

FEEDING THE EVENTER

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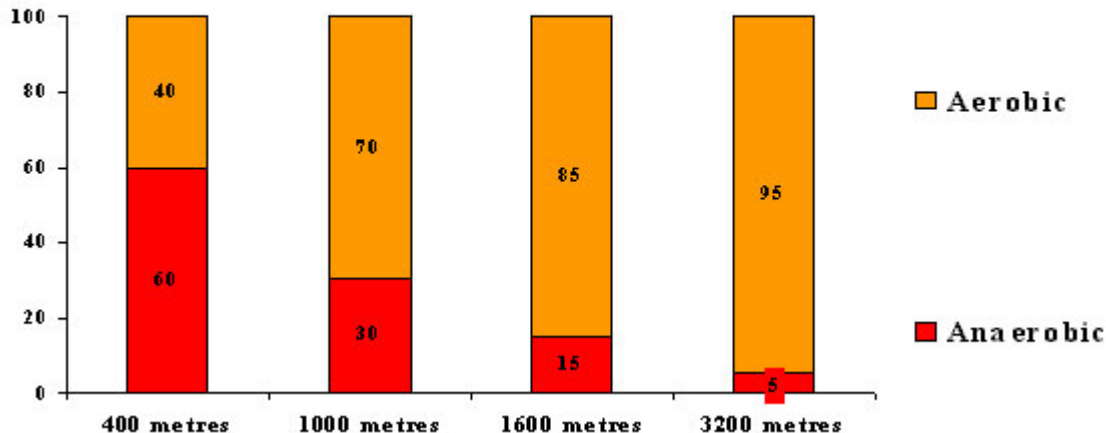
The correct feeding of the eventing horse can aid performance. The following bulletin discusses how certain dietary manipulations and feeding strategies can delay the onset of fatigue and impact on performance.

During low-intensity, prolonged work (ie aerobic), fatigue occurs due to depletion of energy and overheating. In high intensity work (anaerobic), fatigue is caused by lactic acid build up and energy depletion. Feeding to increase aerobic and anaerobic energy, can delay the onset of fatigue. Falling glucose levels, rising lactic acid levels and heat stress all reduce muscle function. However, certain feeding strategies can increase blood and muscle glucose and reduce heat production.

Maintaining energy: The single factor most likely to affect performance is lack of energy, due to either inadequate fitness training for the level of competition or dietary limitations. The amount of energy required depends on: the type, speed and amount of work, condition of the horse and skill of the rider and the environmental conditions. Eventers obtain energy in two ways:

1. During low *intensity* work, muscles convert glucose to energy using oxygen - this is called *aerobic* work. Aerobic work can be sustained for long periods. Such as the cross country phase in Eventing.
2. During *high intensity* exercise, the muscles use energy so quickly that aerobic energy supply is exceeded and glucose must be converted to energy without using oxygen. This is called *anaerobic* work. Anaerobic work can only be sustained for a very short period and results in lactic acid production. Anaerobic energy serves to 'top up' aerobic supply.

% OF AEROBIC AND ANAEROBIC ENERGY FOR DIFFERENT EXERCISE DISTANCES



As a rule of thumb in the fit horse, anaerobic work begins to kick in when speed reaches approximately 10 metres per second and heart rate climbs to around 160 to 180 beats per minute. During the roads-and-tracks phase, heart rates usually reach around 150 - 180 beats per minute, or 70% to 80% of maximum, and blood lactic acid levels may reach 4 mmol/litre.

Glycogen loading: Several studies have shown muscle glucose can be increased by dietary manipulation. When the amount of fermentable polysaccharides (eg raw grains) to the large intestine is minimised, glucose availability is maximised for the performance horse. **Mitavite steam-extruded and micronised feeds** are recommended for horses that require more than 3kg of grain per day, those prone to 'tying up' and to reduce heat load. **Mitavite Formula 3** is an oat free formulation and has been prepared specifically for horses which suffer from tying up.

Heat: The heat produced by working muscles can be reduced by feeding highly digestible, high oil diets. Steam-

extruded and micronised feeds are advanced feeds where more than 90% of the feeds are digested in the small intestine. This can be compared to the digestion of raw grains where only 21% of barley 55% of oats and 29% of corn is digested in the small intestine, the balance is fermented in the large intestine, adding to heat load and reducing the energy available for working muscles. **Mitavite Economix** and **Mitavite Munga** are steam-extruded formulations, helping to reduce the heat from digestion.

Feeding Oils: High oil feeds offers enormous benefits for temperament (critical for the dressage phase), heat load and performance. Oil provides a cool and steady supply of energy - allowing the horse to preserve blood glucose levels. This 'glucose-sparing' effect delays the onset of fatigue, so that although horses cannot increase their top speed, they can maintain it for longer.

Oils are also an excellent way to increase the weight of a horse. They are primarily digested in the small intestine and contain approximately 2-3 times more energy than the same weight of raw grain. Introduce the oil to the diet gradually over a 3-6 week period. Begin with 5-10ml a day and increase it gradually by 5-10ml a day until reaching the desired amount. Monitor manure during the changeover and if it becomes too soft, reduce the rate of oil increase.

Because of the abundance of Omega 6 in diets, it is important to provide an Omega 3 supplement. A recent veterinary review article indicated that Omega 3 oils may be beneficial for treating colitis and enteritis, and in preventing arthritis, laminitis, small airway disease associated with stabling and dermatitis. All oils provide energy, only Omega 3 oils reduce inflammation. Mitavite has formulated a balanced blend of Omega 3 oils in Mitavite Performa 3 oil and 80-100ml a day corrects most imbalances.

Roughage: Each kg of roughage holds 6 - 8kg of water and electrolytes in the gut. This represents a 'reservoir' that can be drawn on as body fluid levels drop during sweating. Roughage intake should be a minimum of 1% of bodyweight, ie 5kg a day for a 500kg horse. An ideal balance is that 50% of this be lucerne or clover chaff/hay and 50% pasture, white or meadow chaff/hay.

When roughage is fed with concentrates, digestion of starch in the small intestine is reduced. Feeding hay either two hours before or two hours later than concentrates improves nutrient uptake. High concentrate meals should be fed no less than 4 hours before competition. Blood glucose levels are lowest 90 minutes after feeding. If exercising at this time, fatigue comes on sooner due to low blood glucose.

Electrolytes: Horses which are travelling, working in hot or humid conditions and in hard training, may require additional electrolytes. The effects of dehydration can cause tying up, longer recovery times, fatigue and muscle problems. Supplementation of electrolytes may be required according to workload and ambient conditions.

Muscle Recovery: Hard training and competing cause muscle damage due to lactic acid and/or over exertion. Intense exercise is a catabolic process. Supplying the correct balance of carbohydrate, specific essential amino acids and anti-oxidants after an intense workout, the catabolic state can be switched to an anabolic (rebuilding of tissue) state, enabling muscles to recover and respond more quickly to training and competition. Feeding 0.5-1kg of **Mitavite Promita** no more than 2 hours before or 1 hour after hard work, takes advantage of increased muscle blood supply and hormone levels associated with work and hastens muscle recovery.

What is in the feedbin affects both health and performance. The equine veterinarians, agricultural scientists and nutritionists at Mitavite have formulated feeds specifically for the competition horse.