



NEBRASKA EQUINE VETERINARY CLINIC

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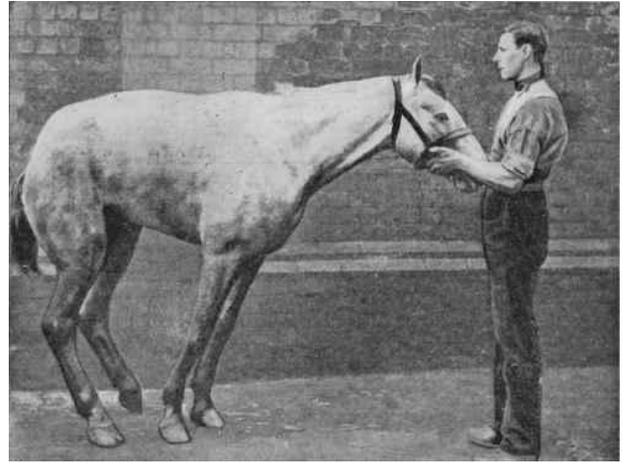
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## Exertional Rhabdomyolysis (Tying Up)

Exertional rhabdomyolysis, also known as tying up, is a condition of muscle pain, stiffness and cramping that occurs during or after exercise. This article will help you recognize and understand the signs of this disorder commonly seen in equine athletes.

### Symptoms

Tying up occurs most commonly shortly after beginning exercise. Horses become reluctant to move, muscles along the back and hindquarters become firm and painful, and muscle twitching may occur. Other common symptoms include profuse sweating, elevated heart rate and respiratory rate, and reluctance to move. The horse's urine may have a dark brown color due to the pigment myoglobin that is released from damaged muscle cells and excreted in urine. It is important to stop exercise immediately and allow the horse to rest. Treatment of an acute episode depends on the severity of the muscle damage that occurs and the hydration status of the horse, but may include pain relievers, tranquilizers, and IV fluids. Horses should be stall rested for 24-48 hours and then light turnout initiated.



### Causes

Exertional rhabdomyolysis is classified into two categories: sporadic or chronic. A horse with sporadic exertional rhabdomyolysis has single or infrequent episodes of tying up. Factors that can be associated with sporadic episodes of tying up include:

- Exercise duration and/or intensity exceeding the conditioning level of the horse
- Exercise during extreme heat and humidity
- Exercise after a period of a few days of rest
- Electrolyte imbalances
- Vitamin E or Selenium deficiency
- Recent respiratory infection

Horses that have frequent episodes of tying up are classified as having chronic exertional rhabdomyolysis. These horses frequently have an underlying muscle disorder called Polysaccharide Storage Myopathy (PSSM) that predisposes them to episodes of muscle damage. PSSM is a condition in which muscle cells have an abnormality in the way they store glycogen. There are two types of PSSM: Type 1 PSSM is a genetic mutation that has been identified in Quarter Horse-related breeds, Morgans, drafts, and warmbloods. The cause for Type 2 PSSM has not yet been identified, but is present in Quarter Horses, Arabians, and Thoroughbreds.

## **Diagnosis**

Diagnosis of exertional rhabdomyolysis is based on clinical symptoms and bloodwork to confirm elevation of muscle enzymes. Bloodwork is also important to monitor kidney function, as myoglobin released from damaged muscle cells can be harmful to the kidneys, especially in a dehydrated horse. PSSM is diagnosed based on genetic testing and/or muscle biopsy.

## **Management**

**Exercise:** Following an episode of tying up, horses should be stall rested for a few days and then turned out for a period of time before a gradual return to exercise. Once they are back in an exercise program, it is important to minimize days of rest, so they are on a regular exercise schedule.

**Diet:** Free access to salt and fresh water should be provided at all times. Horses with PSSM can benefit from a low starch/sugar diet. Additional calories, when needed, should be provided in the form of fat rather than sugar.