

For most riders, the coming of summer weather means motorcycling at it's best. However, like packing a sweater in the fall, certain conditions prevail during the hot summer months that can spell trouble for the traveling motorcyclist. First, the arms, face and hands are exposed to the sun prompting sunburn. A little sunscreen applied to the nose, a long sleeved shirt and gloves for the hands solve the problem. (Experienced riders wear gloves and cover their arms all the time.) The second problem is more involved.

The primary areas of heat loss (the head, neck, armpits and groin) are exposed directly to the wind. Although this aids in cooling the rider, the rate of evaporation of perspiration off the skin is so fast that it becomes impossible to accurately judge the loss of body fluids. Failure to replace these lost fluids can lead to heat exhaustion or, in extreme cases, heat stroke.

A quick review of heat exhaustion/stroke, their symptoms, treatment and prevention may help the rider avoid these ills.



HEAT EXHAUSTION

Heat exhaustion is the most common and occurs when the body loses too much fluid. The warning signs are mild and include weakness, fatigue, excessive sweating, headaches and dizziness. The skin is cold and pale but the body temperature stays near normal. Treatment and prevention are the same. Have the victim drink water slowly. If you have heat exhaustion the worst you'll get is confused. If you have trouble walking or lose consciousness then you are entering the early stages of the much more severe (and often fatal) heat stroke.

HEAT STROKE

Heat stroke is a much more serious and life threatening condition. The body's heat regulating mechanism breaks down and the body's temperature soars. Symptoms include a temperature of 104-106, an almost total absence of sweating, and the skin feels hot, flushed and dry. Pulse rate increases rapidly. Nausea, disorientation and dizziness may precede convulsions or unconsciousness. Immediate first aid is crucial. Some 20% of heat stroke victims die even with the proper medical treatment.

The primary treatment consists of lowering the victim's temperature, which can be accomplished in several ways. Splash the victim with water instead of immersing them, as the water will evaporate more quickly on the skin providing a cooling effect. (A word of caution against throwing a victim into a cool, nearby stream. If the body's temperature falls too far too fast there is the danger of sending the patient into hypothermic shock, which can be even more deadly than heat stroke). Wrap the victim in wet towels. If the patient is conscious, force them to drink fluids. Plain water is best, but other electrolyte drinks like Gatorade are also very good. Move them inside an air-conditioned building to cool down, then get them to a hospital.

What is the best way to avoid these maladies? Drink plenty of fluids. Stay away from alcohol and caffeine as they tend to speed dehydration. Eat more fruit and vegetables as they have a fairly high water content and a good salt balance. Doctors now consider salt tablets bad medicine. The increased salt keeps fluids in the stomach longer, which leaves fewer fluids available for sweating-which aids in cooling the body.

Other handy tips. Wear light colored clothing and avoid traveling during the afternoon. (Yes, you really are cooler in a long sleeved shirt!) If you must travel, slow down your pace and take frequent breaks. (A cup filled with ice and a straw for drinking helps to keep you cool between breaks.) Remember, no one is immune to heat exhaustion, not even finely toned athletes.

Ride Safe

When You're Hot, You're

HOT!

by David L. Hough

I HAD STARTED the day from a campground in Wyoming, and intended to make a fast transit across Nebraska on my way to southern Missouri. Thunderclouds over the Black Hills of South Dakota kept the temperature pleasant most of the morning. But, as I dropped down south into Nebraska, the temperature soared, and a strong southwest wind howled across the prairie, hissing me with hot, dry air. By noon, I had started to get a headache, then my legs began to cramp, and a few miles later I began to feel nauseous and sick to my stomach.

Late for lunch and low on fuel, I looked for a restaurant and a gas station, but there was only a convenience station at the junction where I needed to turn off. So, I filled the tank, bought two cans of ice-cold soda, and planned to find a nearby park where I could make my own sandwich. I was thirsty enough to down both sodas on the spot, but the station was congested with cars, so I went looking for a wayside stop, hopefully with some shade.

A few miles down the road I found a state park. I felt exhausted, my head was throbbing, and it was all I could do to park the bike and drag myself to a picnic table. As I unzipped my jacket and started to gulp down the first can of cold pop, my stomach cramped so badly I almost blacked out. I doubled over with my head down on the picnic table, feeling as though some invisible ghouls were plunging a knife into my belly, but I had no energy to fight back.

I managed a few more sips of the soda, then some water, and as I slowly recovered, I mentally kicked myself for not listening to the signals my body had been sending for the last hundred miles. Those leg cramps were a message: "We're running low on water down here, Boss." Thinking back, I

badn't had anything to drink since a couple of cups of coffee at mid-morning. The leg cramps, the headache, the nausea—yep, all the classic symptoms of heat exhaustion. I'd been focusing too much on covering the miles, and not enough on my hot weather riding tactics.

