

Trimming the Fat: Weight Loss Strategies for the Overweight Horse

Introduction

The number of horses in the pleasure horse population carrying excessive amounts of fat is increasing. Horses that have a high body fat percentage are at a greater risk for heat stress, laminitis, hyperlipidemia, decreased athletic performance, and poor reproductive performance. Horses and ponies become overweight for many reasons including consuming diets proportionally high in concentrates, allowed unrestricted access to pasture, and/or a lack of exercise. In some cases, diseases such as Cushing's disease or hypothyroidism may also lead to obesity. To make matters worse, many horses are "easy keepers," meaning they have a greater ability to maintain their weight despite being fed below their maintenance requirements.

Combating obesity can be very challenging. A horse owner will want to rely on their veterinarian to determine whether the cause of obesity is related to diet and exercise level and/or to a metabolic or physiological condition. Through the use of diagnostic tests and physical examinations the veterinarian may be able to diagnose or rule out certain conditions like Cushing's disease or hypothyroidism. In addition, some horses with heavy parasite loads have a potbellied appearance giving the impression that they are fat when they are not. Once an underlying medical condition is ruled out, a veterinarian or equine nutritionist can assist a horse owner in developing a safe weight loss strategy.

Monitoring Body Weight and Condition

Before any nutritional intervention is imposed, a proper estimate of the horse's body weight and body condition score is needed. Estimating body weight and body condition on a routine (i.e., monthly) basis should be a key component of any horse management program. Tracking the weight of a horse will allow the owner to properly calculate the amount of feed required by the horse in order to gain, lose or maintain body weight, as well as indicate how much weight the horse has lost or gained over a certain period of time. Body weight can be measured by three simple techniques. A large livestock scale is the most accurate method of weight estimation, but a heart girth weight tape, readily available from feed dealers, is also quite useful. Additionally, body weight can be easily calculated from the measurements of the horse's heart girth (HG) and body length (BL, point of shoulder to point of hip), both measured in inches, using the following equation:

$$W = \frac{HG^2 \times BL}{330}$$

In addition to body weight estimation, body condition scoring is useful when determining if the level of feed intake is adequate.

The body condition score (BCS) measures the amount of fat a horse is storing at several different locations on its body, including the neck, withers, shoulder, ribs, loin, and tailhead (Figure 1). A horse stores fat when it is consuming more calories than its body is using for normal metabolic processes on a daily basis. Table 1 describes the BCS scale, which ranges from 1 to 9, with half scores possible. Most horses should be maintained between a BCS of 5 and 6. Elite equine athletes are often maintained at a BCS between 4 and 5 to avoid carrying excessive amounts of fat that may inhibit performance. Obese horses are described as those having excessive fat buildup along their necks, withers, over the ribs and behind their shoulders, with fat buildup on either side of the backbone, fat deposited along the inner thighs, and large depositions of fat surrounding their tailhead. Horses that reach a BCS at 7 or greater are at a higher risk of developing health-related problems.



Methods for Weight Reduction

Horses gain weight because they take in excess calories above the level required for their daily metabolism and energy expenditure through exercise. Calories are introduced to the horse in the form of carbohydrates and fats, of which a grain-based concentrate provides the highest level. Therefore, the goal of a weight loss program is either to reduce the caloric intake, while still providing adequate water, protein, vitamins, and minerals to meet the nutritional needs of the animals, or increase the exercise level. Because of the necessity to meet the horse's vitamin, mineral, protein and water requirements, the most ideal practice is to increase the horse's amount of exercise if possible. Horse owners should be careful when using both methods at the same time because horses may lose weight too rapidly.

Set a Target Weight Loss

After estimating the horse's body weight and BCS, a target body weight and BCS should be set. The horse's breed, height, and intended use must be considered when determining the ideal body weight and/or BCS. As an example, the typical 15 to 16-hand Thoroughbred horse has an ideal body weight of 550 kg (1200 lb) and BCS of 5. This is not the ideal dimension for any other type of horse, such as a pony or warmblood, both of which will have different ideal body weights and BCS's. A horse's current body weight and BCS should be compared to the ideal parameters for that breed. For example, if a 15.2-hand Thoroughbred has a BCS of 8, it needs to reduce its body fat by at least 2 body condition scores, with 3 body condition scores preferred. Given one unit of body condition is about 20 kg (44 lb), the horse needs to lose 40-60 kg (88-132 lbs).

