



# UNITED STATES MARINE CORPS

MARINE CORPS ARTILLERY DETACHMENT  
U.S. ARMY FIELD ARTILLERY SCHOOL  
P.O. BOX 810  
FORT SILL, OKLAHOMA 73503-5810

IN REPLY REFER TO:

DetO 6200.1  
SAFETY  
30 Jun 07

## DETACHMENT ORDER 6200.1

From: Commanding Officer  
To: Distribution List

Subj: HEAT INJURY PREVENTION

Ref: (a) MCO 6200.1E W/CH1  
(b) MCO 3500.27A  
(c) MCO P5102.1A  
(d) BUMEDINST 6220.12A  
(e) NAVMED P-5010, Manual of Naval Preventive Medicine, Chapter 9, Section V, Prevention of Heat Injuries  
(f) MCO 1510.89A, Marine Corps Common Skills Handbook  
(g) TRADOC Regulation 350-29, 16 July 2003, Prevention of Heat and Cold Casualties  
(h) TB MED 507, 7 March 2003, Heat Stress Control Casualty Management

Encl: (1) Understanding Heat Injuries  
(2) The Wet Bulb Globe Temperature (WBGT) Index System  
(3) Heat Condition (Color) Flag Warning System  
(4) Fluid Replacement Guidelines for Warm Weather  
(5) Risk Assessment Matrix

1. Purpose. To disseminate information, guidance, and policy concerning the Marine Artillery Detachment (MARDET), Fort Sill, OK, Heat Injury Prevention Program.

2. Situation. Heat injury prevention is a major concern due to extremely hot weather in the summer months, a constant turnover of students and a lack of Navy Medical personnel to support training. This policy will initiate a heat injury prevention program that combines the Marine Corps Policy with the Army's policy for the MARDET's specific situation here at Fort Sill. For this program to be effective, every member of this command must understand their role in taking preventive action and constantly stay focused on heat injury prevention.

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3. Mission. All sections and Marines within the MARDET will have an understanding of the heat injury prevention program in order to identify, prevent, and react to any type of heat injury.
4. Policy. The Detachment's heat prevention order is directed towards preserving manpower through the application of a comprehensive, effective, and continuous heat injury prevention program. All permanent personnel assigned to the Detachment will read and understand all orders listed on this policy. Training for heat injury prevention will be completed by April of every year. The following letter outlines steps that will be universally applied within all sections.
5. Execution. The Command will utilize all applicable orders mentioned in this letter and the following:
  - a. Sections will have training programs that require physical performance from individuals. These programs will include the basic training of students in their primary military occupational specialty (MOS) and physical fitness. Both of these require strict adherence to Army and Marine Corps regulations that are set for heat injury prevention.
  - b. Sections will be guided by the SAT manual for (MOS) training.
  - c. All sections that require physical performance from individuals will be required to have Combat Life Savers on hand to conduct training. (i.e., field exercises, organized physical training).
  - d. All MARDET Marines will view the power point presentation for heat injury on the Detachments Web Site under Safety/Medical ORM'S before the end of April each year.
  - e. Sections will establish physical fitness programs that develop strength, endurance, agility, and good health necessary to sustain Marines on the battlefield.
  - f. Before any unit/section PT or other training operations in hot environments is conducted, the heat index should be announced and appropriate countermeasures employed [see enclosure (2) The Wet-Bulb Globe Temperature (WBGT) Index System]. Call Ft Sill Range Control at 442-2994 or go to the Ft Sill Intranet site <http://155.219.113.9/> and click on Heat Index Information to receive the WBGT Index. In the field radio East

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Range 38.50, West Range 34.50, Alternate 30.50. Hourly updates are required IAW USAFCOEFS Reg 385-1 Safety Post Range Regulation while in the field. Leadership must adhere to the Heat Condition Warning System in enclosure (3) and the Chart in enclosure (4) of this-SOP for guidance on activity limitations during specific indexes. The Army does not use the Flag system that the Marine Corps uses. However, they do use the same color chart and heat index system as mentioned in enclosure (3) and (4). For example, if the WBGT is 90 and above the color will be (Black) and all limitations that go with (Black) will be enforced.

