Horse Condition and Performance

Striking a Balance

- Nutritional management is key in maintaining good body condition and ensuring maximum performance and productivity of horses.
- Maintenance of body weight and condition are the best indicators of energy sufficiency. So, on a regular basis it is important to assess body condition and to adjust feed intake accordingly. The body condition scoring (BCS) system assesses flesh coverage - mostly fat - over different areas of the body, where a score of 1 indicates an extremely thin horse and a score of 9 an obese one**. For most athletic horses, body condition should be between a score of 4.5 and 6.0. * See attached pictures. They should be kept in lean, muscled condition with no ribs showing.**
- The amount of fat on a horse's body affects many physiological functions, such as reproductive efficiency and work tolerance. **The balance between energy intake and energy expenditure is reflected in a horse's body condition.**
- **Energy deficiency is a major cause of fatigue. As well as limiting performance, fatigue in muscles increases the reliance on tendons, ligaments and joints – predisposing these to injury and breakdowns.**
- Body fat provides the major energy reservoir. The horse's body systems **will mobilize fat for fuel when energy needs are greater than the daily energy intake**. As the time period of inadequate nutrition is prolonged, fat stores are depleted and **noticeable amounts of muscle are broken down for use as energy.**
- Body condition scoring, can be easily adapted and utilized by all owners to manage the proper timing and the amount and type of supplemental feed needed to maximize performance. Body Condition Scoring (BCS) is a classification system used to determine relative fatness or body condition of horses.

Best Condition

- Horses are ranked on a scale of 1 to 9, with 1 being poor or emaciated and 9 being extremely fat.
- **Optimum BCS for working horses is 4.5-6**, and optimum BCS for broodmares is 6-7.
- The difference in the optimum scores is that reproductive efficiency is better when broodmares are maintained at scores of 6-7. **Broodmares that have foaled need some fat stores due to the high nutritional requirements of lactation and recovery from foaling**. It is more difficult to put needed weight on a lactating broodmare versus keeping the broodmare in optimum body condition.
- **Horses maintained at BCS of 4 or below may suffer from decreased immunity, impaired reproductive efficiency, lower work tolerance and breakdown**.

How to Score

► Visually observe the horse's side profile from a distance of 15-20 feet. This will usually give one a good idea of the general condition of the horse — too thin, too fat, about right.

► Next, move close to the horse. Observe and feel for fat at the back, ribs, neck, shoulders, withers, and tail-head, comparing the horse's condition to the descriptions listed below.

- Condition scoring is an assessment *only* of the amount of body fat covering *certain* skeletal landmarks on the body, such as the point of the hip and buttocks, ribs, spine and so on. While some of the observation points (such as through the hindquarters or around the tail head) are also areas occupied by muscle, manual palpation and a little practice will easily differentiate between fat and muscle. Horses with a gut full of hay may look very rounded at first glance, but the prominence of the skeleton will not change upon closer inspection. Likewise, a dehydrated horse will appear tucked-up and long through the underline, but prominence of the landmarks will not significantly change.
- There are nine areas throughout the body that should be assessed:
    1) Neck
    2) Withers
    3) Shoulder
    4) The area directly behind the elbow
    5) Topline
    6) Ribs
    7) Tail head
    8) Point of hip
    9) Point of buttock

A tenth area that is useful as well is the area between the thighs, as viewed from behind.

Each area should be appraised and scored individually and then the scores averaged to produce a final overall score. This doesn't mean you need to laboriously write down and calculate each area. What it does mean is that you need to look at the total horse and take into account individual differences. Some horses can be quite plump and yet still look a little ribby, so the overall score should look at areas other than just those ribs. Other horses can have quite a bit of fat cover, but because of funny conformation

through the croup, look thin in just that one area. Be sure to look at ***all* the areas, then form a general overall score based on individual areas of observation**.

When appraising each area, use your hands as well as your eyes. **Skeletal landmarks can be hidden by a furry winter coat, dirt, lighting or just the way the horse is standing**. Hold your hand flat, fingers together, and feel for the reference points. Then walk around the horse and see if your observations are consistent from the other side as well.