Increase the Exercise Level

Weight loss in the horse can be encouraged by increasing the daily energy expenditure through exercise. Horses capable of exercise should be exercised 3 to 4 times per week for a duration of 30-45 minutes. Beneficial exercise includes but is not limited to lungeing,

trail riding, walking/trotting in an automated exerciser or on a treadmill, participating in riding lessons, and/or competing in shows and events. Caution must be taken when reintroducing a previously inactive horse to exercise in order to avoid injury. Horses must be introduced back into exercise gradually and should never be pushed beyond their physical capacity. This is especially true for overweight horses because they are more prone to fatigue and injury due to carrying excessive amounts of weight. The ability of a horse to handle exercise can be estimated through their heart rate. During a farm visit a veterinarian can be asked to demonstrate how to properly take a horse's heart rate. Following an exercise bout, the horse's resting heart rate should return to normal, or less than 60 beats per minute, in less than 45 minutes. If it takes longer than 45 minutes for the heart rate to return to normal, the level of exercise was likely too difficult. In this situation, the horse needs to be maintained at a lower level of exercise for a longer period of time, allowing it to become more fit to handle a higher exercise level.

For horses with problems that impede the use of regular exercise, as in the case of chronic lameness, more clever ways of management are required in order to increase the activity level of the horse. Turning a horse out into a larger paddock or pasture may increase the level of voluntary exercise. Additionally, providing a companion for the obese horse may encourage play. Locating the feed and water sources far apart from one another in the paddock also encourages an overweight horse to move more while being turned out. Daily hand walking may also be performed if turnout is limited.

Reduce Feed Intake

The average horse at maintenance requires about 2-2.5% of its body weight in the form of forage alone or combined with grain in order to meet its daily nutrient requirements. Horses receiving this amount or more may be encouraged to lose weight by reducing the total amount of feed given. For example, the overweight horse may benefit from keeping total feed intake at 1.5% of body weight. However, keep in mind that the horse's diges-

