

Complaints about muscling are very common but depending on the horse's age and specific circumstances can have very different causes and solutions. Nutritional support of horse muscles can be a powerful way of supporting your equine.

How should you best support muscling of your horse through nutrition. [Click To Tweet](#)

How do you know if you should consider supplementing key nutrients? Look for:

failure to build muscle or loss of muscle mass

muscles have high tone even at rest

muscle pain on palpation

shortened strides and stiff gait

The inescapable component to building horse muscles is exercise. Exercise plumps up muscle protein. It also builds glycogen levels, the storage form of glucose in muscle tissue. Exercise causes water levels in muscle to increase, adding to the bulk. The density of mitochondria, cellular energy factories that are most efficient at generating energy, increases. Blood supply also skyrockets in exercised horses, with exercise triggering the growth of new blood vessels.

Helping Young Horse Muscles

In young, still growing horses that are not in work, the problem with their muscles may be inadequate calories, protein in general, essential amino acids or any combination of these. Which is most likely will depend on the specific circumstances and you will need to have the diet analyzed by a veterinary nutritionist to know for sure.



Heavy parasitism can also rob the young horse of nutrients even when getting what should be an adequate diet. If the young horse is being fed a high percentage of the diet as grain, there is still a chance the diet is protein deficient.

If feeding a mare and foal feed with 16% protein, 0.9% lysine and a diet that is 2/3 cereals and 1/3 hay, you will still need a hay that is at least 12% protein to meet protein needs. If your horse feed's protein and lysine levels are lower, obviously your hay will have to be higher than 12% protein. Conversely, if the diet is 100% hay you would need a hay with 8.28 MJ/Kg and 11% protein. Good quality grass hay, cut before heading, or a grass and 10 to 20% alfalfa mix can easily provide this.

When hay is changing too often to make analysis feasible, your best friends are a high protein supplement such as whey protein and a mineral supplement, often referred to as a "balancer". The NRC recommendation for protein intake in young weanlings is 12 grams/MJ of energy. This drops slightly for yearlings but personally I keep the same level of protein through at least the 2 year old year.

Quarter Horse and Draft Breed Horse Muscles

Heavily muscled quarterhorse or draft breeds often need even more protein to maintain

normal muscle mass, particularly since these individuals often gain weight/fat easily and need controlled calories to avoid becoming overweight.

Horse Muscles of Horses in Training

Horses in training that are not building muscle as expected can also be showing muscle soreness. Performance may also have plateaued. Performance horses usually respond to supplementation with 10 grams of the branch chain amino acid L-leucine along with 60 mL of golden syrup given immediately after exercise. Also important is adequate selenium and vitamin E in the diet - for a 450 kg horse, feed a minimum 2 mg/day of selenium and 2000 IU/day of vitamin E. To assess selenium levels in the diet preferably analyse the forage fed.

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The branch chain amino acid L-leucine is the amino acid in highest concentration in muscle. It is also an important ancillary source of energy during exercise, when leucine is broken down and because it is an essential amino acid, the needs must be met 100% from the diet. You can feed leucine by feeding a branch chain amino acid horse supplement. Insulin enhances uptake so the golden syrup helps by triggering insulin release. The golden syrup also assists with replenishment of glycogen stores in the liver and muscle. Glycogen and the water it holds contribute to muscle bulk.

Supporting Sore Horse Muscles

If muscle bulk improves but soreness persists or the horse is still not advancing well in training, consider adding Acetyl L-carnitine, 1 gram/45 kg of body weight. This can be added to meals. Acetyl L-carnitine has been shown to improve metabolic response to exercise when horses are in training. Another amino acid to consider is L-glutamine, 60 mg/kg of body weight. L-glutamine supports levels of glutathione. Glutathione is the most important antioxidant in muscle.



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Supporting Endurance Horse Muscles

It goes without saying that endurance horses are lean, but their muscles should still be well defined, not sunken. Instead of providing excessive levels of dietary protein in general, targeted amino acid supplementation as just described can protect muscle mass in these horses.

Supporting Elderly Horse Muscles

A very common complaint is muscle loss, especially topline, in older horses. The aging process itself causes some muscle loss, called sarcopenia. Sarcopenia of aging involves primarily the fast twitch muscle fibers so will be most obvious in the hinqarters and upper muscles of the forelimb. The only effective way to reverse sarcopenia is with exercise.

Cushing's disease also causes muscle loss. The elevated cortisol interferes with utilization of glucose, causing muscle protein to be broken down for energy. At the same time it

inhibits repair of muscle. For this reason, any older horse with muscle loss should be tested for Cushing's disease.

Some older horses with muscle loss respond to increased intake of the amino acid L-lysine, approximately 10 grams/day. The reason for this is unclear. It may be the result of a combination of sarcopenia and lysine deficiency in hay. It may also reflect a decrease in the efficiency of protein digestion.

Supporting Horses with Muscle Wasting

Symmetrical muscle wasting with weakness and low head carriage may be equine motor neuron disease, especially if the horse is located in the Northeast. This is a vitamin E deficiency, either because of inadequate intake or exposure to some toxin causing oxidative stress - or both. Diagnosis is by biopsy of the muscle at the tail base. Treatment is high dose vitamin E, typically 10,000 IU/day.

Asymmetrical muscle loss is not likely to be nutritional. It is likely related to either a lameness or neurological disease.

There are many causes of poor muscling, each with a different solution. After ruling out diseases, nutritional support involves careful attention to calories, total protein, key amino acids, vitamin E and selenium. Which are likely involved depends on the specific circumstances. A full mineral and nutritional analysis of the greatest portion of the horse's diet; the grass, hay, haylage eaten is a wise route to take.

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