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*TRADOC Regulation 350-29

6 July 2012

Training

PREVENTION OF HEAT AND COLD CASUALTIES

FOR THE COMMANDER:

OFFICIAL:

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History. This publication is a rapid action revision. The portions affected by this rapid action revision are listed in the summary of change.

Summary. This regulation prescribes policy and provides guidance to commanders in preventing environmental (heat or cold) casualties.

Applicability. This regulation applies to all Active Army and Reserve component training conducted at service schools, Army training centers, or other training activities under Headquarters, U.S. Army Training and Doctrine Command (TRADOC) control.

Proponent and exception authority. The proponent for this regulation is the Deputy Chief of Staff, TRADOC. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations.

Army management control process. This regulation does not contain management control provisions.

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from the Command Surgeon's Office, TRADOC, ATTN: ATBO-M, 950 Jefferson Avenue, Fort Eustis, Virginia 23604-5750.

*This regulation supersedes TRADOC Regulation 350-29, 20 January 2010.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) through channels to Command Surgeon's Office, TRADOC, ATTN: ATBO-M, 950 Jefferson Avenue, Fort Eustis, Virginia 23604-5750. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program (AIEP) Proposal).

Availability. This publication is distributed solely through the TRADOC Homepage at <http://www.tradoc.army.mil/tpubs/>.

Summary of Change

TRADOC Regulation 350-29
Prevention of Heat and Cold Casualties

This rapid action revision, dated 6 July 2012 -

- o Updates term "heat injury" to "heat illness" consistent with current Army terminology.
- o Updates references of U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) to U.S. Army Public Health Command (Provisional) (PHC), and updates links to former CHPPM materials (throughout document).
- o Updates references to other TRADOC regulations (throughout document).
- o Adds training material options (paragraphs 2-2a and 3-2a).

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Chapter 1

Introduction

1-1. Purpose

This regulation prescribes policy and provides guidance to commanders in preventing environmental (heat or cold) casualties.

1-2. References

Appendix A contains required and related publications and referenced forms.

1-3. Responsibilities

Commanders and supervisors at all levels are responsible for protecting Soldiers and civilian personnel from the adverse effects of heat and cold, and for ensuring subordinate leaders are trained in recognition and treatment of heat illness and cold injury.

a. Deputy Chief of Staff, G-3/5/7. Receive and forward compliance reports from centers and schools for annual heat illness and cold injury prevention and treatment training (see paragraphs 1-3d(1) and (2)).

b. TRADOC Surgeon. Prepare and disseminate memorandums on behalf of CG, TRADOC prompting compliance among TRADOC subordinate commands with heat illness and cold injury prevention training each year IAW [TRADOC Regulation 350-6](#), para H-11a.

c. Commanders of major subordinate commands, TRADOC school/center/activity commanders and commandants, directors, and staff principals.

(1) Ensure appropriate hot weather and cold weather protective items (clothing, shelter) are available to Soldiers.

(2) Ensure potable water, ice, and supplemental beverages are available to Soldiers. Plan for 3 gallons of water per day per Soldier for drinking. Consider alternating between water and carbohydrate-electrolyte beverage especially in hot and humid conditions.

(3) Ensure medical support and evacuation plans are tested at least semiannually (see [TRADOC Regulation 350-6](#), para 5-5c) and evaluate compliance with the emergency medical services (EMS) goal of injured personnel to arrive at an EMS facility within 1 hour of any incident (see TRADOC Regulation 350-6, Appendix H-2b).

(4) Establish coordination between the medical treatment facility and training organizations for assistance from preventive medicine service to:

(a) Present annual training (see [paragraphs 2-2](#) and [3-2](#)).

(b) Assist in development of local risk management worksheets (see [appendixes B](#) and [C](#)).

(5) Report heat illnesses and cold injuries IAW [TRADOC Regulation 1-8](#), para 2-2a(35).

(6) Report compliance with heat illness prevention and treatment training prior to 15 April each year, and cold injury prevention and treatment training prior to 15 October each year, thru the TRADOC Emergency Operations Center (EOC) watch team at the following link: usarmy.jble.tradoc.mbx.tradoc-eoc-watch@mail.mil to the TRADOC Surgeon.

d. Brigade Commanders.

(1) Conduct heat illness prevention and treatment training for all subordinate leaders prior to 15 April each year.