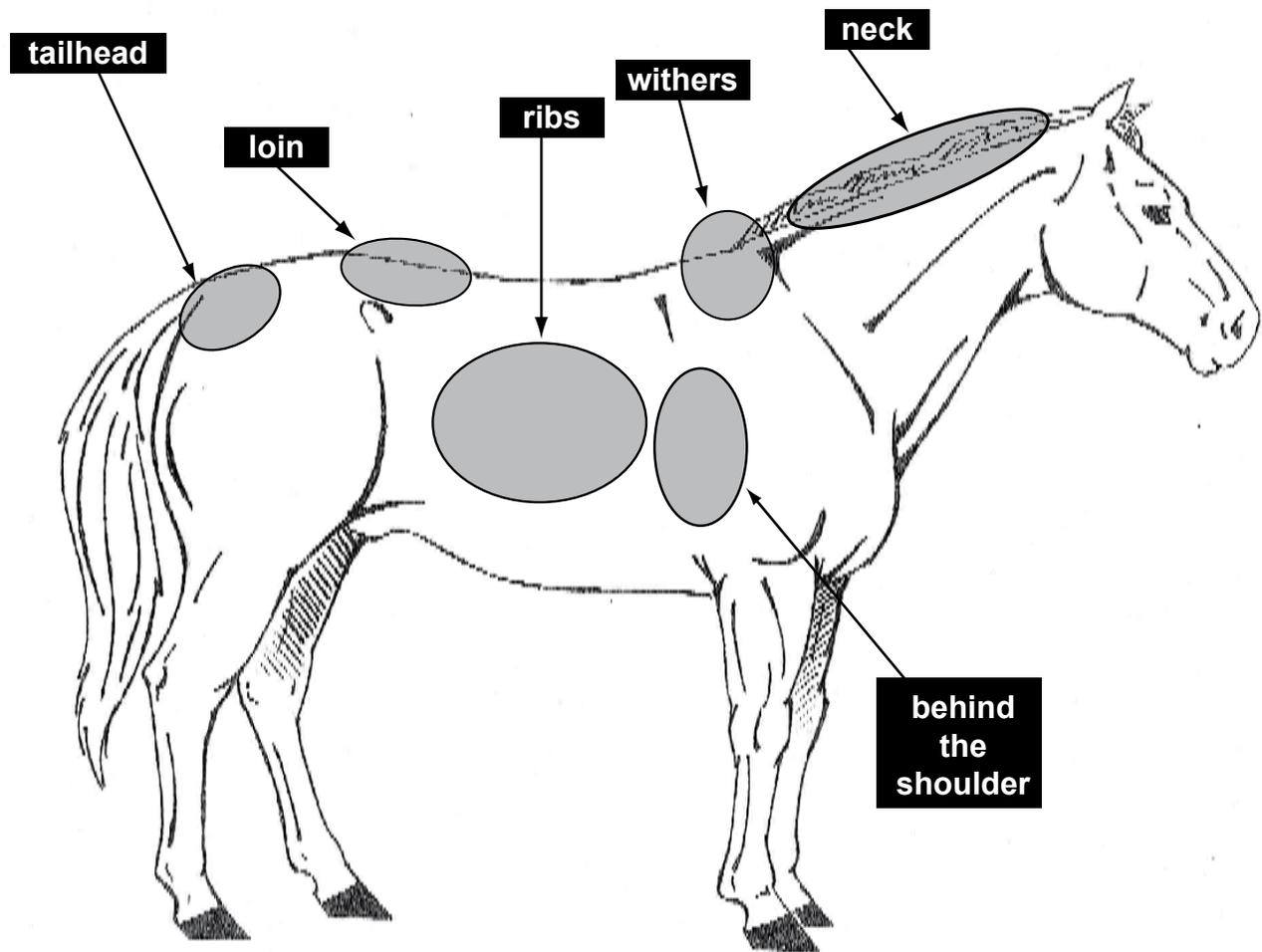


Table 1. Description of body condition scores.^a

| Score | Condition | Description |
|-------|--------------------|--|
| 1 | Poor | Animal extremely emaciated. Spinous processes, ribs, tailhead, hooks (point of hip) and pins (point of buttock) projecting prominently. Bone structure of withers, shoulders, and neck easily noticeable. No fatty tissue can be felt. |
| 2 | Very Thin | Animal emaciated. Slight fat covering over base of spinous processes, transverse processes of lumbar vertebrae feel rounder. Spinous processes, ribs, tailhead, hooks, and pins prominent. Withers, shoulders, and neck structures faintly discernable. |
| 3 | Thin | Fat built up about halfway on spinous processes, transverse processes cannot be felt. Slight fat cover over ribs. Spinous processes and ribs easily discernable. Tailhead prominent, but individual vertebrae cannot be visually identified. Hook bones appear rounded, but easily discernable. Pin bones not distinguishable. Withers, shoulders, and neck accentuated. |
| 4 | Moderately Thin | Negative crease along back. Faint outline of ribs discernable. Tailhead prominence depends on conformation; fat can be felt around it. Hook bones not discernable. Withers, shoulders, and neck not obviously thin. |
| 5 | Moderate | Back level. Ribs cannot be visually distinguished but can be easily felt. Fat around tailhead beginning to feel spongy. Withers appear rounded over spinous processes. Shoulders and neck blend smoothly into body. |
| 6 | Moderate to Fleshy | Slight crease down back. Fat over ribs feels spongy. Fat around tailhead feels soft. Fat beginning to be deposited along the sides of the withers, behind the shoulders, and along the sides of the neck. |
| 7 | Fleshy | Crease down back. Individual ribs can be felt, but noticeable filling between ribs with fat. Fat around tailhead is soft. Fat deposited along withers, behind shoulders, and along neck. |
| 8 | Fat | Prominent crease down back. Difficult to feel ribs. Fat around tailhead very soft. Area along withers filled with fat. Area behind shoulders filled in flush. Noticeable thickening of neck. Fat deposited along inner thighs. |
| 9 | Extremely Fat | Extremely obvious crease down back. Patchy fat appearing over ribs. Bulging fat around tailhead, along withers, behind shoulders, and along neck. Fat along inner buttocks may rub together. Flank filled in flush. |

^a From Henneke et al., 1983

Figure 1. Diagram of body parts used to assign a Body Condition Score (adapted from Henneke et al., 1983).



Main points checked in Henneke scoring system:

- Neck
- Withers
- Behind the shoulder
- Ribs
- Loin
- Tailhead

tive system functions best when high forage diets are fed. It is critical that forage makes up at least 1% of the horse's body weight, limiting concentrate to a level of 0.5% of body weight if fed at all. Feeding less forage to the horse may lead to digestive upsets like colic and overall poor health.

Because grain is the most concentrated source of calories in the horse's diet, overweight horses should have their grain reduced or removed before any forage is decreased. This practice alone may achieve the desired level of weight loss. However, obese horses may need to have their total caloric intake reduced by as much as 65% in order to facilitate weight loss. The latter recommendation is a more extreme situation for horses at risk for developing metabolic problems and should be done with the supervision of a veterinarian due to the risk of hyperlipidemia (fat in the blood) associated with severely restricted diets. As with all dietary changes, they need to be made slowly, with no more than a 10% reduction occurring over a 7 to 10-day period. Due to the different energy densities among forages and concentrates, it is recommended that feed be fed on a weight basis, as opposed to volume basis. Additionally, ample fresh clean water must be provided.

