



Heat Illness Prevention Pocket Guide

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Hazards:

- **H**igh heat category, especially several days in a row (measure wet-bulb globe temperature (WBGT) when ambient temperature is over 75° Fahrenheit (F)).
- **E**xertional level of training, especially several days in a row.
- **A**cclimatization (and other individual risk factors – see below).
- **T**ime of exposure, to include nights and recovery time.

Individual Risk Factors:

The more factors, the higher the risk

- **Not acclimatized** to heat (need 10-14 days to get Soldiers adequately acclimated).
- Exposure to cumulative days (2-3 days) of any of the following:
 - » Increased heat exposure
 - » Increased exertional levels
 - » Lack of quality sleep
- Low fitness level.
- Higher percentage of body fat.
- Minor illness (cold symptoms, sore throat, low-grade fever, nausea, vomiting).

- Taking medications (prescribed or over-the-counter), supplements, or dietary aids such as cold remedies, stimulants, or performance-enhancing drugs.
- Use of alcohol in the last 24 hours.
- Prior history of heat illness (any heat stroke or > 2 episodes of heat exhaustion).
- Skin disorders such as heat rash and sunburn that prevent effective sweating.

Heat Illness Controls: Decision to accept risk is made at the appropriate level

- See U. S. Army Training Command (TRADOC) Reg 385-2, para 1-5e.

Ensure controls are in place

- Monitor and record WBGT hourly.
- Adhere to work/rest cycle in high heat categories.
- Run in formation at double arm interval (the extra space helps an individual's heat dissipate during runs).
- For tasks requiring continuous effort, adhere to the Continuous Work/Water Consumption Guide (without rest) and other guidelines for warm weather training conditions. Allow several hours of rest afterwards.

Provide time for heat acclimatization

- Heat acclimatization requires 10-14 days of moderate aerobic exercise in the heat.
- Total daily duration should be 100-120 minutes; the exercise should cause vigorous sweating.
- Maintain high physical fitness; very fit Soldiers will acclimatize to heat faster than less fit Soldiers.
- Heat acclimatization increases sweating and water requirements; dehydration negates many of the advantages of acclimatization.

Monitor and enforce rehydration and refueling

- Encourage consistent drinking. Do not exceed 1 quart per hour (qt/h) under most conditions; maximum of 1½ qts/h or 12 qts/day under very strenuous conditions (walking in sand, 2.5 miles per hour (mph) with load; field assaults under Heat Category 5 conditions).
- Make water more palatable, if possible, by cooling; ensure adequate time to drink and to eat entire meals.
- Do not allow Soldiers to empty canteens to lighten load. If using refillable bladder systems, limit refills to 3 liters every 3 hours. Have Soldiers see medic if more frequent refills are needed.

- Salt tablets are not recommended, but table salt may be added to food (including meals ready-to-eat (MREs)) when the heat category is high.
- Use the urine color test first thing in the morning to gauge initial hydration status.

Execute random checks

- Spot checks by Cadre, Senior Noncommissioned Officers, and Drill Instructors.
- Enforce battle buddy checks — need to be aware of each other's eating, drinking, and frequency of urination.
- Plan placement of leaders to observe and react to heat casualties in dispersed training.

Follow clothing recommendations

- Heat category 1-2: Normal wear.
- Heat category 3: Unblouse trouser legs; unbuckle web belt.
- Heat category 4-5:
 - » Unblouse trouser legs; unbuckle web belt.
 - » Remove t-shirt from under Army Combat Uniform/ Operational Camouflage Pattern (ACU/OCP) or remove ACU/OCP top down to t-shirt (depends whether biting insects are present).

- » Remove helmets unless there are specific safety reasons to keep them on (such as being on a firing range).
- Mission-oriented Protective Postures (MOPP) 4: Add 10°F to WBGT index for easy work, and 20°F to WBGT index for moderate and hard work.
- Body Armor: Add 5°F to WBGT index.

Have Soldiers take cold showers at the end of the day when moderate or heavy work was performed in Heat Category 3 or higher to “dump” excess body heat.

Warning Signs of Heat Illness and Overhydration

With any of the below symptoms or signs, immediately call for medical evaluation by a 68W (Medic). If 68W is not immediately available, call for Medevac or ambulance.