(2) Conduct cold injury prevention and treatment training for all subordinate leaders prior to 15 October each year.

(3) Adjust training schedules (for example, train during the cooler part of the day) and locations (for example, indoors or in the shade) as needed to protect Soldiers against extremes of heat and cold.

(4) Refer to [TRADOC Regulation 385-2](#), para 1-5b, when making decisions on risk.

e. Unit Leaders.

(1) Download and publish copies of “Commander's, Senior NCO's and Instructor's Guide to Risk Management of Heat Casualties” and “Unit Leader’s and Instructor’s Risk Management Steps for Preventing Cold Casualties” (available at the following link: <http://www.tradoc.army.mil/surgeon/information.htm>).

(2) Utilize field sanitation team members to monitor conditions of cold and heat and advise on risk factors (see [TRADOC Regulation 350-6](#), para 5-11).

(3) Ensure Soldiers' clothing and equipment is present and serviceable prior to the training day; recommend modifications of the uniform to senior leadership, based on local conditions.

(4) Identify and mark Soldiers who are at risk for heat illness and cold injury (see references listed at [paragraphs 2-2b\(1\)](#), [3-2 b\(1\)](#), and [F-1b\(2\)](#)).

(5) Monitor conditions of heat and cold on the training site (see [TRADOC Regulation 350-6](#), para H-11b(2)). Recommend modifications for scheduling, location, and uniform to senior leadership.

(6) Plan for alternate activities and locations for conditions of extreme heat and cold (for example, physical activity or warming shelters in case of extreme cold).

(7) Be prepared to apply iced sheets in case of heat illness. See [appendix D](#) for procedures on use of iced sheets.

(8) Ensure Soldiers drink sufficient amounts of fluids and consume all their meals. Encourage Soldiers to drink frequently in small amounts and observe their fluid intake.

Note: The use of hydration salts is NO longer recommended. With proper fueling, use of available carbohydrate electrolyte solution and water, there is no need for hydration salts. Sodium and other electrolyte requirements are better met by ensuring Soldiers have adequate time (10-12 min) to consume their meals.

(9) Ensure Soldiers maintain their supply of sunscreen and apply it daily when needed.

(10) Develop and enforce work/rest cycles, guard rotation, and sleep plans during extended training hours (see references listed at [paragraphs 2-2b\(1\)](#) and [3-2b\(1\)](#)).

(11) Be prepared to treat and evacuate Soldiers who demonstrate signs of heat illness or cold injury.

(12) Remind Soldiers to observe their buddies for signs of heat illness or cold injury (see [TRADOC Regulation 350-6](#), paragraph 2-10a).

(13) Reevaluate the training mission if two or more heat illnesses occur at a given training site on the same day.

Chapter 2

Prevention and Treatment of Heat Illnesses

2-1. Basics of heat illness risk

a. The threat. Exposure to high environmental temperature produces heat stress in the body. As the body attempts to compensate, physiological strain or heat load results. This strain, usually in combination with other strains caused by work, dehydration, and fatigue may lead to heat illness. Environmental conditions, namely air temperature (the temperature of surrounding objects), vapor pressure of water in the air (humidity), and air movement influence the heat equilibrium of the body and its physiologic adjustments.

b. The defense. The body rids itself of heat normally through the skin and by exhaled breath, constituting heat relief. Some heat is discharged by radiation from the skin, but the body relies mostly on evaporation of sweat from the skin to cool. The adverse impact of high environmental temperature can be reduced by drinking enough water, wearing clothing properly, maintaining a high level of fitness, and resting after exposure to heat. These measures contribute to the body's normal mechanisms for relieving its heat load.

c. Acclimatization. Most Soldiers' physiological responses to heat stress improve in 10-14 days of exposure to heat and regular strenuous exercise. Factors to consider in acclimatizing Soldiers are the wet bulb globe temperature (WBGT) index (see [Appendix E](#)); work rates and duration; uniform and equipment; and Soldiers' physical and mental conditions.

d. Risk factors for heat illness include the following:

(1) High heat category, especially on several sequential days (measure WBGT when ambient temperature is over 75° F).

(2) Exertional level of training, especially on several sequential days.

(3) Acclimatization (and other individual risk factors – see “Commander’s, Senior NCO’s and Instructor’s Guide to Risk Management of Heat Casualties,” cited in para 1-3e(1)).

(4) Time (length of heat exposure and recovery time).

