

FORCE SCIENCE[®] NEWS

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I. Rumored risk of CEWs put to rest (No, they *don't* cause ExDS)

Some researchers have speculated that shocks from conducted energy weapons may induce excited delirium in resistant arrestees. But a new study serves to debunk that rumored risk.

The speculation has centered on serotonin, an important chemical and neurotransmitter in the human body. Abnormally high levels of serotonin can be life-threatening, while producing some of the same symptoms commonly associated with excited delirium syndrome (ExDS), including high body temperature, agitation, sweating, tremor, muscle rigidity, altered mental state, etc.

Serotonin levels can be influenced by stress and are also known to be raised significantly by electroconvulsive therapy, often referred to as “shock treatment.” So a “plausible link” led to the hypothesis that the high-stress electrical exposure from a CEW could spike serotonin to a level that triggers or exacerbates sometimes-fatal ExDS.

A research team headed by Dr. Mark Kroll, a biomedical engineer with the U. of Minnesota and California Polytechnic U., has now tested that theory for the first time— with reassuring results for law enforcement.

BLOOD TESTS. Trainers attached a TASER X26 via alligator clips to the torsos of 31 cadet volunteers at a Texas police academy and discharged the unit for five seconds to “obtain the highest level of involuntary muscle contraction” of the subjects’ upper and lower limbs.

Blood draws taken before, immediately after, and 24 hours later by certified EMTs were tested to measure any changes in concentrations of serotonin and two other stress-related chemicals.

In a paper recently appearing online in the journal *Forensic Science, Medicine and Pathology*, Kroll reports: “With a very broad [i.e., effective] electrode spread, CEW exposure did not significantly raise [blood] serotonin levels” in any of the tests. “All remained within the clinically normal range.”

Indeed, Kroll says, the “trivial” increase recorded in serotonin levels was “far less” than that shown in previous studies to be produced by low-intensity (50% maximum heart rate) physical exercise.

Addressing the speculative comparison of a CEW event to electroconvulsive therapy (ECT), Kroll points out that “typical ECT [exposure] delivers 20 watts vs. the CEW which delivers less than 2 watts of electrical power.”

CONCLUSION. While the cause(s) of ExDS are not yet fully understood, Kroll writes that the serotonin-provoked hypothesis is “not supported by the findings” of this new study. Even if the “negligible” effect on serotonin levels had been tripled, he says, the result “would not have been clinically significant compared to the shifts seen with [mere] exercise.”

Kroll, a use-of-force litigation consultant who serves as a scientific advisor to the manufacturer of the TASER CEW, can be reached at: mark@kroll.name

Our thanks to Atty. Michael Brave, director, CEW Legal for Axon Enterprise Inc., for alerting us to this research.

II. Mark your calendar: Leading researcher addresses racial bias issue

One of the most urgent issues in law enforcement today is the question of racial bias among police.

- Do cops have it but don't know it?
- Do they have it but successfully suppress it on the job?
- Do they deliberately exploit it to skew justice in minority communities?
- Or on the whole, are they in fact free of this treacherous stain?

One of the nation's leading law enforcement researchers will share what science has to say about this contentious subject at this year's annual Lewinski Lecture on Nov. 5. The three-hour presentation is part of the ongoing speaker series sponsored by Minnesota State U.-Mankato in honor of the long-time faculty service in its law enforcement department of Dr. Bill Lewinski, executive director of the Force Science Institute.

INTERNATIONAL EXPERT. This year's headliner will be Dr. Lois James, an assistant professor at the Washington State U. College of Nursing, where she focuses on

studying bias, stress, sleep, and performance in LEOs, military personnel, and other high-stress populations. A research advisor to the IACP, she is internationally recognized for her award-winning and ground-breaking work on how suspect race and ethnicity influence officer decision-making during critical encounters.

“Much of the intense scrutiny police have experienced in recent years and the national debate on policing legitimacy have been largely driven by racial tensions,” James told *Force Science News*.

“The widespread allegations of racially motivated policing, particularly regarding use of force, are hotly contested. Officers feel misunderstood and defensive, minority community members often feel targeted and victimized, and the general public falls somewhere in between. Unfortunately, research studies have been mixed and sometimes contradictory, adding to the confusion and controversy.”

In her Mankato talk, which includes time for answering questions, she plans to offer “an objective overview of the research on racial bias in policing, from field studies to laboratory experiments.” She’ll examine six decades of experiments in an effort to draw valid conclusions on “whether and how officers are influenced by racial bias” and the implications from these findings for training and policy.

In the past, *FSN* has reported on a number of James’ studies of bias, including her findings on whether a suspect’s clothing or race influence an officer’s shooting decisions, what impact officer fatigue has on bias, whether officers hesitate more before shooting a white suspect than a black one, and how an innovative simulation training program can be used to counter implicit bias among officers.

WHEN & WHERE. The free event will start at 9AM on Nov. 5, in Ostrander Auditorium in the Centennial Student Union at MSU. 3 free POST credits will be offered to students from Minnesota.

For more information, contact: carl.bock@mnsu.edu

III. Reminder: Lewinski speaks at IACP on timing of OIS interviews

If you’re attending the IACP conference in Orlando next month, be sure to catch the presentation by Dr. Bill Lewinski on when best to conduct an officer’s official interview after a shooting or other high-intensity event.

The executive director of the Force Science Institute will explain the six key psychological factors to consider in timing such statements to assure the most thorough and accurate account of what happened. His 90-minute program and its recommendations will be based on solid research into human behavior and memory by FSI and other scientific institutions.

Lewinski is expected to challenge a recently published study that advocates prompt interviews of involved officers, claiming that a delay to allow for emotional de-escalation and memory consolidation tends to weaken an officer's accurate recall. "That study is seriously flawed in its methodology and conclusions," Lewinski says, "and should not be used as a basis for department policy."

Lewinski's session, open to all conference attendees, is scheduled at 12:30 pm Oct. 6 before the IACP's Police Psychological Services Section in the Orange County (FL) Convention Center. A large audience is expected.

IV. Why so many shots in an OIS? A FS Advanced Specialist explains

Trained by Hollywood to expect that a single round is enough to fatally wound a threatening suspect, noncops may question OISs in which multiple shots were fired. Why did officers fire *so many* rounds? Why was the suspect shot after already falling to the ground? Why did some bullets hit him in the back?

For PIOs, administrators, police attorneys, and others needing answers for reporters, suspects' relatives, law enforcement critics, or jurors a recent explanation by Advanced Force Science Specialist Jason Helfer may be helpful.

In a report appearing on the website of Lexipol, the public safety policy advisory organization, Helfer discusses in detail the powerful factors that impact the decisions of when to start and when to stop shooting during a life-threatening encounter.

"It's understandable that civilians who read reports of officers firing multiple, sometimes dozens, of rounds at a suspect will question whether the officers used excessive force," writes Helfer, a deputy chief of internal affairs for a municipal department in New York state.

"In truth, however, what some civilians and law enforcement critics perceive as an act of reckless disregard for life, or even intentional murder, is often merely the [inevitable] product of physiology."

He goes on to examine critical behavioral factors that are often beyond an officer's control, including attentional capacity, perception and processing time, reaction time, mental and physical condition, and suspect movements.

Among other things, he describes Force Science experiments that measured the time required by officers to stop shooting once they experience a "stop" stimulus. "Some officers were able to react seemingly instantaneously, resulting in no additional rounds, while others took up to 1.5 seconds to cease pulling the trigger, resulting in additional rounds being fired" after an unmistakable signal to stop.