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## Restraint Asphyxia

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### Authors' Reply

We thank Drs. Gulino and Young for their letter and the opportunity to clarify the issues concerning cause of death during restraint. They believe the concept of restraint asphyxia has no scientific basis and should "disappear like the dinosaur." We believe they missed the point of the article.

We presented the 21 case reports as examples of asphyxia by chest compression (1), sometimes called *traumatic asphyxia*. Our contention is that the probable cause of death in the individuals reported was asphyxia caused by the inability to move enough air into and out of their lungs to maintain consciousness. Few rational pathologists would deny that people can die with enough weight compressing their chest. Some common examples include a car falling off a jack onto a careless mechanic; a woodsman pinned by a fallen tree; or unfortunate spectators who fall and are pinned underfoot by a surging crowd. The mechanism of death in such cases has a clear and scientifically accepted physiological basis-people need to breathe to stay alive. If an insufficient amount of oxygenated air is delivered to the lungs for a long enough time, then unconsciousness results and death follows. Boa constrictors use this principle effectively.

In the case of prone restraint with weight applied to the back, the question isn't really whether a person *could* die from asphyxia; sufficient weight applied to the back for a sufficient time will kill the healthiest of individuals. The question is whether sufficient weight was applied to the torso for a sufficient time to cause asphyxial death in an individual case of "sudden death" that appears to have occurred while the decedent was held in a prone restraint position. It is true that we have no scientific studies to "prove" that asphyxia will occur with sufficient weight on a human's back, but that does not negate the concept. Forensic scientists accept that death from asphyxia can occur by suffocation if the nose and mouth are blocked by a hand or pillow for several minutes and that death by strangulation can occur if the neck is squeezed with enough force for a long enough time. If credible witness evidence indicates that the partial weight of one or more adults was on the back of a person for more than a couple minutes

when signs of life disappeared and the person's arms and legs were restrained such that he couldn't use them to help relieve the chest compression, why is it so hard to imagine that asphyxia could occur? In *Medicolegal Investigation of Death* (2), asphyxia by chest compression (traumatic asphyxia) is discussed in several chapters. In the same text, in a chapter devoted to cause and manner of death issues, Adams and Hirsh state, "A satisfactory cause-and-effect relationship is ordinarily based on the temporal relationship between the putative risk factor and the onset of the fatal episode" (3). Why do Drs. Gulino and Young believe they need to invoke the scared to death/adrenaline hypothesis?

They make the point that petechial hemorrhages in the eyes are not specific for asphyxia. We agree and stated so in our article. Petechiae are, however, important findings to note in autopsy reports because of their strong association with certain asphyxial mechanisms of death. They took exception to the importance of victims stating they couldn't breathe during the prone restraint process, arguing that the ability to talk shows the absence of asphyxia. Another interpretation is that the process of asphyxiating from weight compressing the chest during a struggle is a dynamic process with a beginning and an end and involves fatigue of the accessory muscles of respiration. To plead "get off, I can't breathe!" seems to us a valid indicator of difficulty breathing. If those who doubt the asphyxial potential of prone restraint with weight on the back would lie prone on the floor, hold their ankles behind their back, and have a trusted friend sit on their back for a minute while they try to breathe, most doubts would vanish. In such a situation, respiratory effort is much greater, muscles fatigue, and respiratory volume declines with progressively increasing weight. In our experience, the subjective feeling is panic.

Drs. Gulino and Young use references to papers by Chan et al. (4) and by Schmidt and Snowden (5) to attack Dr. Reay's 1988 article (6), an article we didn't even reference in our paper. None of those papers address the issue of weight on the back during restraint, and all use healthy young men as volunteers in hogtying experiments after moderate exercise. They reference an article in *Forensic Drug Abuse Advisor 2000* (6), erroneously citing Dr. John Eisele as the author. The *Forensic Drug Abuse Advisor* is a private newsletter, owned, published, edited, and authored by Dr. Steven Karch. Dr. Karch was discussing unpublished information Dr. Eisele presented at the American Academy of Forensic Sciences annual meeting in February, 2000. The newsletter discussion they reference ends with an editorial comment about the "scientific silliness in these (positional asphyxia) cases."

Finally, Drs. Gulino and Young imply that death investigators who attribute deaths to restraint asphyxia are blaming the restrainers and accusing them of negligence. Assigning blame and making accusations has never been the province of medical examiners and coroners. Our job is to objectively investigate deaths within our jurisdiction and to try to accurately assign a cause

and manner of death. In difficult cases in which the cause of death is not readily apparent, as is the case in most deaths during restraint, "in the interest of science and truth" we should keep our minds open to all reasonable explanations for death, including asphyxia. To do otherwise is to take an "ostrich with its head in the sand" approach to forensic pathology, an ineffective way to kill a dinosaur.

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## REFERENCES

1. O'Halloran RL, Frank JG. Asphyxial death during prone restraint revisited: a report of 21 cases. *Am J Forensic Med Pathol* 2000;21:39-52.  
[\[Context Link\]](#)
2. Spitz WU. Asphyxia. In Spitz WU, ed. *Medicolegal investigation of death*, 3rd ed. Springfield, IL: Charles C. Thomas, 1993:484-5.  
[\[Context Link\]](#)
3. Adams VI, Hirsh CS. Trauma and disease. In Spitz WU, ed. *Medicolegal investigation of death*, 3rd ed. Springfield, IL: Charles C. Thomas, 1993:196.  
[\[Context Link\]](#)
4. Chan TC, Vilke GM, Newman T, Claussen JL. Restraint position and positional asphyxia. *Ann Emerg Med* 1997;30:578-6.  
[\[Context Link\]](#)
5. Schmidt P, Snowden T. The effects of positional restraint on heart rate and oxygen saturation. *J Emerg Med* 1999;17(5):777-82.  
[\[Medline Link\]](#) [\[CrossRef\]](#) [\[Context Link\]](#)
6. Reay DT, Howard JD, Fligner LL, et al. Effects of positional restraint on oxygen saturation and heart rate following exercise. *Am J Forensic Med Pathol* 1988;9:16-8.  
[\[Medline Link\]](#) [\[Context Link\]](#)
7. Karch SB. More on positional asphyxia. *Forensic Drug Abuse Advisor* 2000;12:18.