(1) Due to the nature of this command Unit/Section PT will not be conducted if the Heat index is 90 or higher (Black). Unit/Sections must be extremely cautious of any training being conducted during this temperature index. With the exception of field exercises all moderate and strenuous work will be avoided.

(2) Leaders will consider alternate activities that can be performed inside air conditioned buildings if moderate or strenuous (PT) is required.

(3) Leaders will slow down their pace and movements during field exercises during this temperature index. Combat Life Savers will monitor all personnel for heat illnesses. (Enclosure (1) - Understanding Heat Injuries).

(4) Leaders will adjust timelines to allow for training events to be conducted in the cooler parts of the day if possible. (i.e., before 0800 hours or after 2000 hours).

g. Marines with a previous heat-related injury or who are taking dietary supplements must inform their senior leadership to ensure close monitoring of the Marine to reduce the potential for additional heat stress injury. Medical records of Marines who have suffered a heat-related illness must be flagged for ease of identification of susceptible Marines and close monitoring by the command. Marines that have had prior heat illnesses will be identified by wearing a fluid replacement guideline card on their left breast pocket or on the left breast of their PT shirt. (Enclosure (4) - Fluid Replacement Guidelines).

h. Marines who are unacclimatized (Enclosure (1) - Understanding Heat Injuries) to the region, overweight, or unaccustomed to strenuous exercise must be provided a gradual program of PT/training that includes working or running slower

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and shorter time or runs. Section Combat Life Savers will evaluate Marines with illnesses, especially those with fever or dehydration to determine fitness for PT or other training operations in the environment. Section OIC's/SNCOIC's will send Marines found with these type illnesses to Reynolds Hospital for further evaluation.

(1) All Marines will be given time to acclimatize in the summer months in accordance with enclosure (1), para. d.

i. All Field Training events will have the following:

(1) Safety Vehicle with duty driver.

(2) Combat Life Saver (1) per every (10) Marines.

(3) Adequate amount of cool fresh water. (See Fluid Replacement Guidelines in enclosure (4) for appropriate amount.)

(4) Communication capabilities (radio/cell phone).

(5) ORM evacuation plan to evacuate personnel with illnesses/injury. [Enclosure (5) Example ORM].

(6) When temperature index is 85 or above the safety vehicle will carry (1) large cooler per (15) personnel filled with ice water and an ice blanket. (Sheet soaked in ice water) in case of heat injury.

j. All PT events will have the following:

(1) Adequate amount of cool fresh water. (See Fluid Replacement Guidelines in enclosure (5) for appropriate amount)

(2) Combat Life Saver (1) per every (10) Marines.

(3) Cell phone to call emergency services (911).

(4) Safety Vehicle with duty driver for events with more than (15) personnel or with students involved.

(5) If temperature index 85 or above the safety vehicle will carry a large cooler per (15) personnel filled with ice water and an ice blanket (sheet soaked in ice water) in case of heat injury.

(6) ORM evacuation plan to evacuate personnel with illnesses/injury. (Enclosure (5) - Example ORM).

k. Individuals performing PT will do the following:

(1) Notify personnel within their section of the PT they are going to perform.

(2) Notify personnel in the section of the timeline they will be gone and when they plan to return. The route they plan to run if applicable.

(3) Carry water as needed.

(4) Sections will monitor individual PT by time. If the person has not reported back within the timeline the section will find the individual and take appropriate action.

(5) Individuals should avoid conducting individual physical training during the hottest part of the day.

1. If a Marine is observed with the symptoms, enclosure (1), of heat injury the below immediate action will take place:

(1) The Marine will be placed in a cool shaded area.

(2) The Marine will have his/ her clothing loosened or removed as required.

(3) The Marine will consume water slowly.

(4) The Marine will be cooled by water/ ice blanket as required.

(5) The Marine will be evacuated to Reynolds Hospital for further evaluation.

(6) The section will notify the command and send in a Mishap report to the Safety Officer.

(7) The section will follow-up with Marine in hospital until he/she is released.

6. Action. Effective upon receipt, all MARDET personnel will ensure compliance with this policy.

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7. In conclusion, this heat injury prevention program is designed to serve as a tool in conjunction with the orders mentioned within to identify, prevent, and react to heat injuries and illnesses. Bottom line, heat injuries and illnesses are mishaps that can be avoided by using good leadership and proper preventive methods. The loss of one Marine for heat injury or illness is too many. Leaders will prevent these type mishaps by training, observing, and correcting their Marines as required by this policy.