(5) Not acclimatized to heat.

(6) Exposure to any of the following in the previous 2-3 days:

- Increased heat exposure.
- Increased exertional levels.
- Lack of quality sleep.

(7) Poor fitness (unable to run two miles in less than 16 minutes).

(8) Overweight.

(9) Minor illness (cold symptoms, sore throat, low grade fever, nausea, vomiting).

(10) Taking medications (either prescribed or over the counter)/supplements/dietary aids (for example, allergy or cold remedies, ephedra supplement).

(11) Use of alcohol in the last 24 hours.

(12) Prior history of heat illness (any heat stroke, or more than two episodes of heat exhaustion).

(13) Skin disorders such as heat rash and sunburn that prevent effective sweating.

(14) Age more than 40 years.

e. Types of heat illness.

(1) Heat cramps are caused by an imbalance of electrolytes in the body as a result of excessive sweating. This condition causes the casualty to experience cramping in the arms, legs, and abdomen and sweat excessively, with or without thirst.

(2) Heat exhaustion is caused by loss of body fluids (dehydration) through sweating without adequate fluid replacement. It can occur in an otherwise fit individual who is involved in physical exertion in any hot environment, especially if the service member is not acclimatized to that environment. These signs and symptoms are excessive sweating with pale, moist, cool skin; headache; weakness; dizziness; loss of appetite; cramping; and nausea (with or without vomiting).

(3) Heat stroke is caused by exposure to high temperatures (such as direct sunlight) or being dressed in protective overgarments, which causes the body temperature to rise. Heat stroke occurs more rapidly in service members who are engaged in work or other physical activity in a high heat environment. Heat stroke is caused by a failure of the body's cooling mechanism, which includes a decrease in the body's ability to produce sweat. The victim may experience weakness, dizziness, confusion, headaches, seizures, nausea, stomach pains or cramps, and respiration and pulse may be rapid and weak. Unconsciousness and collapse may occur suddenly.

2-2. Heat illness prevention and treatment

Resources for leaders are available as follows:

a. Annual training.

(1) The following training products are available for download:

(a) U.S. Army Public Health Command (PHC) Web site

(<https://phc.amedd.army.mil/topics/discond/hipss/Pages/HeatInjuryPrevention.aspx>).

- Joint Training Counter-Improvised Explosive Device (IED) Operations Integration Center (JTCOIC) – Training Video "Heat Can Kill" (2011) (18:17) (AKO login required).
- U.S. Army Combat Readiness/Safety Center Video "Heat Injury Prevention" (2008) (3:11).

(b) JTCOIC – Training Video "Heat Can Kill 2" (2011) (14:41)

<http://www.youtube.com/watch?v=xOtcM2FIJdo>.

(2) A heat illness prevention presentation is available from the TRADOC Surgeon's Web site

(<http://www.tradoc.army.mil/surgeon/information.asp>).

b. Risk Management process.

(1) Use "Commander's, Senior NCO's and Instructor's Guide to Risk Management of Heat Casualties" (see paragraph 1-3e(1)) to develop DA Form 7566 (Composite Risk Management Worksheet).

(2) Refer to prototype risk management worksheet at [appendix B](#).

c. Pocket guide. The Heat Injury Prevention (HIP) Pocket Guide is the recommended resource for leaders to carry on their persons. It is available from the PHC Web site.

d. Treatment. All treatment must be supervised by a constant observer.

(1) Soldiers with mild heat illnesses should be placed in the shade and given fluids to drink. Evacuate if symptoms worsen or do not improve after 30 minutes of rest and rehydration.

(2) Suspected heat stroke.

(a) Call emergency medical service (EMS).

(b) Place the Soldier in the shade and remove outer clothing.

(c) Apply iced sheets (see [appendix E](#)).

(d) Do not start intravenous fluids. This should be done by emergency personnel.

(e) Continue cooling until EMS arrives.

(f) Do not attempt to evacuate the Soldier yourself – focus on cooling.

