

How does a horse regulate its body temperature ?

By Dr Mac | 23 December 2023 | 10:00 am

Dr Mac explains how a horse uses thermoregulation to deal with changes in air temperature and to cope with vigorous exercise.



When a horse gallops on a cold day or early in the morning, blood flow is directed to its muscles to enable rapid contraction.

We all know that a horse (like a person) sweats when it gets hot and shivers when it gets cold. But did you realise that this reaction is linked to increased heart rate as well as changes in the distribution of blood circulating through various organs?

Understanding this can assist you to monitor and react in time when your horse gets too hot or cold for comfort.

The normal rectal temperature of a horse varies between 37,7°C and 38,2°C, but can rise to 44°C after a gallop on a hot day. The proportion of blood circulating in the skin, tissues, fat and muscles plays a significant role in thermoregulation.

Length and thickness of the hair can also help protect horses against cold weather in winter and to some extent increase the surface area for evaporation when sweating in the heat.

On a blazingly hot day, a thick mane and tail can protect against the sun's rays burning the face, eyelids and neck, as well as the perianal area and genitals. Long hair on the fetlocks also protects the pastern and coronet, especially in horses with white hooves and leg markings.

Riding in the cold

In cold weather, a horse generates warmth through aerobic digestion of carbohydrates and fats from feed, as well as by walking briskly to stimulate circulation of blood through the muscles by aerobic contraction.

As it gets colder, the horse will start to shiver and its coat will stand on end as the blood is redirected to its central organs through an increasing heart rate.

When riding on a very cold winter's day, you will notice your horse's breathing and heart rate increase. Thereafter, if it is still too cold, the horse may become lethargic. This often means that the capillaries under the skin and in the muscles are beginning to contract.

A short gallop warms the horse up in the short term and is often used as part of a routine outside in countries where snow coats the fields in winter.

During our hot summer, a horse being exercised needs to cool itself down. This happens mainly through sweating, as evaporation cools the surface of the skin.

When a horse gallops on a cool day or early in the morning, about 80% of the blood flow (carrying much-needed oxygen) is directed to the muscles to enable rapid contraction. In hot weather, the blood supply is directed away from the muscles to just under the skin, where sweating will cool it down.

This is the reason we exercise racehorses, eventers and showjumpers in the early morning, and thereafter, when the sun is up, allow them to rest in the shade under trees or in their stables.

When a horse exercises, 20% of its muscle cells are used for training and 80% are transformed into heat. This is because the horse's exertion boosts blood flow, which transfers heat from its core to the surface of the skin.

Because this depletes the blood circulating through the heart and lungs, oxygen is depleted and the horse will start panting.

Excessive sweating also depletes electrolytes, and a good rider knows when to slow down to a walk and shower the horse with cold water to cool it down and allow it to get its breath back.

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