The original developer of this system, D.R. Henneke, has written that for a horse to correctly fall into each of the below described categories, *every* component of the description must apply. For example, if a horse meets all of the qualifications but one for a condition score of 3, then that horse should be categorized as something other than a 3.

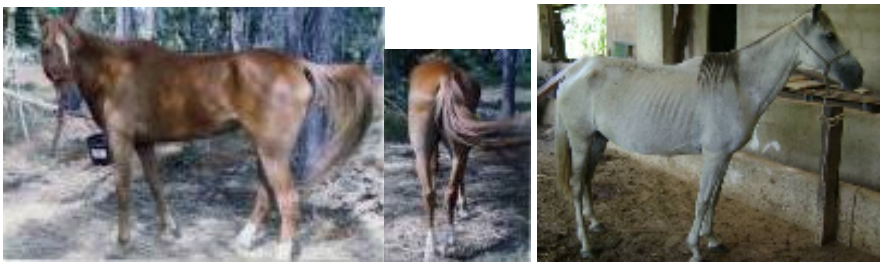
*The descriptions for the individual categories are as follows:

Condition Score 1: Emaciated: Bony structures of neck, shoulders and withers easily noticeable. Spinous processes, along the ribs, topline, point of hip and point of buttock all project prominently, with an obvious ridge down the back. Individual vertebrae may be identifiable. There is significant space between inner buttocks. The animal is extremely emaciated; no fatty tissue can be felt.

Condition Score 2: Very Thin: Bony structures of the neck, shoulders and withers are faintly discernible. Spinous processes, ribs, topline, point of hip and buttock are prominent. Noticeable space between inner buttocks. Animal is emaciated.

2.5 Score

Condition Score 3: Thin: Neck, withers and shoulder are accentuated, but not obviously thin. Tail head is prominent. Slight fat cover over ribs, but still easily discernible. Spinous processes, point of hip and point of buttock are rounded, but easily discernible. Area between buttocks is filled in, but without noticeable deposition of fatty tissue.



Condition Score 4: Moderately Thin: Neck, withers and shoulders are not obviously thin. Ribs are faintly discernible. Point of hips and buttocks are not visually discernible. Fat can be felt around the tail head, prominence somewhat dependent upon conformation. There is a slight negative crease (a ridge) along the topline, especially over the loins and hindquarters.

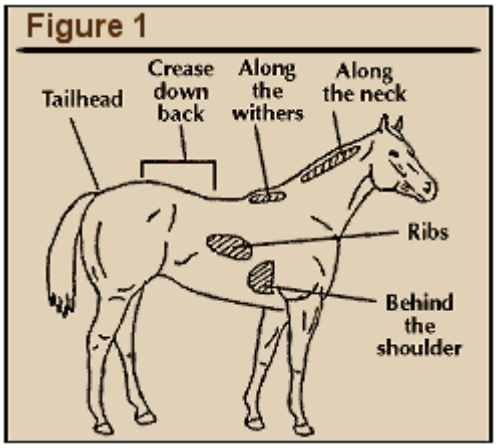
Condition Score 5: Moderate: Neck, withers and shoulder appear rounded and blend smoothly into the body. Ribs cannot be seen but are easily felt. Back is level with neither a ridge nor a gully along the topline. Fat around tail head is beginning to feel spongy. Slight amount of discernible fat deposited between buttocks.

Condition Score 6: Moderately Fleshy: Fat beginning to be deposited along the neck, withers and shoulders. Fat over the ribs beginning to feel spongy, ribs cannot easily be felt. Fat around tail head feels soft. May be slight positive crease (gully) along the topline. Noticeable fat deposition between buttocks.

Condition Score 7: Fleshy: Fat deposited along neck and withers and behind shoulder. Individual ribs can be felt, but with noticeable filling between ribs. Slight positive crease down back. Fat around tail head feels soft.

Condition Score 8: Fat: Noticeable thickening of neck. Area along withers is filled with fat; area behind shoulder is filled in flush with body. Ribs cannot be felt; noticeable positive crease down back, fat around tail head is very soft. Significant fat deposited along inner buttocks.

