2007 ***Valentino et al*** Articles Comparison

May 2007: Repeated Thoracic Discharges From a Stun Device	Sep 2007: Acute Effects of TASER X26 Discharges in a Swine Model	November 2007: Neuromuscular Effects of Stun Device Discharges
WEB Address: **www.charlydmiller.com/LIB11/ 2007MayThoracicStunStudy.pdf**	WEB Address: **www.charlydmiller.com/LIB11/ 2007SepVfibTasedPigs.pdf**	WEB Address: **www.charlydmiller.com/LIB11/ 2007NovValentinoNeuromuscularBaton.pdf**
CITATION: Valentino DJ, Walter RJ, Nagy K, Dennis AJ, Winners J, Bokhari F, Wiley D, Joseph K, Roberts R. Repeated thoracic discharges from a stun device. ***J Trauma***. May 2007;62(5):1134-1142. **[ONLY ABSTRACT posted!]**	**CITATION:** Dennis AJ, Valentino DJ, Walter RJ, Nagy KK, Winners J, Bokhari F, Wiley DE, Joseph KT, Roberts RR. Acute effects of TASER X26 discharges in a swine model. ***J Trauma***. September 2007;63:581–590. Submitted for publication December 9, 2006. Accepted for publication April 4, 2007.	**CITATION:** Valentino DJ, Walter RJ, Dennis AJ, Nagy K, Loor MM, Winners J, Bokhari F, Wiley D, Merchant A, Joseph K, Roberts R. Neuromuscular effects of stun device discharges. ***J Surg Res***. November 2007;143(1):78-87. Submitted for publication January 8, 2007 Available online 16 October 2007.
Device Studied: **MK63 STUN BATON**	Device Studied: **TASER X26**	Device Studied: **MK63 STUN BATON**
METHODS: Ten Yucatan mini-pigs, six experimental and four sham controls, were anesthetized with ketamine, xylazine, and glycopyrrolate. Experimental pigs were exposed to two 40-second discharges from an EMI device over the left thorax. Electrocardiograms, troponin I, blood gases, and lactate levels were obtained pre-exposure, at 5, 15, 30, 60 minutes, and at 24, 48, and 72 hours postdischarge.	**METHODS:** Using an Institutional Animal Care and Use Committee-approved protocol, 11 standard pigs (6 experimentals and 5 sham controls) were anesthetized with ketamine and xylazine. The experimentals were exposed to two 40- second discharges from an EID (TASER X26, TASER Intl., Scottsdale, AZ) across the torso. Electrocardiograms, blood pressure, troponin I, blood gases, and electrolyte levels were obtained pre-exposure and at 5, 15, 30, and 60 minutes and 24, 48, and 72 hours postdischarge. p values <0.05 were considered significant.	**METHODS:** Using an IACUC approved protocol, from May 2005 through June 2006 in a teaching hospital research setting, 30 Yucatan mini-pigs (24 experimentals and 6 sham controls) were deeply anesthetized with ketamine and xylazine without paralytics. Experimentals were exposed to discharges from an EID (MK63); Aegis Industries, Bellevue, ID) over the femoral nerve on the anterior left hind limb for an 80 s exposure delivered as two 40 s discharges. EKGs, EMGs, troponin I, CK-MB, potassium, and myoglobin levels were obtained pre-discharge and post-discharge at 5, 15, 30, and 60 min, 24, 48, and 72 h (n _ 6 animals) and 5, 15, and 30 d post-discharge (n _ 6 animals at each time point). … Data were compared using one-way analysis of variance and paired t-tests. P-values <0.05 were considered significant.

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CONCLUSIONS: Although significant changes in some parameters were seen, these changes were small and of little clinical significance. Lengthy EMI exposures did not cause extreme acidosis or cardiac arrhythmias. These findings may differ from those seen with other EMI devices because of the unique MK63 waveform characteristics or to specific characteristics of the model systems.	**CONCLUSIONS:** Immediately after the discharge, two deaths occurred because of ventricular fibrillation. In this model of prolonged EID exposure, clinically significant acid-base and cardiovascular disturbances were clearly seen. The severe metabolic and respiratory acidosis seen here suggests the involvement of a primary cardiovascular mechanism.	**CONCLUSIONS:** There was no evidence of acute arrhythmia from MK63 discharges. No clinically significant changes were seen in any of the physiological parameters measured here at any time point. Neuromuscular function was not significantly altered by the MK63 discharge. In this animal model, even lengthy MK63 discharges did not induce muscle or nerve injury as seen using EMG, blood chemistry, or histology.
"QUOTES" POSTED on charlydmiller.com: **These findings may differ from those seen with other EMI devices because of the unique MK63 waveform characteristics or to specific characteristics of the model systems.**	**"QUOTES" POSTED on charlydmiller.com:** **Immediately after the [TASER] discharge, two deaths occurred because of VENTRICULAR FIBRILLATION. … In this swine model, lengthy thoracic discharges from a TASER X26 produced … cardiorespiratory dysfunction which, when coupled with intense muscle contractions, resulted in SEVERE acidosis, tachycardia, hypotension, and sometimes FATAL VF.**	**"QUOTES" POSTED on charlydmiller.com: limitations: … (2) For ethical reasons, ketamine/xylazine anesthesia was used in this swine model. Anesthesia precludes pain perception … Pain perception would undoubtedly alter some of the responses reported here. (3) In the field, stun devices are used to subdue combative individuals who are usually in a state of greatly increased sympathetic activity and, in many cases, are under the influence of alcohol or other drugs that may alter the thresholds for dysrhythmia and for pain. Under those conditions, the effects of MK63 discharges might deviate considerably from those seen here. … Since previous animal studies of the TASER X26 showed some dramatic physiological changes, the present findings may be due to the unique waveform and pulse power generated by the MK63 device, to differences in the electrode spacing for the MK63 compared with the TASER X26, or differences between the model systems. Further studies are needed**