

EKGs Necessary to Prevent Marine Deaths

A small investment in diagnostic tools at MEPS could prevent numerous deaths of junior Marines in training and the fleet

by GySgt Andrew Guthart

The families of our Marines trust the Corps with the lives of their sons and daughters. A recent study indicates that in a population pool of athletes the size of the Marine Corps, up to eight Marines per year may die unnecessarily from sudden cardiac arrest (SCA).¹ Many of those deaths could be prevented with the addition of Electrocardiogram (EKG) testing at Military Entry Processing Stations (MEPS).

In 2013, LCpl David Finlayson died during a training run with his unit in Hawaii. His family, devastated by this unexpected loss, sought answers from the Marine Corps. LCpl Finlayson had previously been in good health and served in a physically demanding job as an infantry assaultman. The autopsy did not identify any structural abnormalities, leading the medical examiner to conclude that his death was the result of a cardiac arrhythmia of unknown origin.² According to LCpl Finlayson's mother Laurie,

That was the moment we found out they don't do EKGs as part of the pre-military medical [screening]. It was such a shock. They have two or three days of medical testing. With all the physical stresses put on these guys, how could they not do an EKG to check their hearts?

Laurie went on to start the Lion Heart Heroes Foundation to advocate for EKG screening for military members.

DOD Instruction 6130.03 lists all the medical conditions that bar entry or

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LCpl Finlayson training in Korea just 6 months before his death. (Photo by Cpl Callahan.)

continued service in the military. At MEPS, a doctor will perform a simple auscultation to listen for heart abnormalities, but this will not identify all of the heart conditions listed in the DOD instruction. An EKG can measure the electrical activity of the heart and deviations from the normal sinus rhythm can indicate arrhythmias or structural abnormalities, some of which can prove

fatal over time if left untreated.³ The latest EKG machines using international criteria algorithms can uncover 85 percent of the heart conditions that can lead to SCA.⁴ A physician can then verify any abnormal readings and refer them for further testing.

EKG testing would not result in a significant number of health disqualifications at MEPS. Using modern technology, the false positive rate is less than three percent. In 2020, the Naval Academy, in conjunction with Naval Health Clinic Annapolis and Uniformed Health Services University, screened all incoming freshmen. Averaging 80 screenings a day, at 10 minutes per testing, a team of two corpsmen and one doctor screened 1,178 freshmen—finding 98 percent of them fit for service. Of those two percent who had an abnormal reading, additional screening returned 73 percent of them to full duty status with only seven referred for treatment.⁵

Adding EKG screening to the medical process at MEPS would also be cost beneficial to the U.S. Govern-



Photo caption. (Photo by author.)

ment over time. Accounting for death gratuity payments, Service Group Life Insurance, health care, funeral costs, and survivors' pensions, the death of a Marine will cost the government an estimated \$800,000.⁶ Assuming approximately eight SCA deaths a year, this adds up to \$6.4 million per year in potentially unnecessary costs. To install an EKG machine in all 65 MEPS nationwide would cost approximately \$130,000 based on the estimated cost of a \$2,000 high-quality EKG machine and associated equipment.⁷

Based on a 26-year study in Italy, EKG testing could offer up to an 89 percent reduction in SCA events Marine Corps-wide. The study, which took place in the Veneto region of Italy, saw the dramatic 89 percent decrease of SCA from over four deaths per 100,000

athletes per year to less than .5 per 100,000—effectively making sudden cardiac death in sports a thing of the past. The screenings also lowered the rate of athlete deaths to less than the non-athletic civilian percentage rate.⁸

Marines who suffer an SCA in the field or during training are far more likely to die than civilian athletes who collapse, for example, in a sports stadium. While SCA is survivable with the rapid application of cardiopulmonary resuscitation and an automatic external defibrillator, time is critical with irreversible damage starting at the three-minute mark. Marines are not routinely trained in cardiopulmonary resuscitation and Navy corpsmen are rarely equipped with an automatic external defibrillator. To compound this matter, Marines are often training and



Photo caption. (Photo by author.)

deployed to austere and remote environments where definitive medical care is potentially hours away.

By adding EKG screening to the medical process at MEPS, the Marine Corps could significantly reduce SCA deaths force-wide over time. This is a truly worthy goal for our organization and a promise kept to the families of our Marines to keep their sons and daughters from unnecessary peril. By making a modest investment in EKG screening, the Marine Corps could save many young American lives.

Notes

1. Aaron Lear et al, "Global Incidence of Sudden Cardiac Arrest in Young Athletes and Military Members: a Systematic Review and Meta-Analysis," *Journal of Athletic Training*, (Carrollton, TX: National Athletic Trainer's Association, September 2020).
2. Staff, "Military Mom's Fight to Keep Brave Hearts Beating," *Avive*, (February 2021), available at <https://avive.life>.
3. Information for Electrocardiogram (ECG or EKG) is available at <https://www.mayoclinic.org>.
4. Staff, "CARDEA 20/20 ECG," *Cardiac Insight*, (n.d.), available at <https://www.cardiacinsightinc.com>.
5. Sarah Ermoshkin, "Naval Health Clinic Annapolis and Uniformed Services University; Partners to Reduce Sudden Cardiac Death," *dvids*, (September 2020), available at <https://www.dvidshub.net>.
6. Kenneth Reich, "Soldiers' Death Benefits Could Exceed \$800,000," *Los Angeles Times*, (April 2003), available at <https://www.latimes.com>.
7. Information for New CARDIAC INSIGHT Cardea 20/20 Interpretive EKG Arrhythmia is available at <https://www.dotmed.com>.
8. Bernard Chaitman, "An Electrocardiogram Should Not Be Included in Routine Preparticipation Screening of Young Athletes," *Controversies in Cardiovascular Medicine*, (Dallas, TX: AHA Journals, January 2007).

