greatly facilitated when under the reassuring guidance of seasoned operators, particularly on the fireground. In a stressful situation, the physical touch (e.g., a hand placed on the shoulder) and calming voice of a fellow firefighter, especially when personalized (i.e., using their first name) and injected with humor, can dramatically reduce arousal levels – bringing a firefighter back to or closer to center.²⁸ These interactions are powerful tools for improving resilience and overcoming adversity. When a personal connection is made, especially when laughter is evoked, there is a release of neurotransmitters and hormones—dopamine and oxytocin (responsible for social bonding and establishing trust)—as well as endorphins that minimize pain and discomfort.²⁹

After every incident, the operation must be critically and constructively analyzed to evaluate individual performance and the efficacy of the tactics and techniques utilized. Conducting a ‘hotwash’ should be done immediately following an incident to discuss what took place. At the company level, each member must contribute by openly and honestly describing the incident from their unique vantage point and perspective; taking full accountability for their actions. The feedback gleaned from this debrief should then be used to complete a formal Post Incident Analysis (PIA) to capture these invaluable experiences and lessons learned. An After-Action Review (AAR) should then be held the next shift to review the incident as a whole with all of the companies involved. This process of reflection is where operational and performance

²² Dworkis, *The Emergency Mind*.

²³ Brezler, Lopez, Fader, and Facinelli, *FDNY Mental Performance Initiative 13*.

²⁴ Zinsser, *NBFD Optimizing Human Performance 3*; Zinsser, *The Confident Mind*.

²⁵ DJ Shipley, *The Huberman Lab Podcast: How to Make Yourself Unbreakable* (October 6, 2025).

²⁶ Diviney, *Masters of Uncertainty*.

²⁷ Lopez, *NBFD Optimizing Human Performance 2*; Rich Diviney, *The Attributes: 25 Hidden Drivers of Optimal Performance* (Random House, 2021).

²⁸ Brezler, Lopez, Fader, and Facinelli, *FDNY Mental Performance Initiative 13*; Dan Shaw and Doug Mitchell, *Command and Control*, lecture, October 14, 2023.

²⁹ Diviney, *The Attributes*.

issues are diagnosed. These insights improve our understanding of the fireground and our processes, serving as the driver for future training and organizational change. They also allow us to process the residue from these incidents and reframe negative outcomes from losses to learning opportunities.³⁰

The importance of recovery cannot be overstated. A high stress operation, can take a tremendous toll on the body; even for those not engaged in significant physical activity (e.g., the pump operator from the first-arriving engine company and the incident commander), due to the mental and emotional strain incurred.³¹ Until recently, the physiological impact from the acute stress response on firefighters has yet to be quantified. Technological advances have led to biometric devices being readily available to the general public (Photo 3). These ‘wearables’ have the ability to accurately measure the level of stress the body has endured (both physical and emotional). By capturing a variety of metrics—heart rate and heart rate variability (among other vital signs)—a cumulative strain score is calculated. Firefighters wearing these devices during high stress operations are routinely sustaining high heart rates with spikes in excess of 200 beats per minute, and earning strain scores at the top end of the spectrum. These operations are rivaling and even exceeding the most extreme physical endeavors.³² Because of the academic research being conducted by Leadership Under Fire, which has brought these concepts to the forefront of the fire service, there is now a legitimate data set for statistical analysis to prove this fact.

Firefighters must prioritize their wellness to withstand and recover from these sudden high intensity periods. Clean eating and hydration will nourish the body (providing essential calories and nutrients). Practicing good sleep hygiene to consistently achieve sufficient deep and rapid eye movement (REM) sleep will restore the body. Engaging in regular anerobic and aerobic exercise, in addition to stretching and mobility, will strengthen and condition the body. Wellness and recovery must be a lifelong commitment, as it is a foundational component of human performance and longevity.



Photo 3: The Whoop, a wearable biometric device that tracks a variety of health and stress metrics to calculate daily sleep, recovery, and strain scores.

While the volume of fire duty cannot be controlled, making fireground experience the limiting factor, there is much we can gain vicariously through watching film and intentional

³⁰ Moffitt, *The Fourth Pillar*.

³¹ Brezler, Lopez, Dutton, *FDNY Mental Performance Initiative 13*.