2-3. Other conditions associated with hot weather, overexertion, and overhydration

In addition to the above conditions, leaders should be aware of the following hot weather-related conditions:

a. Heat rash (prickly heat) is caused by restrictive clothing, excessive sweating, and inadequate hygiene. Heat rash can prevent effective sweating and increase a Soldier's risk for heat illness.

b. Sunburn is caused by exposure to the sun without protection from clothing or sunscreen. It can prevent effective sweating and increase a Soldier's risk for heat illness.

c. Skin cancer, including basal and squamous cell carcinomas and melanoma, is the most common of all cancers. Exposure to ultraviolet radiation from the sun (regardless of cloud cover or low temperature) sets the conditions for skin cancer. Soldiers with fair skin that burns and freckles easily, light blue/green eyes, and either red or blonde hair are at highest risk for developing melanoma; however, anyone can develop skin cancer.

d. Rhabdomyolysis or "rhabdo" is the breakdown of muscle fibers and release of muscle fiber products into the circulation, producing muscle tenderness, muscle weakness, and abnormal urine color (dark, red, or cola colored). It is not classified as a heat illness but is caused by extreme exertion in a person who is unaccustomed to exertion, especially if subjected to environmental heat stress with inadequate hydration and electrolyte abnormalities from an inadequate diet and/or abuse of laxatives or diuretics. Some of the muscle breakdown products are toxic to the kidney and frequently result in kidney damage. Sickle cell trait can increase a Soldier's risk for rhabdomyolysis.

e. Hyponatremia (water intoxication) is caused by fluid overload (that is, drinking more than 12 quarts of water per day) and under-replacement of salt losses (not eating enough salted food). This condition can be deadly. Symptoms of hyponatremia can mimic a heat illness, so it is important that Soldiers regulate their fluid intake and diets, and battle buddies and supervisors be generally aware of fellow Soldiers' fluid and dietary intake. Repeated vomiting is a sign that suggests over hydration in the presence of heat illness. Any Soldier who is vomiting repeatedly and possibly has a heat illness should be evacuated to an emergency room. "When in doubt, evacuate."

Chapter 3

Prevention and Treatment of Cold Injuries

3-1. Basics of cold injury risk

a. The threat. The body loses heat by radiation if the outside temperature is lower than the body's temperature. It loses heat by evaporation cooling from sweating, which is useful in hot weather but problematic in cold weather, especially when sweat trapped by clothing diminishes the insulating value of the clothing.

b. The defense. The normal response to the cold is for the blood vessels in the skin and remote parts of the extremities to constrict and conserve warmed blood for the vital organs. By moving large muscle groups by shifting their position on the ground, they can help shift blood from the central body to the periphery. Actions to aid the body's defenses against the cold include dressing properly for the cold and wet, especially for relatively low level of activity (such as lying on the ground); adding clothing in layers for cold and inactivity and removing layers for increased temperatures and activity to prevent sweating; staying well-nourished so the body produces calories; and drinking plenty of fluids, which is important in maintaining the circulation volume.

c. Acclimatization. Soldiers do not respond physiologically to cold exposure the same as to heat exposure. The adjustments to cold exposure are less pronounced, slower to develop, and less practical in terms of relieving strain. For this reason, it is more important for leaders to ensure Soldiers are properly clothed for the cold and wet, adjust the uniform requirements depending on activity, and provide for external warming measures (heated shelter).

d. Risk factors for cold injury include the following:

- (1) Cold (temperature 40° F and below).
- (2) Wet (rain, snow, ice, humidity) or wet clothes.
- (3) Wind (wind speed 5 mph and higher).
- (4) Lack of adequate shelter/clothes.

- (5) Lack of provisions/water.
- (6) Previous cold injuries or other significant injuries.
- (7) Use of tobacco/nicotine or alcohol.
- (8) Skipping meals/poor nutrition.
- (9) Low activity.
- (10) Fatigue/sleep deprivation.
- (11) Little experience/training in cold weather.
- (12) Cold casualties in the previous 2-3 days.

3-2. Cold injury prevention and treatment

Resources for leaders are available as follows:

a. Annual training.

(1) The following training products are available from the PHC Web site at <https://phc.amedd.army.mil/topics/discond/cip/Pages/ResourceMaterials.aspx>:

- (a) Cold: Cold Weather Casualties and Injuries Chart.
- (b) Cold: Cold Weather Injuries Card.

(2) A cold weather injury prevention presentation is available from the TRADOC Surgeon's Web site at <http://www.tradoc.army.mil/surgeon/information.htm>.

b. Composite Risk Management process.

(1) Use "Unit Leader's and Instructor's Risk Management Steps for Preventing Cold Casualties" (see paragraph 1-3e(1)) to develop DA Form 7566, Composite Risk Management Worksheet).

