

## PHYSICAL STRESS AND EXHAUSTION IN ENDURANCE HORSES

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Endurance horses can develop symptoms of physical stress and exhaustion, often linked to dehydration and fatigue during training and long distance competition. Stress can be either acute in form or develop over a long period of time during an extended training program.

There are a number of predisposing causes of physical stress in endurance horses. These include:

Cause	Predisposing Cause
<input checked="" type="checkbox"/> Physically unfit for type of exercise	Inadequate training time and distance, poor physical conditioning or inappropriate type of training for endurance
<input checked="" type="checkbox"/> Poor overall condition	Lack of energy, protein and other nutrients in diet. Loss of body weight due to low energy and protein intake, poor appetite, excessive poor quality roughage. Heavy internal parasite burden that saps nutrients, intestinal malabsorption.
<input checked="" type="checkbox"/> Concurrent disease	Elevated body temperature and immune response due to viral or bacterial infection, lung or airway disease, painful conditions
<input checked="" type="checkbox"/> State of chronic dehydration	Inadequate fluid and electrolyte intake. Excessive loss or inadequate replacement. Lack of adequate water, poor quality water, deficiency of salt and electrolytes in diet, excess water loss in droppings, hot humid weather with high sweat loss.
<input checked="" type="checkbox"/> Physical fatigue and exhaustion	Too fast for too long in a competitive ride. Inadequate time for muscle glycogen repletion. Exhaustion of muscle energy reserves with lactic acid accumulation in muscles due to fast exercise with muscle fatigue and exhaustion. Repeat long distance exercise within 48-72 hours of extended exercise.
<input checked="" type="checkbox"/> Heat stress and hyperthermia	Hot, humid conditions reduce efficiency of heat loss, dehydration and loss of excess body fluid reduces sweat loss, inadequate airflow over body, inadequate cooling out at check points, high protein diets with hindgut heat accumulation.
<input checked="" type="checkbox"/> Long term adrenal exhaustion	Long term training and repeated competition exhausts the anti stress "cortisone" hormone output, resulting in blood electrolyte abnormalities, dehydration and loss of physical stamina. Chronic pain state due to muscle and skeletal soreness.
<input checked="" type="checkbox"/> Metabolic conditions	Exercise induced muscle problems such as 'tying up', alkalosis (high bicarbonate levels in blood due to high chloride loss in sweat), the 'thumps' due to blood calcium depletion from

	sweat loss.
<input checked="" type="checkbox"/> Mental dullness	Excessively hard or long exercise reduces willingness and mental alertness although muscles are physically fit.

### **Symptoms of Stress**

The symptoms of stress are related to the degree and type of stress condition, its underlying cause or combination of causes.

**The common signs of long term or a chronic stress condition include:**

<b>Signs</b>	<b>Comments</b>
Fatigue and Tiredness	Horse unable to maintain speed and stamina during a ride, slows down and becomes distressed.
Loss of Appetite	Progressive loss of appetite over a period of time despite increasing energy density of ration and decreasing bulk consumed.
Chronic Dehydration	Dried out, dull coat, tucked up belly, reduced water intake
Loss of Body Weight	Loss of body condition to a lean to poor condition despite an adequate diet
Poor heart rate recovery	Elevated heart rate above 60-65 beats/min after a 30 minute rest period
Unwillingness	Sourness, refusal to work, muscle soreness
'Tying up', 'The Thumps'	Signs of metabolic problems due to electrolyte imbalances or deficiencies – obvious discomfort signs

**The signs of an acute stress condition at a vet check point include:**

<b>Sign</b>	<b>Cause</b>
Elevated heart rate (Physical exhaustion, elevated body temperature)	Poor recovery elevated above 80-100 beats/min for 15-20 minutes after check point rest. Failure to recover to 60-65 beats/min at 30 minutes. Elevated above 180 b/min at entry check to vet hold point.
Elevated body temperature (heat stress under hot, humid conditions)	Body temperature remains elevated above 39.5°C for 30 minutes at check point, above 40.5°C with elevated heart rate at entry to gate hold point.
Elevated respiratory rate (Panting)	Respiratory rate elevated above 25-30 breaths per minute after 30 minutes, elevated body temperature above 40.5°C. Elevated above 50 breaths/min at entry to gate hold point.
Decreased sweat output Severe dehydration	Severe dehydration and fluid loss 1. Slow skin pinch return 2. Slow capillary refill 3. Tucked up belly 4. Darker mucous membranes
Reduced or Absence of gut sounds	Reduced gut activity with lack of gas sounds

	and intestinal movement. Low grade colic signs – pawing, looking at flank, sweating on flanks if not dehydrated
Depression Reduced appetite	Loss of alertness and vitality, inability to take interest in surroundings, no interest in food, limited intake of water
Elevated tail position and open anus	Standing with head down, tail out in arch, open anus for 30 minutes or longer during rest period
'Tying up' 'The Thumps'	Muscle cramping and seizure. Inability to stride out, stumbling shortened stride, shaking. Respiratory and heart rate synchronised – 'The Thumps'
Muscle tremors and twitches	Noticeable muscle tremors in hind limbs, low grade discomfort, elevated body temperature
Collapse	Inability to stand to support own weight, dehydration, hyperthermia, elevated heart and respiratory rate, slow capillary refill, shock

### **Preventing Acute Stress**

There are a number of measures that can be adapted to reduce the risk of acute stress conditions.

These include:

<input checked="" type="checkbox"/> Ensure adequate fluid intake/hydration	Provide opportunity for water intake during ride, supplement with electrolytes
<input checked="" type="checkbox"/> Ride to fitness of horse and ambient conditions, especially under hot humid conditions	If combination of Temp. °C and relative humidity exceeds <u>120</u> - reduce speed and ensure efficient cool out and 'strapping' method
<input checked="" type="checkbox"/> Reduce speed over difficult terrain, heavy or adverse conditions	Slow down under wet conditions, jump off and run up hills whilst leading horse
<input checked="" type="checkbox"/> Feed a balanced ration	Provide adequate energy to meet exercise needs. Avoid excess protein intake. Avoid excess calcium during early training. Provide balanced electrolytes. Provide good quality roughage for water holding capacity.
<input checked="" type="checkbox"/> Ensure freedom from concurrent disease in the lead up to a ride	Do not ride a horse with an elevated temperature, respiratory problem, reduced appetite, depression
<input checked="" type="checkbox"/> Freedom from colic or 'tying up' in the 10-14 days prior to a ride	Colic often causes circulatory distress and gut fluid and blood flow changes. Tying-up results in muscle damage with elevated muscle enzymes.
<input checked="" type="checkbox"/> Check horse thoroughly after long distance travel	Avoid dehydration, lung fluid collection as a result of long distance travel, check leg swelling, hoof soreness from standing etc.
<input checked="" type="checkbox"/> Cool out horse thoroughly at each rest point and maintain short haircoat	If possible, sponge backline and belly area – scrape off in 30 seconds – repeat until body temperature is below 39°C – do not allow horse to 'drip dry' with a wet coat. Clip to maintain a thin haircoat.