S. T. CAMPBELL

DISTRIBUTION: A

## UNDERSTANDING HEAT INJURIES

### 1. Heat Injuries

a. Heat injuries may occur during physical training (PT) or any hot weather operation or activity, when an individual: (1) is not properly hydrated and/or acclimatized; (2) is exposed to extreme heat; (3) is in Mission-Orientated Protective Posture (MOPP) gear or other personal protective clothing required by the job; (4) is inside closed spaces, such as inside an armored vehicle, or (5) wears body armor. Other contributing factors include previous heat injury, alcohol consumption, use of dietary supplements, fatigue, and skin trauma (i.e., sunburn).

b. Heat injury can be divided into three categories: heat cramps, heat exhaustion, and heat stroke. Any personnel (military or civilian) trained in heat injury prevention must be able to:

- (1) Prevent or minimize heat injuries. PREVENTION IS KEY.
- (2) Recognize and give first aid for heat injuries.
- (3) Check personnel for signs and symptoms of heat injuries.

2. Heat Cramps. Heat cramps are painful cramps of muscles, usually in the stomach, legs, and/or arms. They are caused by loss of electrolytes in the body due to excessive sweating. Heat cramps may occur without the individual feeling thirsty. See table 1-1 of this enclosure for signs and symptoms and first aid measures.

3. Heat Exhaustion. In NAVMED P-5010, this condition is defined as resulting from peripheral vascular collapse due to excessive water and salt depletion. Symptoms include profuse sweating, headache, weakness, pallor, nausea, vomiting, mild dyspnea (shortness of breath), and palpitations. The casualty may become faint and lose consciousness. The blood pressure may be low, the body temperature may be elevated or normal, and the pupils may be dilated. It can occur in an otherwise fit individual involved in PT or any hot weather operation or activity especially if the person is not acclimatized to that environment. If ice packs are available, use them. Put them in arms, armpits, and neck. See table 1-1 of this enclosure for signs and symptoms and first aid measures.

## UNDERSTANDING HEAT INJURIES (continued)

4. Heat stroke. This is a medical emergency that may result in death if care is delayed. It is typically defined as a core temperature greater than 105 degrees Fahrenheit or any change in mental status of an affected individual with any elevated core temperature. It is caused by a failure of the body's ability to maintain optimum core body temperature (cool itself). It occurs more rapidly in personnel who are engaged in work or other PT in a high heat environment than those not physically engaged. If ice packs are available, use them. Put them in arms, armpits, and neck. See table 1-1 of this enclosure for heat injury, signs and symptoms, and first aid. Heat stroke requires immediate evacuation to a higher level of care.

5. Treatment. Medical care and treatment are provided in accordance with NAVMED P-5010. Battalion aid stations will be prepared to treat cases of heat injury. Artificial cooling devices should be employed at treatment stations and in ambulances.

6. Prevention. The three major ways of preventing heat injury are: (1) hydration; (2) wet-bulb globe temperature (WBGT) monitoring and appropriate work/rest cycles; and (3) acclimatization. Remember that removing camouflage or other utility uniforms may increase the chance of sunburn. Provide shade or move individual to shade. In a hot environment and during periods of heavy work, thirst is not a reliable indicator of the body's need for water. Do not use sports drinks as a sole source of hydration. Sport drinks are helpful in replacing fluids and nutrients lost during times of heavy work activity, but cold water is adequate in most situations. Use the fluid replacement guidelines in enclosure (4). Incidence of heat injury recurrence is higher in individuals who have already suffered from a single episode of exposure than those who have not. Leadership must ensure annual heat injury awareness training and education is obtained from medical personnel, per NAVMED P-5010. Proper training and awareness of health risks will minimize heat-related injury/fatality.

a. Hydration. Proper hydration is a process that begins 24 to 48 hours in advance of long marches or working in high-humidity environments. If a unit knows it will engage in activities that require high hydration, it should enact a unit hydration protocol which: prohibits alcohol intake prior to the activity; prohibits the use of dietary/muscle building supplements prior to the activity; encourages consumption of



## UNDERSTANDING HEAT INJURIES (continued)

low to moderate amounts of cool water evenly spaced over the 24-hour day; prohibits cardiovascular exercise in excess of 30 minutes, 24 hours prior to activity (to minimize fluid loss and muscle fatigue which can in turn minimize musculoskeletal injuries); and ensure annual heat injury awareness training and education are obtained from medical personnel, per NAVMED P5010.