(2) Refer to prototype composite risk management worksheet at [appendix C](#).

c. Foldout booklet. Graphic Training Aid 05-08-012, Individual Safety Card, is the recommended resource for leaders to carry on their persons. It is available through Reimer Digital Library, <http://www.adtdl.army.mil/> (log in; select "Library Search," then "Commandant Approved Training," then "Graphic Training Aids" and under Keyword type " Safety;" or order through the installation Training Audiovisual Support Center).

3-3. Other conditions associated with cold weather

In addition to the above conditions, leaders should be aware of the following cold weather-related conditions:

a. Carbon monoxide poisoning produces vague symptoms of fatigue, headache, nausea, vomiting, loss of coordination, and mental status changes, including giddiness and decreasing mental alertness. Progressive exposure results in loss of consciousness and death.

b. Snow blindness is caused by glare from an ice field or snowfield, especially at high altitude, causing a sensation of grit in the eyes with pain in and over the eyes, made worse by moving the eyeball. Other signs and symptoms are watering, redness, headache, and increased pain on exposure to light. It is more likely to occur in hazy, cloudy weather than when the sun is shining. Snow blindness is prevented by wearing sunglasses in these conditions.

Appendix A**References****Section I****Required Publications**

TRADOC Regulation 1-8

TRADOC Operations Reporting

TRADOC Regulation 385-2

U.S. Army Training and Doctrine Command Safety Program

Section II**Related Publications**

Tri-Service Reportable Events – Guidelines & Case Definitions

Accessible at

http://afhsc.army.mil/Documents/TriService_CaseDefDocs/June09TriServGuide.pdf

Army Regulation 350–1

Army Training and Leader Development

Field Manual 4-02.17

Preventive Medicine Services

Field Manual 4-25.11

First Aid

Field Manual 4-25.12

Unit Field Sanitation Team

TRADOC Reg 350-29

Field Manual 5-19
Composite Risk Management

Field Manual 21-10
Field Hygiene and Sanitation

Field Manual 31-70
Basic Cold Weather Manual

GTA 05-08-012
Individual Safety Card

TB MED 507
Heat Stress Control and Heat Casualty Management

TB MED 508
Cold Injury

US Army Research Institute of Environmental Medicine Technical Note 02-2
Sustaining Health and Performance In Cold Weather Operations

TRADOC Regulation 350-6
Enlisted Initial Entry Training (IET) Policies and Administration

Section III

Referenced Forms

DA Form 1045
Army Ideas for Excellence program (AIEP) Proposal

DA Form 2028
Recommended Changes to Publications and Blank Forms

DA Form 7566
Composite Risk Management Worksheet

Appendix B Composite Risk Assessment Worksheet – Heat Illness

This worksheet (figure B-1) is provided as an example only. Each worksheet should be developed specifically for each site.

COMPOSITE RISK MANAGEMENT WORKSHEET											
For use of this form, see FM 5-19; the proponent agency is TRADOC.											
1. MSNTASK Protect against Heat Illnesses		2a. DTG BEGIN		2b. DTG END		3. DATE PREPARED (YYYYMMDD)					
4. PREPARED BY a. LAST NAME		b. RANK		c. POSITION							
5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. WAS CONTROL EFFECTIVE?				
	Heat load (heat index and Soldier's activities today and the past 2 days)		Ensure Soldiers shower in cold water at end of previous training days Consider relocating or rescheduling training		Company training meeting	Platoon leader (PL) / Platoon sergeant (PSG)					
	Soldiers in general not acclimatized to heat		Consider modifying uniform and or activity level		Company training meeting	PL/PSG					
	Soldiers are under-hydrated		Plan for and enforce adequate water consumption, especially on evening prior to training		Company training meeting	PL/PSG					
	Individual Soldiers not acclimatized to heat		Mark individual Soldiers who are not acclimatized		Platoon/squad formation	PL/PSG					
	Soldiers overweight/unfit		Mark individual Soldiers who are overweight/unfit		Squad leader (SL)	SL					
	Soldiers have minor illnesses and/or taking medications		Ensure early symptoms of illness are identified and treated Mark Soldiers who are ill and/or taking medications		Squad leader	SL					
13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one)											
<input type="checkbox"/> LOW <input type="checkbox"/> MODERATE <input type="checkbox"/> HIGH <input type="checkbox"/> EXTREMELY HIGH											
14. RISK DECISION AUTHORITY											
a. LAST NAME		b. RANK		c. DUTY POSITION		d. SIGNATURE					

Additional space for entries in items 5 through 11 is provided on Page 2.

