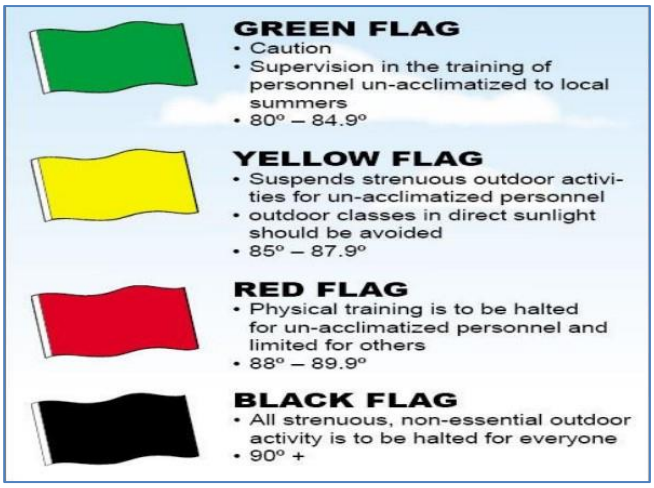
NAVAL SAFETY COMMAND

SAFETY AWARENESS DISPATCH

SA 23-20

Heat Stress Mishaps

With the summer months quickly approaching, and for some, they exist year-round, we're looking at one of the most prevalent and unavoidable environmental hazards, heat. Whether on or off-duty, if you are going to be outside during the summer, you will probably have to deal with the summer heat. Some places have it worse than others, but the result of not respecting the hazard that higher temperatures pose is the same everywhere. The following examples illustrate what can happen if we don't prepare for the heat or heed its effect on us.



- Going hard on the gridiron. A Marine was part of a base football league and participating in Saturday practice on a humid day. During the two-hour session, he participated in almost every play without taking a break to rest or drink water. The Marine drove back to the barracks after practice and, upon exiting his car, experienced severe leg cramps. As he tried to alleviate the cramps, he had a full-body seizure and blacked out. The barracks duty officer found the Marine and called emergency services. The Marine was described as fit with a history of participation in competitive athletics. After the incident, the Marine admitted he discounted the heat because of his perceived physical ability. *—No one is immune to the effects of heat stress, or in this Marine's case, full-blown heat stroke. Heat acclimatization leads to sweating more but doing so earlier and more efficiently. However, this does NOT reduce the need for proper hydration. No amount of acclimatization will protect you if you don't give your body what it needs; water, electrolytes and the occasional rest break.*

- Steamed. A civilian food service employee reported to work feeling ill and fatigued. She requested to work the scullery because she could take water breaks more frequently than on the food serving lines. While she was able to take more breaks, she also had to work with the hot steam from the dishwashing machine. She worked for two hours before she became dehydrated and nauseous. A supervisor took her to get medical attention, where she received intravenous (IV) treatment and instructions to stay home for six days to recover. *—Heat stress doesn't just happen outside. Anywhere you physically exert or expose yourself to heat can cause this problem. Recognizing the signs and when to stop what you are doing is essential. While the worker did attempt to mitigate her fatigue by working where she could take breaks, that wasn't enough. Taking one day off would have saved this employee six days convalescence.*

- Pushing too hard. A Marine attending his infantry school was trying to be the top of his class—Oorah! He was a noteworthy athlete, having taken part in multiple ultramarathons. His class was conducting their land navigation test on a scorching day for the region and he was trying to be the first to complete his land navigation card. He sprinted from point to point, and an instructor encountered him on his way to his last point, ahead of most of the class. Toward the end of the event, he had not returned, though. Another student was returning and, hearing a groan, found the first student collapsed in a dry creek bed. He had a core temperature of 108 degrees. *—This incident is another testament that even the most physically fit people are affected by heat. This Marine's intensity is commendable, but we must recognize our limits and know when to cut back.*

- A sunny day car wash. A Sailor was participating in a car wash fundraiser in a desert city. The event began at 0730. After two hours in the sun, the Sailor started feeling dizzy and losing muscle control. He was taken to the unit clinic, where he was cooled with ice packs and treated with an IV. *—There's no room for complacency in the heat. A car wash where you are working with water seems like the last place one*

would get heat exhaustion, but working in the sun is working in the sun. Even if you have water around you, you will become dehydrated if you aren't drinking it. "Drink up me hearties yo ho!" (water, that is)

- Hiking away from civilization. Two Sailors were spending their Saturday hiking in a national forest. They conducted a there-and-back route, walking approximately two hours from the parking lot and then back to their truck. The temperature reached 110 degrees by the time they got to the turnaround, with a humidity of 40 percent. Shortly after beginning the return trek, one of the Sailors collapsed from a heat stroke. There was no cell phone reception, so the other Sailor had to run to get help. They eventually got an air medevac, but not fast enough to prevent the heat stroke from being irreparable. The Sailor died while in the hospital. *—Risk mitigation is not just for on-duty. Hiking can usually be a leisurely activity, but not when the temperature is in triple digits. It is always important to be conscious of heat injury, and even more so when the weather is extreme and you are far from medical support. Please plan appropriately for occasions like this.*

Key takeaways

Heat is often unavoidable. We can't change the weather, but we can take the right approach to it. Ensure you recognize when heat is a factor, whether indoors or outdoors, so you can act accordingly. We recommend the following considerations.

1. **Prevention starts and ends with proper hydration.** We have all heard the mantra you have to start hydrating the day before an event. It takes your body a while to intake fluids. If you start an exercise without hydrating beforehand, you are behind the curve. Prior hydration must be followed with continuous hydration. Heat and exertion drain your body of water and electrolytes—that is literally what sweat is. You must continuously replenish your system. Make sure you are drinking the proper fluids as well. Excessive sugar and caffeine are not the correct answer. Caffeine is a diuretic and there are better hydration options than drinks with high sugar content.

2. **Know the symptoms.** Identifying heat stress before it becomes heat stroke can save lives. Headaches, cramps, and fatigue are often initial indicators of potential heat exhaustion and require action, like taking a break and hydrating. Dizziness/light-headedness, nausea/vomiting and decreased/absent sweating can follow, which are signals that heat stress is escalating and may become severe if not corrected. Continued heat stress can lead to confusion or disorientation, seizures and unresponsiveness. At that point, the individual likely lost the ability to recognize their condition and will require others to intervene to prevent or treat heat stroke. Taking a break and increasing fluid intake may be enough to counteract heat stress if initiated early and sometimes it's better to stop completely. Stopping for the day is better than pushing yourself into heat stroke and taking yourself out of the fight.

3. **Plan for the heat**. Recognizing that heat will be a factor is your and your leadership's responsibility. Don't wait until you're feeling the signs before you hydrate. Start hours or even the day before the expected heat-related activity. Studies show that prior heat injury increases the likelihood of a future incident. Those with previous heat stress incidents must be more vigilant. Leadership must plan accordingly for heat conditions and factor in mitigations. Know the heat flag conditions and make plans for when they change. Enforce the mitigations you have in place. For more on heat stress management, see the chapter 2 of the Navy Safety and Occupational Health Manual for Forces Afloat, OPNAVINST 5100.19 (series).

Heat Stress Related Studies

Incidence of Recurrent Exertional Heat Stroke in a Warm-Weather Road Race - PMC (nih.gov)(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7766530/)

Heatstroke stresses the body years after the original heat illness - News - University of Florida (ufl.edu) (https://news.ufl.edu/2022/07/heatstrokes-long-term-damage-to-the-body/)

And remember, "Let's be careful out there"