Patrol Issues

Cuffs ON, weight OFF: 4 simple rules every officer should know during prone restraint

How officers can recognize respiratory distress, limit time spent in prone restraint and respond more effectively to a developing medical crisis

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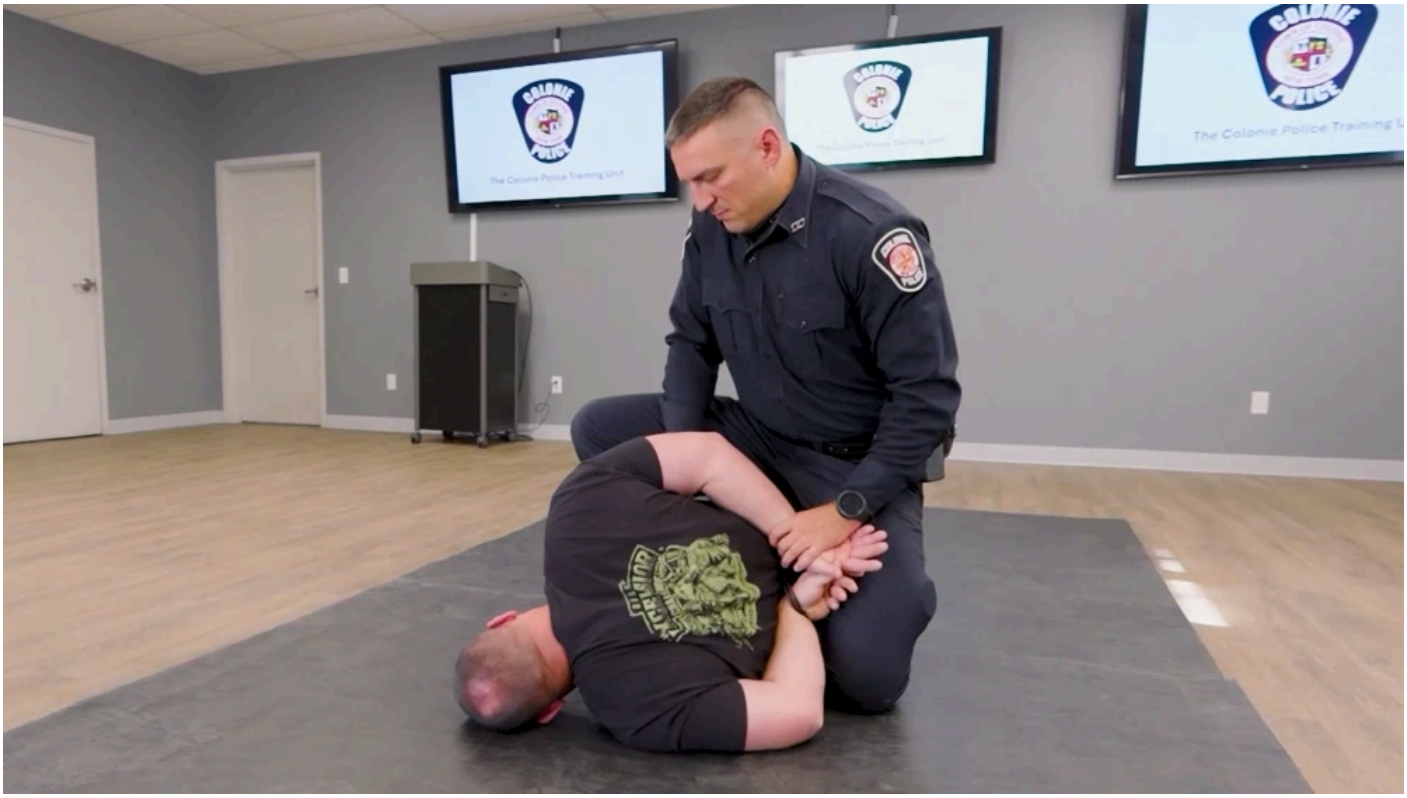

By Chief James J. Gerace & Dr. Geoffrey Desmoulin

The “scrum.” The “blue tsunami.” Whatever term you use, most police officers have been there. It’s a massive pile of officers on top of a lone individual, face down in the violent throes of a severe acute behavioral emergency. In those seconds, the environment is chaotic, officer adrenaline is surging, and the subject’s physiological clock is ticking.