Heat exhaustion had snuck up on me because it was hot, but not one of those triple-digit scorchers that announces itself like a pizza in the face. I remembered a ride south over the Siskiyou Mountains from Oregon to California that turned into a scorcher. Up at the 4000' elevation it was chilly enough, but 100 miles or so later, descending into the Sacramento Valley was like riding into a broiler oven. By the time I reached Oroville, the temperature sign on the bank was flashing 118° F, and I had another 150 miles to cover to reach the rally site at Mariposa.

To continue that ride, I needed to go into desert survival mode. I kept the fell riding gear on, including riding pants, jacket, insulated leather boots, gloves and a knit neck "cooler," which I saturated with water from a squeeze bottle. As quickly as the fabric dried out in the blast-furnace wind, I would flip the facemask open, squeeze a gusher of water down my chin, and slam the facemask shut again.

Whether I was riding or stopping for more ice water, other people stared at me in disbelief. Peering out of their air-conditioned cars, or staring at me from inside an air-conditioned restaurant, I could see they just couldn't grasp the concept of someone being outside in 118° weather, bundled up in heavy clothing.

When You're Hot, You're HOT

Back at the park in Nebraska, I dig back into my brain and review how the human

body reacts to changes in temperature of the core organs. The human body won't tolerate much of a drop in core temperature (hypothermia) or more than a couple of degrees rise in temperature (hyperthermia) without taking drastic action. The tactics the body uses to deal with heat stress include sweating, vasodilation, increase in heart rate and reduction of blood pressure.

Sweating

Sweat (perspiration) evaporates on the surface of the skin and clothing. The process of evaporation actually cools the surface of the skin, transferring heat from the body to the air. While sweat contains a few chemicals, it's mostly water. Which means I need to keep replenishing the supply—about a pint of water every hour, not just two cups of coffee three hours ago. Run low on water, and your body will start complaining.

Vasodilation

If the core starts to heat up, even just a half-degree, blood vessels enlarge to circulate more blood (and therefore transfer more body heat) toward the skin. If air temperature isn't much higher than body temperature, evaporating sweat helps transfer the extra heat to the air. Of course, if the sweat evaporates too quickly and the skin dries, it begins to absorb heat from the air, and the increased blood flow from vasodilation just pumps that heat back to the core.

This is the type of highly-dangerous situation that can quickly occur in places like the Sonora or Mojave deserts of the Southwest, and which often catches Eastern bikers on vacation by quick and deadly surprise. Counting on their body sweat and the humidity in the air to cool themselves off, they strip down to bare skin or t-shirts. This tactic worked for them back home, but in

the desert, where there is virtually no humidity and the 120° heat vaporizes their sweat before it has any chance at all to cool their skin, it only accelerates the overheating process.

Heart Rate and Blood Pressure

The heart responds to rising core temperature (hyperthermia) and vasodilation by increasing the heart rate to keep filling those enlarged blood vessels. The heartbeat can be 50%-70% faster than the resting rate. If the core continues to heat up, blood flow is shunted away from your muscles and brain in an attempt to carry heat away from the core to the skin, and your blood pressure drops.

When the core is struggling to get rid of excess heat, you're going to get messages. Arms get tired. Leg muscles cramp. The stomach churns. A headache sets in. The rider feels dizzy, or even blacks out. The various symptoms are trying to tell us to do something other than keep on hammering through that blast furnace until the bike runs out of gas or we pass out.

Heat Cramps

Muscle cramps caused by heat usually affect the legs and lower abdomen first, but can also affect a motorcyclist's arms and shoulders. Heat cramps are a symptom that the body's water supply (electrolytes) is running low, just like when the water evaporates out of your bike's battery until it won't crank the engine anymore.

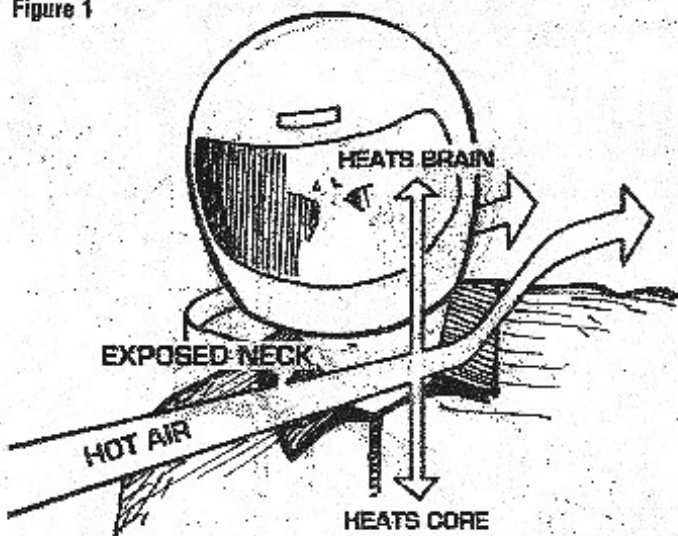
You don't want to ignore heat cramps, because you're not going to feel better until you replenish the water. Take a break, find some shade, massage the cramped muscles to relieve the spasm, and take sips of water. If the cramps don't subside, the recommended first aid dose is a teaspoon of table salt per half-glass of water every 15 minutes for one hour.