³² Jake Dutton, *NBFD Optimizing Human Performance 3* (November 3, 2025).

storytelling—the latter of which being a tradition that has been in existence since the dawn of time. We can also hone our abilities through mental rehearsal. Performance imagery is a practice that has been utilized by elite athletes for decades. Simply find a quiet place, and envision yourself successfully carrying out a specific operation, in the first-person view. Vivid imagery and evoking the senses is the key to an effective session. By creating a somatic experience, mental rehearsal can “activate many of the same neural structures and pathways that are engaged in the actual activity; the transmission becoming smoother and faster with each activation.”³³

Another cognitive exercise, developed by US Marine Corp Major John Schmidt, is the Tactical Decision-Making Game (TDG). Unlike conventional fire service simulations, TDGs possess a defined and relevant problem set, and incorporate realistic time restrictions to complete prescribed tasks, as well as the issuance of orders (over the radio and/or face-to-face). Intentional moderation, which includes pointed, open-ended, follow-up questions (sparking constructive introspection and discussion) and a debrief, are essential to a successful TDG.³⁴ The more reps we perform and slides we insert into our mental deck, the better chances we have of finding a match and mitigating the problem set being confronted.

Sound decision-making when faced with adversity requires acclimating to the environment, or “connecting the dots.” Sensemaking is the ability to sift through the barrage of intelligence and sensory inputs and home in on what truly matters: “Once the ‘non-dots’ are removed, the task of connecting the remaining dots is much easier.”³⁵ It is not the volume of information that makes the difference; it is the relevance. What we take in through our continuous size-up process must be rapidly interpreted to determine its context and identify any patterns for it to become purposeful. This is the difference between mere information and actual intelligence. Through this critical thinking process, we can practically translate that intelligence into an action plan.

The greater our understanding of the environment (i.e., fire dynamics and building construction) and the interrelation between our tactics and victim survivability, the greater our ability will be to forecast what is to come, operate proactively, and outmaneuver the fire. Through the use of simple mental models, we can establish environmental and operational baselines. When we understand what “right” looks like, we can readily detect anomalies. An anomaly is any aspect of a situation that is atypical, which can be incredibly subtle and difficult to articulate (often described simply as “something does not feel right”). When you know what to look for and where, sound judgments can be made rapidly with minimal information (a technique known as thin slicing).³⁶

Equally important is recognizing when you have obtained enough information, reaching the “threshold for decision,” and being able to select the appropriate intervention.³⁷ A common misconception that can be an impediment to performance, is that more intelligence and options are better. The desire for information and “tools in the tool box,” especially amidst uncertainty, can cause “paralysis by analysis.” In reality, very little intelligence and only one appropriate option is needed to respond effectively. According to the Pareto Principle, 80% of the outcomes come from 20% of the inputs. Once that minimal critical intel has been obtained, the initial

³³ Zinsser, *The Confident Mind*.

³⁴ Phil Jose, *Fire Nuggets Framework Podcast: Episode 05* (October 9, 2025).

³⁵ Gary Klein, *Street Lights and Shadows: Searching for the Keys to Adaptive Decision-Making* (Echo Point Books and Media LLC, 2020).

³⁶ Klein, *Street Lights and Shadows*.

³⁷ Patrick Van Horne and Jason Riley, *Left of Bang: How the Marine Corps’ Combat Hunter Program Can Save Your Lift* (Black Irish Entertainment LLC, 2014).

action taken will address the vast majority of the problem set. The feedback obtained from the environment in response will then provide the additional insights needed to successfully guide the remainder of the operation (Figure 4).³⁸ This principle represents the essence of the famous quote from US Army General George S. Patton: "A good plan, violently executed now, is better than a perfect plan next week."

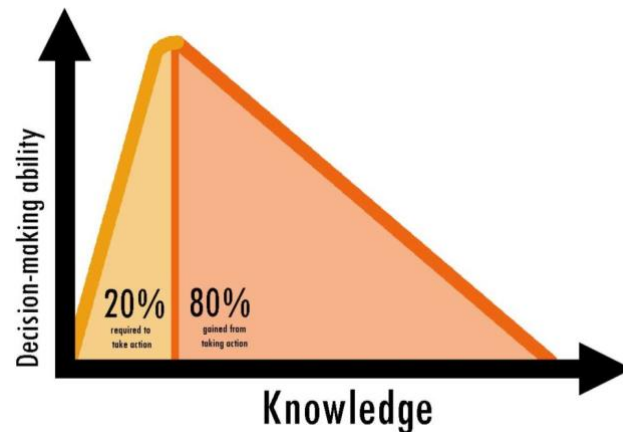


Figure 4: The steep knowledge-decision-making curve depicting the Pareto Principle (courtesy of Jay Bonnifield and Fire Engineering).