In their book **Simple Rules**, Donald Sull and Kathleen Eisenhardt argue that clear, carefully designed rules help people and organizations make decisions quickly. These “shortcut strategies” are most effective when they are few in number, tailored to the situation and easy to apply in high-stakes environments.

In prone restraint incidents, officers do not need a medical degree. They need simple rules they can recall and act on under pressure.

The physiology of the “tsunami”

What is beneath that pile of officers? The subject may be experiencing both a mechanical and chemical crisis. As the struggle continues, the body produces increasing amounts of carbon dioxide (CO_2). If the subject cannot expel it effectively, carbon dioxide and metabolic acids can accumulate, lowering blood pH and increasing the risk of sudden cardiac arrest.

In their recent paper, **Physiology and Biomechanics of Prone Restraint Respiration**, researchers Theodore Milner and Geoffrey Desmoulin identify eight risk factors that can increase a person’s vulnerability to restraint-related respiratory compromise:

- **Struggle:** Active struggling dramatically increases muscular work throughout the body producing more carbon dioxide and metabolic acids. At the same time, the respiratory muscles must work harder to overcome the mechanical disadvantages of the prone restrained position. The combination of increased carbon dioxide production and the greater effort to breathe can overwhelm the body’s ability to maintain normal blood chemistry.

- **Obesity:** Individuals with obesity are more vulnerable to restraint-related respiratory stress. When a person with obesity is placed in the prone position, excess adipose tissue around the abdomen increases pressure on the diaphragm and chest wall, making each breath more difficult. Obesity is also associated with reduced lung capacity and lower lung

volumes, which can require faster, more strenuous breathing to remove carbon dioxide from the blood during exertion or struggle.

- **Drugs:** Substance use increases the risk of carbon dioxide accumulating in the blood. Opioids may slow breathing and reduce the amount of air moving in and out of the lungs, while stimulants such as methamphetamine can interfere with the body's normal cardiovascular responses to rising carbon dioxide levels. Chronic substance use may also damage the heart or lungs, further limiting the body's ability to meet the respiratory demands of restraint.

- **Hard surfaces:** When a person is lying prone on a hard surface, the respiratory muscles must lift the weight of the upper body, along with any additional downward force, with each breath. This increases the work of breathing and results in greater carbon dioxide production. Softer surfaces can reduce some of this workload by allowing the chest to move more freely during breathing.

- **Downward force:** Additional weight applied to the back or torso makes breathing more difficult. The respiratory muscles must work against both the person's body weight and the external force to expand the chest and move air. Greater force can also increase pressure within the chest, restrict blood flow to the lungs and further impair the body's ability to eliminate carbon dioxide.

- **Immobilization:** A restrained person may be unable to shift into a position that makes breathing easier. Restricting movement of the legs, hips, torso, or arms can prevent the person from relieving pressure on the chest and abdomen. This increases the work of breathing and may trigger distress or panic, placing even greater strain on the body.

- **Anxiety:** Anxiety and panic increase both breathing rate and the effort required to breathe. A restrained person who feels unable to breathe effectively or shift into a better position may panic and struggle harder. Officers may interpret that movement as continued resistance, leading to additional restraint and even greater physiological stress.

- **Time:** The effects of restraint-related respiratory stress build over time. The longer a person remains prone while struggling, anxious, intoxicated, or otherwise physiologically

compromised, the more carbon dioxide and metabolic acids can accumulate. Prolonged restraint may eventually overwhelm the body's ability to compensate, particularly in vulnerable individuals.