Heat Exhaustion

If you don't pay attention to those headaches and cramps, and just keep on riding, you may get to heat exhaustion before you get to your destination. You just run out of energy, as a result of that lower blood pressure and shunting of blood away from the brain and muscles. You may not recognize heat exhaustion, because we're used to feeling tired during a long ride. And note that you can lose all your energy without a significant rise in body temperature. Symptoms of heat exhaustion include:

- Headaches, dizziness, nausea and momentary fainting
- Cramps
- Tiredness, weakness
- Profuse sweating

Figure 1



Air that is hotter than the body can heat up any exposed skin, which in turn heats up both the brain and the central core.

- Pale, clammy skin
- Approximately normal body temperature

If you didn't drink some water for those cramps, that's a high priority now. Find someplace where you can get off the bike and into the shade, preferably into an air-conditioned room, and sip some water. Remove your riding gear and wet down your skin. Pour a glass of water down your neck, or onto your head. Wet your shirt. The evaporating water will actually help your body get rid of some heat.

If you feel faint, lie down before you fall down, and elevate your feet above your head to increase blood flow to the brain. And if you're sick enough to vomit, you're in worse shape than you thought. Pull over at the next fire station and explain the situation, or call the emergency number and request assistance. It may be necessary for you to go to a hospital for an intravenous saline (salt) solution.

If the symptoms have gotten this far, don't plan on getting back on the bike for at least a day. Your body needs some time to recuperate. Get out of the sun and stay out of the heat for 24 hours (real: check into a nice air-conditioned motel, sit in the shade, and sip ice water for a day).

Heat Stroke

I've seen motorcyclists who ignored all the symptoms of heat exhaustion, and even-

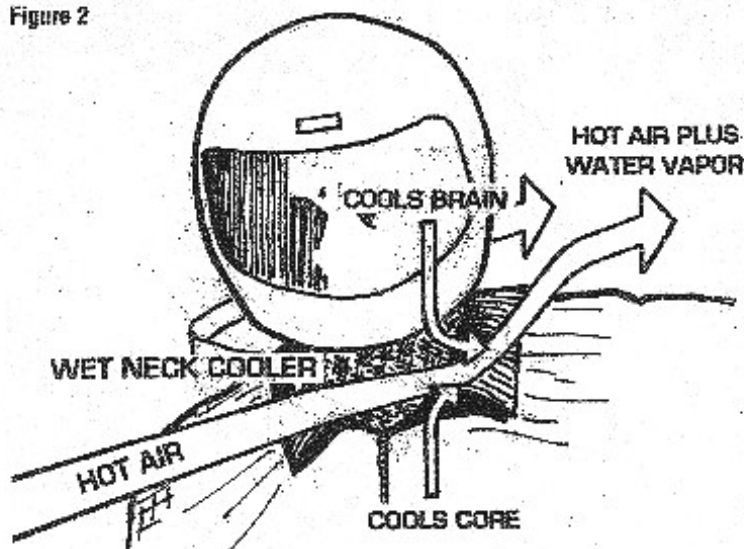
tually just sat down in the sun, with dazed looks on their faces. One British couple had already been several days on the road under a blazing Spanish sun, hadn't taken any liquids since breakfast tea that morning, and were quickly falling into the incoherent stage of heat stroke. Fortunately for these riders, someone else saw the symptoms and organized help in time.

If the core temperature continues to rise, the body's temperature regulating mechanisms begin to shut down. Sweating stops, the heart beats faster, the victim becomes confused, then incoherent, and then comatose. The symptoms of heat stroke include:

- Victim incoherent, blurring out, or unconscious
- Skin hot, red, dry (no perspiration)
- Pulse rapid
- Body temperature elevated (skin feels hot to the touch, may climb as high as 106° F.)

Heat stroke is a medical emergency. Without immediate medical care, the person can die. If you recognize these symptoms in yourself or a riding buddy, get the victim into some shade, out of his riding gear, and cooled down by any means available. If an air-conditioned room is available, get the victim into the cooled air. As soon as possible, get the victim to emergency treatment. Yes, this is a life-threatening emergency.