Having a calibrated system, with a focused size-up process and a distilled hierarchy of tactics and techniques that is driven by the probable conditions in an algorithmic fashion (i.e., “if this, then that”), will provide the framework for rapid decision-making. While this predetermined, structured progression improves ease and efficiency of execution, particularly under high stress and when experience is lacking, the approach is generalized. The mental models developed are, therefore, limited to the variables that were accounted for at the time of their inception. Addressing nuance and novelty, however, requires synergistic thought—fusing linear algorithmic thinking with non-linear creative thinking. Because creative thinking is rooted in the ability to make connections (amongst those algorithms), its strength is directly correlated to expertise; making it the limiting factor.

To describe this dynamic, emergency physician Dana Sajed, MD, made a musical analogy comparing algorithmic thinking to playing musical scales and chord progressions, and creative thinking to improvisation. The rote “classical” methodology (algorithmic thinking) provides the essential principles and practices, which thrives when conditions are defined/routine, or “black and white.” The fireground, however, is graduated with a wide spectrum of gray.³⁹ The abstract “jazz” methodology (creative thinking) transcends the confines of those norms through pattern recognition. This deep, contextual understanding, codifying the environment and identifying the interrelation between the parts of the system, allows for the innovation and adaptiveness required to overcome friction and uncertainty when the situation becomes extraordinary and fails to fit those established operational molds.⁴⁰ High performance is, therefore, a byproduct of “physical continuity and cognitive connectivity.”⁴¹

³⁸ Jay Bonnifield, *Research-Based Size-Up for Wood-Frame Apartment Buildings* (Fire Engineering, April 30, 2025).

³⁹ Kevin O’Connor, *NBFD Optimizing Human Performance 2* (January 15, 2025).

⁴⁰ Dworkis, *The Emergency Mind*.

⁴¹ Aaron Fields, *Tip of the Spear Leadership Podcast: Episode #86 – Drilling for Function* (December 8, 2025).

While these heuristics can streamline the decision-making process and even help offset experiential gaps, they are not infallible. We must be cautious not to fall into the trap of biases and preconceptions, manifesting from past practice and previous experiences, as well as early reports. These factors can become anchors that lead to cognitive dissonance and cause us to ignore warning signs when they challenge our initial assumptions or our standard approach. Additionally, we must recognize the limitations of our knowledge and understanding, as an overconfidence in the depth and breadth of our expertise can lead to false intuitions and poor judgment. Effectively implementing these practices requires intentionality and composure to recognize the cues and patterns, critical thought and fluency to establish their contextual relevance within a given situation, and tactical proficiency with a “bias for action” to seize opportunities and gain competitive advantage (Photo 4).⁴² This proactive and measured posture enhances our reaction time and the overall efficacy of our operations.⁴³ With a resilient mindset, one which expects the occurrence of problems and is prepared with contingencies and self-regulating techniques, we can harness our stress response and leverage it to prevail in the face of adversity. By enhancing human performance, we can deliver the best possible service to the communities we serve.



Photo 4: Decisive action is the lynchpin for a successful outcome, especially when lives are hanging in the balance (courtesy of the New Britain Fire Department).

Nicholas Papa is a deputy chief with the New Britain (CT) Fire Department, where he has served since 2007, presently assigned as the shift commander of Group B. A second-generation firefighter, he entered the fire service in 2003, volunteering for the neighboring suburb of Newington until his appointment to the Nbfd. He is a Fire Engineering best-selling author of the book *Coordinating Ventilation: Supporting Extinguishment and Survivability*, an FDIC educational advisory board member and instructor, as well as a past FSRI technical panelist for the Study on Coordinated Fire Attack. Nick is also the founder of the fire service training and consulting organization, Fireside Training, LLC (www.firesidetraining.org), and co-host of the Fire Nugget's Framework Podcast.

⁴² Daniel Kahneman, *Thinking Fast and Slow* (Farrar, Straus, and Giroux, 2013).

⁴³ Klein, *Street Lights and Shadows*.