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Figure B-1. Sample composite risk assessment worksheet – heat illness

Appendix C Composite Risk Assessment Worksheet – Cold Injury

This worksheet (figure C-1) is provided as an example only. Each worksheet should be developed specifically for each site.

COMPOSITE RISK MANAGEMENT WORKSHEET For use of this form, see FMJ 5-15; the proponent agency is TRADOC.			
1. INST/TASK Protect against Cold Injuries		2a. DTG BEGIN	2b. DTG END (YYYYMMDD)
4. PREPARED BY a. LAST NAME		c. POSITION	
b. RANK		d. SIGNATURE	
5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS
9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. WAS CONTROL EFFEC-TIVE? TIME?
	Cold (wind chill 40 and below); wet (rain, snow, ice, humidity); wind (wind speed 5 mph and higher)		Consider relocating or rescheduling training
	Lack of adequate clothing/shelter; wet clothing		Specify packing list Inspect Soldiers' packs, and replace missing or unserviceable items Provide warming shelters at training site
	Lack of provisions/ water, dehydration		Ensure rations and water are available Consider supplemental snacks and warm beverages
	Low activity		Plan activities that move large muscle groups
	Previous cold injuries Physical injuries that limit Soldier's activity		Identify, mark, and monitor Soldiers with prior cold injuries or other type injuries
	Shipping meals/ poor nutrition Fatigue/ sleep deprivation		Enforce consumption of meals Develop/ enforce rest and sleep plan
			Company training meeting
			Company training meeting
			Company training meeting
			Platoon squad formation
			Squad leader (SL)
			Squad leader
13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (Check one) <input type="checkbox"/> LOW <input type="checkbox"/> MODERATE <input type="checkbox"/> HIGH <input type="checkbox"/> EXTREMELY HIGH Additional space for entries in items 5 through 11 is provided on Page 2.			
14. RISK DECISION AUTHORITY a. LAST NAME		b. RANK	
		c. DUTY POSITION	

Figure C-1. Sample composite risk assessment worksheet – cold injury

Appendix D

Instructions on Use of Iced Sheets

D-1. Concept

a. The use of bed sheets cooled with ice water has been proven to significantly improve the recovery and outcome of persons suffering from heat stroke.

b. The use of iced sheets for treatment of heat stroke in the field is recommended in [TB MED 507](#), paragraph 5-2; Heat Injury Risk Management; and [TRADOC Regulation 350-6](#), paragraph H-11f.

D-2. Procedure

The recommended indications and procedures for use of iced sheets are as follows:

a. Provide iced sheets in accordance with risk assessment and local guidance.

b. Prepare iced sheets by placing ordinary bed sheets in iced water.

(1) Keep iced water ready in Igloo(R)-type ice chests.

(2) Have sheet readily available, either soaking in iced water or in resealable plastic bags.

(3) When needed, immerse sheet in iced water and ensure it is saturated; this can be done as Soldier's outer clothing is being removed.

c. Depending on the risk, the ice chests can be maintained at training sites by drill sergeants; carried on ambulances or nonstandard evacuation vehicles; and maintained at troop medical clinics.

d. Iced sheets should be applied anytime a Soldier has a change in their mental status and consideration is given to environmental heat exposure being the cause of this change (that is, either during environmental heat extremes or following days of exposure to environmental heat extremes). Mental status changes include confusion, inability to properly follow commands, loss of consciousness, etc. The mental status changes of heat illness are more important than the Soldier's temperature when deciding on the treatment of heat illnesses. Ask the following questions to assess mental status:

(1) What is your name?

(2) What month is it? What year is it?

(3) Where are you?

(4) What were you doing before you became ill?

e. Iced sheets should always be applied as follows:

- (1) Cover as much exposed skin as possible with the ice-cold sheets.
- (2) Also cover the top of the head.
- (3) When sheets warm up, put them back into cooler and then reapply.

f. Iced sheets should be re-iced and re-applied (or completely replaced) whenever the iced sheets become warm (because the sheets are no longer delivering cooling therapy). Cooling should be continued until EMS arrives. Do not disrupt cooling on the basis of a temperature measurement (for example, with ear or skin thermometer).

g. Evacuate any Soldier who requires cooling with iced sheets to the nearest emergency room via EMS.