Figure 2



Water evaporating from a neck cooler can actually draw heat away from the skin, cooling both the brain and the core.

While you are waiting for the medics, you can sponge water or rubbing alcohol on the victim's skin, apply ice wrapped in towels, fan air over them, or whatever you can do to help cool them down. Your target is to get body temperature below 102° F. Don't give any stimulants, especially not any alcoholic beverages.

If there is not any shade available, one of the most important things to do is to get the victim off the ground—any way you can. On a hot summer day, the temperature of the air just 8-10" above the ground is as much as 10-12° cooler than the ground surface itself.

Running Cool

When you're riding in hot, dry climates, the tactics for avoiding heat problems are simple: Drink lots of water, insulate your skin from the hot air, and use evaporative cooling. Tap water is fine; if you can stand the taste and the local bugs. Bottled water is better, and available most everywhere in the world in plastic bottles. Exercise drinks containing "electrolytes" are acceptable, unless you have high blood pressure. Carbonated soft drinks are better than nothing, although it would be wiser to get plain water without large doses of salt, sugar or chemicals. Alcoholic drinks such as beer are unwise, because alcohol not only increases abnormal heartbeats, it depresses the pumping function of the heart and degrades judgment, while actually dehydrating the body.

Insulate Your Skin

People from cooler climates have learned to remove clothing when it gets hot. As the day warms up, off comes the riding pants, then the jacket. If the temperature continues to climb, the rider is really getting hot, so off comes the shirt, and the blue jeans get swapped for shorts. But guess what? The rider feels even hotter. Why doesn't baring more skin cool the rider down? Think about this: When air temperature rises above 99° F, bare skin just soaks up more heat from the air. You can't give off heat to air that's hotter than you are.

If you expose your skin to air that's hotter than you are, the heat flows in one direction—from the air to your body (Figure 1).

Once air temperature climbs above 99° F, keep your insulation on, and the vents closed. That's why I wear my leather gloves and insulated riding boots in the summer-time as well as in the winter. My feet are down in the airstream that's first been heated up by the pavement, and then heated some more by the engine. Am my feet hot? Sure, but not as hot as if I were wearing thin boots or shoes that exposed my ankles.

Evaporative Cooling

Before leaving the park, I change my neck protector for a knit neck cooler and wet it down. The water bottle is filled and stowed in the front of the tankbag where I can reach it while riding. Remember how sweat works. Evaporating water absorbs

heat from the skin and transfers into the air. Motorcyclists can augment sweat by wetting down clothing. The most important area is the neck below the ears, because that's where large arteries are most exposed to the airstream. A wet neck "cooler" on your neck helps draw heat out of the large carotid arteries, cooling both the brain and the core (Figure 2).

A wet cotton bandanna around your neck will help, although you will need to wet it down every few minutes. A knit neckband works even better, because it will hold more water. I've tried those tubular neck "snakes" filled with water-absorbing crystals. They work reasonably well for walking, but for me they aren't efficient enough for motorcycling. The crystals hold water so well that it evaporates too slowly. For motorcycling on a seriously hot day, I need a lot more evaporation, and I need it positioned snugly over the carotid arteries, not just draped loosely around my neck.

The bad news is that evaporative cooling only works well in dry climates. When the humidity is already high (you're 99% sure in Missouri in August) neither perspiration nor the water in your shirt can evaporate. No evaporation—no cooling. But, of course, there is usually shade to be found in Missouri, so the best tactic may be to simply take more breaks in formal climates, and to look for alternate tactics.

Alternate Tactics

In Arizona, it's standard practice to nap until midnight and cross the desert between midnight and dawn. In California, you can usually find cooler air by heading for the mountains, or following the coast in Colorado or Wyoming, head for the hills. Mountains and coastal roads are scarce in states such as Kansas or Iowa, but you can take advantage of the typically cooler morning air. Get up at dawn and get your riding in before the sun starts to warm things up too much.

Crossing Nebraska, now in my "desert survival" mode, I make a point of taking more frequent breaks, drinking more water, keeping my gear zipped up and my neck cooler saturated. The heat and the wind about in the sun sets, so I decide to keep riding after dark to cover some miles in the cool of the evening.

That one here, motorcycling is a lot more fun when your body temperature is steady in the green band, your electrolyte level is topped up, and your brain isn't pounding on the inside of your helmet. ☺

HEAT EXHAUSTION

1. WEAKNESS, FATIGUE, DIZZINESS
2. EXCESSIVE SWEATING
3. COLD PALE SKIN
4. NORMAL BODY TEMP.

HEAT STROKE

1. DISORIENTATION, UNCONSCIOUS
2. ABSENCE OF SWEATING
3. SKIN IS HOT, FLUSHED, DRY
4. HIGH BODY TEMP.
5. CAN BE FATAL