(1) Drink fluids frequently in accordance with enclosure (5). Infrequent, large intakes, may lead to stomach distention, vomiting or cardiac problems. Fluid losses should be replaced hour by hour as opposed to salt losses that can be adequately replaced with a salty diet on a daily schedule. Fluid needs may range from 2 quarts in a garrison situation to 3 gallons a day when consuming field rations and performing heavy work in a hot environment. Ideally, individuals should drink 13 to 20 ounces of cool water 10 to 20 minutes before exercise/work in the heat. This procedure, however, does not replace the need for continual fluid replacement and is not as effective in maintaining thermal balance as consuming an equal volume of cool water during exercise or work. Drink cool water until urine turns very pale yellow. Some foods and prescription drugs may darken urine. Seek medical evaluation if you drink proper amounts of water and your urine color is consistently dark yellow.

(2) An individual who gets sick or dizzy in hot weather should rest. DON'T OVERDO - AVOID A PREVENTABLE HEAT INJURY.

b. WBGT Monitoring. See enclosure (3) for information on equipment installation, frequency of monitoring, WBGT Logs, and setup of WBGT Station. The WBGT index is a good indicator of external heat stress on the body. It is most useful in the traditional settings (long-forced marches or mid-day training) under which it was developed. Since the advent of high intensity early morning or late day physical activity, its usefulness to predict early morning PT heat casualties is reduced. This tool determines flag conditions and work/rest cycles. The WBGT readings must be taken in an unshaded location that best represents the actual training location. It works by incorporating the effects of air velocity and humidity (wet bulb), air temperature (dry bulb), and radiant heat (globe temperature).

c. Work/Rest Cycles. Table 5-1 of enclosure (4) provides commanders a guide for deciding the level, criticality, flexibility and execution of physical training conducted during increased heat index conditions. If a command must exceed the

## UNDERSTANDING HEAT INJURIES (continued)

training condition guidelines contained in this Order to accomplish mission essential tasks, that command will have established procedures to do so. Commanders, in concert with local medical authorities, will develop and approve standing operating procedures (SOP) for those occasions. The SOP will contain risk management principles and indicate how the increased heat injury risk will be assessed and addressed. Measures will include, but are not limited to, increased command supervision, command support, and increased support and preparation by local medical personnel. These guidelines apply to the average acclimatized individual wearing camouflage/utility uniforms in hot weather. For example, when performing moderate work, as shown in table 5-1 of enclosure (4), schedules will call for a 10-minute break every hour when the flag condition is green and the WBGT is between 80 to 84.9 degrees Fahrenheit. The hour immediately after the noon and evening meals should be devoted to relaxation or non-strenuous training. Seven hours of sleep per 24-hour period is the minimum required for general efficiency. Table 5-2 of enclosure (4) shows work examples.

d. Acclimatization. Acclimatization is the ability of the body to undergo physiological adaptations to function in a hot environment. NAVMED P-5010, article 9-35 states, "A period of 3 weeks is optimal for acclimatization, with progressive degrees of heat exposure and physical exertion." A minimum of 2 weeks is necessary for the acclimatization process. Chapter 3 of NAVMED P-5010 recommends 22 days for hot humid environments.

(1) Acclimatization to heat involves repeated exposure to heat, sufficient to raise the core body temperature by at least 1 degree Celsius and to induce moderate to profuse sweating. A climate-specific heat injury prevention program must include a differentiation between dry heat and humid heat. Commands should modify the guide provided in enclosure (2) to reflect specifics of climatic conditions in their geographic locations.

(2) During the first 2 days of heat exposure, light activities are appropriate.

(3) By the third day of heat exposure, 3 km runs at the pace of the slowest individual are possible.

(4) Heat acclimatization takes at least 14 days with carefully supervised exercise for 2 to 3 hours daily in the heat.