

Recent CEW Medical Studies

Many people are interested in whether exposure to a Taser conducted energy weapon (CEW) discharge is safe. This is particularly important to those who may volunteer to be exposed, either in a training setting or for research purposes. All human studies to date have supported the safety of Taser exposure. Here is a list and brief description of some of the recent medical studies that have been performed in humans.

Medical Investigations in Humans – Cardiac Effects:

1. Cardiac Effects of the Taser Conducted Energy Weapon

(Ann Emerg Med. 2006 48(4): S102)

In this study (performed by investigators at Wake Forest University) 84 Taser discharges were monitored in 28 volunteers. An EKG was recorded before, during, and after each discharge. Heart rate increased, but no abnormal cardiac rhythms or other adverse effects occurred.

2. Cardiac monitoring of subjects exposed to the Taser.

(Prehosp Emerg Care 2006;10(1):130.)

Investigators in this study performed EKGs before, during, and after 58 Taser discharges in volunteers. Heart rate increased, but no abnormal cardiac rhythms or other adverse effects were seen.

3. Does the Taser Cause Electrical Changes in Twelve Lead ECG Monitoring of Human Subjects

(Acad Emerg Med 2007 14 (5 Supplement 1): S104)

In this study 32 volunteers received a full diagnostic (twelve lead) EKG just before and after exposure to a standard 5 second Taser discharge. No cardiac rhythm effects or other adverse cardiac effects were seen.

4. Absence of Electrocardiographic Change Following Prolonged Application of a Conducted Electrical Weapon in Physically Exhausted Adults

(Acad Emerg Med 2007 14 (5 Supplement 1): S128-S129)

Investigators in this study combined vigorous exercise (simulating a physical struggle with police and the physiologic changes of exhaustion) with a prolonged Taser discharge of 15 seconds. 25 volunteers had a full diagnostic (twelve lead) EKG before and after exercise to exhaustion and again after prolonged Taser exposure. No abnormal cardiac rhythms or other adverse cardiac effects were seen.

5. Serum Troponin I Measurement of Subjects Exposed to the Taser X-26

(Acad Emerg Med 2007 14 (5 Supplement 1): S103-S104.)

Investigators used a sensitive blood test (Troponin I) to detect any small amounts of cardiac muscle damage that might be missed by EKGs. 66 volunteers received a standard (5 second) Taser discharge, followed by blood testing 6 hours later. None showed any evidence of cardiac injury.

Medical Investigations in Humans – Metabolic & Respiratory Effects:

1. Cardiovascular and Metabolic Effects of the Taser on Human Subjects

(Acad Emerg Med 2007 14 (5 Supplement 1): S104-S105)

Vital signs and blood tests were performed on 32 volunteers just before and several times up to an hour after exposure to a Taser discharge. No serious or harmful changes in blood pressure, pH, bicarbonate, lactate, or electrolyte levels were found.

See reverse for more.

Medical Investigations in Humans – Metabolic & Respiratory Effects (continued):

2. Cardiovascular and Physiologic Effects of Conducted Electrical Weapon Discharge in Resting Adults.

(Acad Emerg Med. Jun 2006;13(6):589-595.)

In this study 66 volunteers had blood tests measured just before and several times up to 24 hours after exposure to a Taser discharge. No dangerous changes in blood test values were seen, including pH, bicarbonate, lactate, electrolytes, myoglobin, and troponin.

3. Physiologic Effects of Prolonged Conducted Electrical Weapon Discharge on Acidotic Adults

(Acad Emerg Med 2007 14 (5 Supplement 1): S63.)

Investigators in this study combined vigorous exercise (simulating a physical struggle with police) with a prolonged Taser discharge of 15 seconds. 38 volunteers underwent both exercise and Taser exposure; 6 volunteers underwent exercise only for comparison. There were similar changes in the blood chemistries over time in both groups, indicating no significant additional effects of the Taser.

4. The Impact of the Taser Weapon on Respiratory And Ventilatory Function in Human Subjects

(Acad Emerg Med 2007 14 (5 Supplement 1): S191-S192.)

In this study investigators examined whether Taser discharge can cause breath holding (which could potentially be harmful). Breathing parameters were measured before, during, and after a standard (5 second) Taser exposure in 28 volunteers. In addition, blood levels of oxygen and carbon dioxide reflecting respiratory function were measured. Results showed faster and deeper breathing during the Taser discharge, which quickly returned to normal. There was no evidence of breath holding or other adverse respiratory effects.

5. Respiratory effect of prolonged electrical weapon application on human volunteers.

(Acad Emerg Med. 2007 Mar;14(3):197-201.)

Similar to the study above, a different group of investigators combined respiratory assessments with a prolonged (15 second) Taser discharge. 52 volunteers participated. No breath holding occurred. Subjects' breathing was both faster and deeper during Taser discharge. There was no evidence of breath holding or other adverse respiratory effects.

Real World Use of Tasers by Law Enforcement Agencies Against Criminal Suspects:

1. Conductive Electrical Weapons: A Prospective, Population-Based Study of the Safety of Application by Law Enforcement

(J Trauma. 2007 62(1):265-275)

In this series of 426 consecutive uses of the Taser in Dallas, TX, all suspects received a medical evaluation after Taser exposure. There were no deaths and no injuries severe enough to require a visit to the emergency department. All Taser uses were within department policy.

2. The relative risk of police use-of-force options: evaluating the potential for deployment of electronic weaponry

(J Clin Forensic Med. 2006 Jul;13(5):229-41.)

In this review of over 1100 police use of force incidents in England, officer and suspect injuries were tracked and compared after the use of Tasers, irritant sprays, batons, and police dogs. There were no deaths associated with the Taser. Suspects were more likely to be injured after irritant spray, baton, or police dog use and less likely to be injured after Taser use. Police officers were more likely to be injured after use of irritant spray or batons, and less likely to be injured after use of Taser or police dogs.