Any one of these factors can increase physiological stress, but the risk rises sharply when several are present at once. A person with obesity who is intoxicated, anxious and actively struggling while being held prone on a hard surface under downward pressure may produce carbon dioxide faster than the body can eliminate it. Over time, that imbalance can disrupt normal blood chemistry, leading to severe acidosis and potentially cardiac arrest.

For officers, these are not abstract medical concepts. They are conditions that can be observed in the field and, in several cases, affected by police actions. Understanding these risk factors provides the basis for a few simple operational rules that can reduce physiological stress and improve safety for everyone involved.

Chief Gerace's four simple rules

Police officers cannot control a subject's weight or toxicology, but they can control how they respond. In a high-stress struggle, long policies are difficult to recall and even harder to apply. These four simple rules bridge the gap between policy and practice. Each is short, memorable and designed to help officers make better decisions under pressure while reducing the risks associated with prone restraint.

1. EMS: Early and often

Reduces the effects of drugs, anxiety and time

Request EMS as soon as you recognize an acute behavioral emergency, Do not wait until the cuffs are on to realize that the subject may be experiencing a medical crisis. Reducing the time between restraint and medical care may be one of the most important factors in survival.

2. Cuffs ON, weight OFF

Reduces the effects of downward force and immobilization

Handcuffs are the finish line. Once the subject is handcuffed and the cuffs have been double locked, remove all weight from the subject's back and torso.

3. Sit 'em or side 'em

Reduces the effects of obesity, downward force and hard surfaces

No one stays prone. Gravity works against a person who is exhausted or has obesity. Move the subject to a seated or side-lying position as soon as it is safe to do so, allowing the chest and abdomen to expand more freely and making it easier to eliminate carbon dioxide.

4. Struggle against restraints = medical evaluation

Reduces the effects of struggle and time

This rule requires a critical shift in mindset. If a subject continues to struggle violently after being handcuffed, the behavior may not be defiance. It may signal a developing medical crisis.

Treat statements such as “I can’t breathe” as an important warning, especially when the subject is trying to lift the chest off the ground in a “cobra” position. That movement may be an attempt to create more room to breathe and can indicate “air hunger.” If EMS has not already been requested, call immediately and have the subject medically evaluated.

| WATCH: See the four simple rules applied during a real incident

Conclusion

Whether these incidents are ultimately examined by medical experts, investigators or the courts, officers must make critical decisions in real time. The public, agency leaders and prosecutors increasingly expect officers to recognize that an acute behavioral emergency is also a medical emergency.

These four simple rules give officers a practical framework for doing exactly that. They provide clear, memorable actions that can reduce physiological risk while protecting the subject, the officers involved and the agency. In the heat of the “blue tsunami,” officers do not need more policy. They need simple actions they can remember and apply under pressure.

About the authors

Chief James “Jay” Gerace is a seasoned law enforcement leader with over 27 years of police service and the Chief of Police for the Colonie Police Department in New York. He has extensive experience in developing and implementing evidence-based training programs for officers, including a special focus on scenario-based training to mitigate high-risk situations. His work has been published in respected law enforcement trade publications, the IACP’s Police Chief Magazine, FBI Law Enforcement Bulletin, Translational Criminology and Police 1. He has presented in front of leading organizations such as the National Academy of Sciences in Washington, D.C.

Dr. Geoffrey T. Desmoulin, PhD, R.Kin., P.L.Eng. is the Founder and Principal of GTD Scientific Inc. and a forensic biomechanical engineer specializing in officer use of force, injury biomechanics, incident reconstruction, and physical testing. He has authored more than 50 peer reviewed scientific publications and developed novel forensic methodologies, including reconstruction techniques recognized as reliable and admissible in U.S. Federal Court. Dr. Desmoulin regularly instructs law enforcement professionals, investigators, and attorneys on the application of biomechanics to forensic investigations. His current research focuses on advancing the scientific understanding of use of force incidents to improve investigations, training and officer and public safety.

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