



FACT SHEET

Department of Animal Science, University of Connecticut

Effective Horse Management – Horse Health Series

Heat Stress: Too Hot to Trot?

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During hot summer weather, heat should be a concern for horse owners. Horse owners need to provide extra care during hot weather to decrease stress and maintain the health and well being of their horses.

Normally, the horse cools itself by sweating. Heat is lost and the body cools as sweat evaporates from the skin's surface. Less moisture evaporation occurs in times of high humidity, causing the cooling mechanism to become less efficient. Some horses are anhydrotic, meaning they have little or no ability to produce sweat. These horses are prime candidates for heat stress. Below is a table that will help horse owners determine when it is too hot to work a horse. If humidity is more than 75%, heat stress is a likely result due to inability to sweat regardless of ambient temperature.

Ambient (outside temperature) + relative humidity (° F)	Horse's efficiency of cooling
Less than 130	Most effective
130-150	Decreases
Greater than 150	Greatly reduced
Greater than 180	Conditions could be fatal if horse is stressed

Common terms for horse overheating include hyperthermia, heat exhaustion, heat cramps, heatstroke or sunstroke. Explanations of the signs associated with each are listed below:

- **Hyperthermia or overheating** in the horse is due to a disturbance in the heat regulating mechanism of the horse's body that can result from hot weather, high humidity, poor stable ventilation, prolonged exposure to direct sunlight, excessive work, transportation, or obesity. Some signs of overheating include muscle tremors, profuse sweating, collapse, dark urine, dull expression and behavior, dark mucous membranes, and slow capillary refill.
- **Heat exhaustion** will cause the horse's temperature to rise to 105-109° F, the pulse rate to rise to 50 to 100 beats per minute, and the respiration rate to rise to

more than 30 breaths per minute. Normal vital signs of the horse include a temperature of 99.5 – 101.5° F, pulse rate of 28-44 beats per minute, and a respiration rate of 8-20 breaths per minute.

- **Heat cramps** are most commonly found in horses that are sweating profusely while doing hard work in intense heat. Signs of heat cramps include spasms of the abdomen and/or legs, muscle twitching and cramping of the muscles. These occur due to a loss of electrolytes (i.e. severe salt loss).
- **Heatstroke or sunstroke** is more serious. Horses undergoing prolonged hard or fast work during hot weather, horses exposed to direct sunlight without shade, young, poorly conditioned horses, and horses with long hair coats are susceptible to heatstroke or sunstroke. Signs of heatstroke or sunstroke are rapid breathing, weakness, incoordination, and refusal to work. Body temperature can increase to 106–110° F, sweating stops, and the skin dries. Prolonged exposure to high temperatures also results in dilation of surface blood vessels. When dilation occurs without an increase in blood volume, circulatory collapse, delirium, and convulsions may also occur. Death can occur within a few hours if the horse is not cooled and does not receive emergency veterinary care.

Treatments for these conditions include:

- For **heat exhaustion** and **heatstroke**, the horse should be sprayed with cool water and moved to a shady area or cool, well-ventilated barn.
- For **heatstroke**, ice packs should be placed on the horse's head and large blood vessels on the inside of its legs.
- For **heat cramps**, the horse should be cooled, rubbed down, and given electrolytes.

For **overheating** the horse owner should use fans, allow the horse to have **a few swallows** of cool, clean, fresh water every few minutes, and call a veterinarian because the horse may need to receive intravenous administration of fluids.

Ideally, overheating would not occur in the first place. Prevention of overheating includes:

- removing blankets or sheets from stabled horses during extreme heat
- clipping horses with long hair
- providing adequate ventilation in stables
- using fans in barns or stalls
- sprinkling the aisle of the barn with water to aid in cooling in areas of low humidity
- providing shade for all outside horses
- consider feeding fat as an energy source. One study examined the effect of feeding 10% corn oil (a fat source) and 3% soybean meal instead of 13% of the cracked corn ration in the control diet. Using fat as an energy source produces less metabolic heat for the energy produced when compared to carbohydrate as the energy source. This results in the horse having less heat to dissipate.
- replacing electrolytes after physical exertion, since sodium, potassium, calcium and chlorine are lost in the urine and sweat. Loss of electrolytes can lead to metabolic problems, a decrease in the thirst response, and loss of interest in eating and drinking. A simple source of these electrolytes is feeding a 2-ounce mixture of 3 parts lite salt

(potassium chloride), and 1 part limestone on a daily basis. This is also a good source of sodium.

- providing plenty of clean, fresh water. At 0° F, the horse will drink about 1 pint of water per pound of dry feed consumed and this increases to 1 gallon of water per pound of dry feed consumed at 100° F
- properly conditioning horses
- limiting strenuous riding to late evenings or early mornings when the temperature is lower and following the guidelines above
- walking a hot horse which protects against placing a horse in an area void of airflow where sweat will not undergo convection and evaporation
- transporting horses at cool times of the day and providing them with adequate ventilation in the trailer
- using the skin pinch test to determine if a horse is properly hydrated. To do this, a section of skin on the neck or shoulder is pinched. The skin should recoil in 1-2 seconds in a normally hydrated horse. A delay indicates some dehydration.

Four common myths have also been found in previous equine publications. Each of these misconceptions prevents the overheated horse from cooling off properly. They are:

1) “Never let a horse drink more than one or two swallows of water at a time. ” This comes from the belief that allowing a hot horse to consume unrestricted amounts of water may lead to problems such as colic due to hyperdistension of the stomach. However, a horse’s stomach can hold between 2 and 4 gallons of fluid without being distended, so one or two sips of water at a time is overly restrictive when the hot horse is rapidly losing water and trying to keep itself cool. The horse should therefore be allowed to have a few swallows of cool, clean, fresh water every few minutes.

2) “Never give ice-cold water to a hot horse either inside or out.” The second myth has been the source of controversy over the years because people believed that ice cold water placed on a hot horse’s body will “shock” the horse’s thermoregulatory system into shutting down blood flow to the skin. This belief has been found to be incorrect based on extensive research conducted during 1995 at the University of Illinois and University of Guelph, and at the 1996 Olympic Summer Games in Atlanta. Researchers proved conclusively that horses working under hot and humid conditions were better able to maintain, or even reduce, core body temperature. Furthermore, after intense exercise, ice water baths caused a decline in heart rate during rest periods when used. Horses were also observed trotting more freely after the baths. Application of cold water to the overheated horses helped to dissipate heat by providing more water to evaporate from the skin, and by direct conduction of the horse’s body heat into the water that runs off the horse, carrying excess heat with it.

3) “Never let a hot horse cool out without a blanket or sheet.” Many people cool out the horse by placing a sheet or blanket on the horse while walking it. Inhibiting the evaporation of water from the skin by using a blanket or sheet is not recommended in hot and humid conditions.

4) “Never let a hot horse cool out in a drafty area.” This comes from the belief that a draft will make the horse susceptible to a “chill”. However, restricting access to moving air during hot and humid conditions makes little sense. Fans work to increase evaporation and dissipate heat by the cooling process known as convection. Misting fans take advantage of the additional cooling property of blowing water onto the horse when its sweat is changing phase from liquid to gas.

Horse owners are capable of preventing overheating. Know how to recognize the signs of overheating and what to do when overheating occur. Be aware of the myths regarding overheating treatments and share correct information with others.

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