Appendix E

Instructions on Use of the WBGT

E-1. Types of WBGTs

a. The mechanical WBGT kit is the U.S. Army standard. Commanders may use digital WBGTs at their discretion.

b. The TRADOC Surgeon's Office recommends the use of a regularly calibrated, mechanical WBGT kit (NSN 6665-00-159-2218, WBGT Kit with Tripod: NSN 6665-01-381-3023, NSN Source: FM 4-25.12).

c. Commanders may, at their discretion, use alternative digital WBGT measurement devices called handhelds or heat stress monitors (HSMs).

(1) Should commanders choose the digital alternative, such measuring instruments must receive yearly calibration via appropriate calibrating activities (such as test, measurement and diagnostic equipment [TMDE]). Inaccuracies may occur if the operator is in close proximity to the unit (that is, when using a handheld device) or when digital WBGT/HSM devices are left outside for long periods without use.

(2) Acceptable commercially-available HSM devices include the QUESTemp 36, the Extech HT30, and the WIBGET RSS-214. Consult with the installation Environmental Health Section, Safety, and Department of Public Works for assistance in choosing a device.

E-2. Method for use of the WBGT

a. The standard method for measuring the heat index is to calculate the values of radiant heat, humidity, air movement, and shaded temperatures via WBGT thermometer. This device requires reading the mercury levels in ruled glass columns and using a slide rule-type index to obtain the heat index. The less expensive mechanical WBGT kits can be used at various sites in the training area at a significantly lower cost. Refer to TB MED 507, Heat Stress Control and Heat Casualty Management, accessible at http://armypubs.army.mil/med/dr_pubs/dr_a/pdf/tbmed507.pdf, appendix B, for instructions on employing the mechanical WBGT device.

b. Any WBGT device, whether mechanical or digital, should be calibrated by TMDE support personnel on schedule in accordance with guidelines for the equipment.

c. Employ field sanitation team members to maintain and operate WBGT devices.

**Appendix F
Methods for Controlling Risk of Heat and Cold Injury****F-1. Marking Soldiers at risk**

a. Consult “Commander's, Senior NCO's and Instructor's Guide to Risk Management of Heat Casualties” and “Unit Leader's and Instructor's Risk Management Steps for Preventing Cold Casualties” (see para 1-3e) to determine individual Soldiers' risk factors for heat and cold injury.

b. Ensure cadre identify and mark Soldiers who are at risk for heat and cold injury:

(1) Colored, square Velcro patch affixed to the upper left sleeve (such as red for heat injury risk and blue for cold injury risk).

(2) Colored beads strung on parachute (“550”) cord (such as red for heat illness risk and blue for cold injury risk) (figure F-1), which can double as hydration tracking (see below). Refer to “Examples of Marking Soldiers with Prior Injuries” at <http://www.tradoc.army.mil/csm/docs/MARKING%20slides.pdf> for instructions on configuring the cords.

(3) Colored wrist or armbands (red for heat and blue for cold).



Figure F-1. Colored beads on 550 cord

F-2. Monitoring Hydration Status

The following methods are recommended to monitor Soldiers' hydration status:

- (a) Parachute 550 cord tied to a uniform buttonhole or ear plug case. Soldiers tie a knot in the cord each time they finish a canteen (1 quart) of water. (See figure F-2.)



Figure F-2. Knotted 550 cord

- (b) Beads on a 550 cord. Ten beads are strung on 550 cord (figure F-3) for Soldiers to move up or down for each quart of fluid they have consumed.



Figure F-3. Beads on 550 cord

F-3. Reduce heat load

Provide for Soldiers to shower unclothed in cold water at the end of a day of moderate and heavy training in category 3 and above to reduce heat load.

Glossary

Section I

Abbreviations

DA	Department of the Army
EMS	emergency medical service
EOC	emergency operations center
HSM	heat stress monitors
IAW	in accordance with
JTCOIC	Joint Training Counter-Improvised Explosive Device (IED) Operations Integration Center
PHC	U.S. Army Public Health Command
TMDE	test, measurement and diagnostic equipment
TRADOC	U.S. Army Training and Doctrine Command
WBGT	wet bulb globe temperature