Indications of Possible Heat Casualty

More Common Signs/Symptoms

- Dizziness
- Headache
- Nausea
- Unsteady walk
- Weakness or fatigue
- Muscle cramps

Immediate Actions

- Remove from training and loosen clothing.
- Allow casualty to rest in shade; place flat on back with legs elevated 12-24 inches above the heart.
- Give sips of water or rehydration fluids if available (not to exceed 1 liter).

Serious Signs/Symptoms

- Hot body, high temperature
- Confusion, agitation (see Mental Status Assessment on p.8)
- Vomiting
- Involuntary bowel movement
- Convulsions
- Weak or rapid pulse
- Unresponsiveness, coma
- Hyperventilating

Immediately call Medevac or ambulance for emergency transport while doing the following:

- Lay down in shade with feet elevated until Medevac or ambulance arrives.
- Undress as much as possible.
- Immediately begin cooling with ice sheets or ice packs.
- Assess and document fluid intake if possible; do not administer additional water.

Mental Status Assessment

An important sign that the Soldier is in a serious life-threatening condition is mental confusion (with or without increased temperature).

Anyone can do a mental status assessment asking some simple questions.

Call for emergency Medevac or ambulance if any of the following exist:

- What is your name? (Does not know his/her name.)
- What month is it? What year is it? (Does not know the month or year.)
- Where are we/you? (Is not aware of location or surroundings.)
- What were you doing before you became ill? (Does not know the events that led to the present situation.)

Water Intoxication or Exercise Associated Hyponatremia

Drinking more water than the body can excrete (through sweating and urination) can lead to water intoxication, which requires immediate medical attention. Signs and symptoms are similar to heat illness and often occurs during the heat illness season. These include confusion, weakness, and vomiting.

Ask these questions to the Soldier or Battle Buddy:

- Is the Soldier alert with appropriate behavior, and can he/she answer simple orientation questions as listed above?
- Ask the Soldier about fluid consumption (for the day and for the training event). If they have been consuming over 1 liter per hour, they may have water intoxication.
- Has the Soldier been eating? Check rucksack for number of MREs left (suspect water intoxication if the Soldier has not been eating).
- If the Soldier has collapsed during training and is found to have changes in mental status and is exhibiting inappropriate behaviors (i.e., confusion, being combative, vomiting), they should be directed to rest in the shade, with clothing loosened. Medical care should be sought immediately.

Work/Rest Times and Fluid Replacement Guide

Heat Category	WBGT Index, (°F)	Easy Work Walking on hard surface, 2.5 mph, < 30-lb. load; weapon maintenance, marksmanship training.		Moderate Work Patrolling, walking in sand, 2.5 mph, no load; calisthenics.		Hard Work Walking in sand, 2.5 mph with load; field assaults.	
		Work/Rest (minutes)	Fluid Intake (quarts/hour)	Work/Rest (minutes)	Fluid Intake (quarts/hour)	Work/Rest (minutes)	Fluid Intake (quarts/hour)
1	78° - 81.9°	NL	½	NL	¾	40/20 (70)*	¾ (1)*
2	82° - 84.9°	NL	½	50/10 (150)*	¾ (1)*	30/30 (65)*	1 (1¼)*
3	85° - 87.9°	NL	¾	40/20 (100)*	¾ (1)*	30/30 (55)*	1 (1¼)*
4	88° - 89.9°	NL	¾	30/30 (80)*	¾ (1¼)*	20/40 (50)*	1 (1¼)*
5	> 90°	50/10 (180)*	1	20/40 (70)*	1 (1¼)*	10/50 (45)*	1 (1½)*

Adherence to this guidance will result in sustained performance and hydration for at least 4 hours of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/hr) and exposure to full sun or full shade (± ¼ qt/hr). Rest means minimal physical activity (sitting or standing) in the shade if possible. Body armor - add 5°F to WBGT index in humid climates. NBC (MOPP 4) - Add 10°F (Easy Work) or 20°F (Moderate or Hard Work) to WBGT Index. **CAUTION:** hourly fluid intake should not exceed 1½ qts. Daily fluid intake should not exceed 12 qts.

*Use the amounts in parentheses for continuous work when rest breaks are not possible. Leaders should ensure several hours of rest and rehydration time after continuous work.

NL = no limit to work time per hour.

Source: TB5071, AFPAM 48-152 (I) March 2003.



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