Change the Type of Diet

Horses will naturally tend to lose weight if they are fed diets high in fiber and low in soluble carbohydrates (i.e., sugar and starch). An excellent source of fiber is mature grass hay, which has seed heads that are visible and a higher stem-to-leaf ratio than hay cut when it's immature. Hay that's cut by the grower when it's more mature is preferred as a weight-loss feed over immature hays because it's higher in fiber and lower in energy content. Hays containing all alfalfa or alfalfa mixes should be avoided because they are typically higher in energy than grass hays. In addition to feeding hay, a commercially available ration balancer may be fed on a daily basis. Ration balancers contain concentrated amounts of vitamins, minerals and protein to help balance out those nutrients low in most forages, but they are lower in energy

compared to most commercial concentrates. In addition to removing feed high in starch and sugar from the horse's diet, high fat diets should also be avoided.

Reduce Access to Pasture

Unlimited access to pasture during the growing season can lead to weight gain because grasses and legumes in pasture are a great source of nutrients. Pasture grasses in the early spring and fall can contain high levels of soluble carbohydrates that almost mimic the amounts given when grain is fed. Although allowing horses access to pasture is a good management technique because it allows them an area of exercise and prevents boredom, you must limit intake of pasture in the overweight horse. This can be addressed by limiting the length of turnout by using a roundpen, dry lot or stall, or by fitting the horse with a grazing muzzle to reduce grazing.

Feed Horses Separately

When feeding a group of horses, care must be taken that each animal receives the proper amount of feed. Both overweight and underweight horses should be fed separately, preventing excessive competition from hampering the intake of the thin horses and allowing the fat or aggressive horses to overindulge. Providing separate feed allows you to more accurately monitor the feed intake of your horse. If a private feeding area is not available, canvas or mesh feed bags can provide an alternative feeding method to buckets.

Drugs, Medications, and Supplements

The use of drugs, medications, and supplements to reduce body weight in the horse is a relatively new area of research and should be considered a last resort. In addition, drugs or medications should always be prescribed by a veterinarian who must also be available to monitor the horse's progress. Research into levothyroxine sodium and clenbuterol indicates that such compounds can enhance

weight loss in normal horses, but the application of such drugs to obese horses, as well as potential side effects, are not known. Research into the dietary supplement chromium tripicolinate has shown that it may be useful to enhance insulin sensitivity in the horse, which may become a useful therapy for the obese horse at risk for laminitis. Supplement manufacturer's claims should be critically evaluated and discussed with a veterinarian or nutritionist prior to their use.

Expectations for Weight Loss

Weight loss should occur gradually over the course of several months. A horse may safely lose about 50 lbs or one BCS each month. Rapid weight loss, especially in obese ponies, may put the animal at a high risk of developing hyperlipidemia. Hyperlipidemia is a condition where the body perceives itself to be starving, leading to the release of large quantities of stored fat into the bloodstream. This condition may quickly lead to impaired liver function and death. Signs of hyperlipidemia include drowsiness, depression, muscle twitching, incoordination, colic, and diarrhea.

Another drawback to intensive weight loss strategies is the increased likelihood of developing stereotypical behaviors, such as weaving, wood-chewing, bedding ingestion, and coprophagy. Allowing horses to interact with field companions, the provision of stimulatory toys, and the use of a regular exercise program may reduce the likelihood of stereotypies like weaving, pacing, and cribbing on fences. Because proper weight loss may take several months, body weight and BCS changes should be monitored every 2-4 weeks. Monitoring too often (i.e., weekly) can cause the horse owner to become discouraged because visible changes may not be readily obvious. As with all weight loss programs, patience and consistency are key. Once the horse has reached its ideal body weight or BCS, maintaining that level of fitness is critical. Constant attention to the quality and quantity of feed offered as well as the body weight and BCS of the horse will allow horse owners to make informed deci-

sions as to the amount of feed offered to the horse. Adjustments to the ration can be made based on the changing requirements of the horse during the different seasons or training schedules. Some fluctuation of body weight is normal in the adult horse. A change of 20-30 pounds of body weight (± 0.5 BCS) should not be regarded as a problem unless the horse has continued to increase or decrease its body weight the next time body weight is monitored.

Summary

Equine obesity is a growing problem in horse and pony populations with a multitude of causal factors and implications on health. Horses that have a BCS of 7 or higher are at a greater risk for developing health problems. Management techniques that encourage weight loss include increasing exercise and changing the diet to decrease caloric intake while meeting the other nutritional needs of the horse. It is critical that a horse's weight or BCS be monitored on a routine basis to make sure that the horse isn't gaining or losing excessive amounts of weight. A veterinarian should be involved in the weight loss program of a horse and should be notified of the horse's progress often. Maintaining horses between a BCS of 5 and 6 should reduce the possibility of obesity-associated disorders related to health, exercise, and reproductive performance.

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