Figure 1 shows areas of assessment

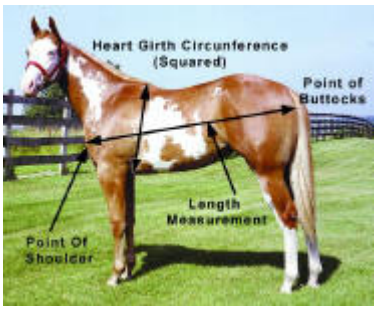


If a horse meets most, but not all criteria for a score, use 0.5 point increments. For example: if a horse meets most criteria for a BCS of 5, and some criteria for a score of 6, a BCS of 5.5 should be assigned. **Make feed adjustments based on condition score. A horse maintained at optimum body condition will achieve better reproductive and performance efficiency.**

Estimating a Horse's Body Weight

(Heart girth2 x Length) ÷ 330 = Weight in lb

- Measure in inches the heart girth just behind the withers and elbows
- Measure in inches from point of shoulder to point of buttocks
- This measurement has a 0.90 correlation with actual weight



For Better Health and Performance, Follow these Key Management suggestions

► Feed according to class of horse and body condition.
Consider age, weight and activity level. **Older horses and poor doers or thinner horses will require more feed.**
► Provide unlimited access to **clean, fresh water**
A 500kg horse at maintenance will consume approximately 30-45 litres daily.
► Maximize forage consumption
Forage should be the major component of the feeding program.
Feed **good-quality** hay, free of mould and dust.
Feed a minimum of 1.5% of the horse's body weight daily as forage. This equates to a MINIMUM of 6.75 – 8kg's of forage(grass and hay) per day.

Horses should be fed a **total of 2-3 % of their body weight**, so if feeding 1.5% hay one should be feeding the equivalent in concentrate i.e. Minimum 5-6Kg's. It is preferable to have the ratio at 65:35 - Roughage to concentrate, thus 8kg forage and 5kg concentrate. As the work-load increases so the concentrate can be increased and the hay decreased.

► Measure feed by weight, not by volume
All concentrate feeds do not weigh the same.
► Limit concentrates to 2.5kg per meal.
► Make feed changes gradually over a 7-10 day period
► Manage feeding times/rates
Feed a minimum of 2-3 meals/day for stalled horses.
Monitor daily consumption of feeds.

Hay and Feed Quality

- **Hay quality is as important as forage quantity**. Hay should have a crude protein content of 7% or higher on an as-fed basis. Hay with less protein tends to be over mature and have too much indigestible fibre. As plants mature, their digestibility and nutrient content decline.
- It is better and cheaper to feed higher quality hay.
- Lucerne has from 14 – 18% protein, good teff around 12% protein and eragrostis around 7 -9% protein. **Cheaper hay is often unfertilised and the nutrient content is very poor. IE. You are wasting your money.**
- **Bear in mind that most grazing is deceptive in quantity and quality (little grass and a lot of weed) and the number of horses out in paddocks means that they are not eating much during the day, so they should be receiving a minimum of 5kg's of hay per night. In winter it is necessary to supplement during the day as well.**

Concentrates and Protein: Quantity or quality

- The quality or amino acid composition of the protein in the diet is important. Of the 22 amino acids required by horses, 10 must be supplied in the diet and are thus called essential amino acids.
- Muscle development, the **ability to repair and rebuild muscles** after work and protein losses in sweat creates a need for high quality, highly digestible protein.
- It is generally accepted that lysine is the first-limiting amino acid, followed by methionine and perhaps threonine. It follows then that a diet containing sufficient total protein but which is low in lysine will make the balance of the protein unavailable for effective utilization. To use the Leibig's Barrel analogy, you can only fill a barrel to the level of the shortest segment.
- Vitamins and mineral levels need to be balanced for feed intake. **The vitamin and mineral packs in commercial feeds are really the difference between a good feed and a great one**.

Feeds and Heat Production

- Metabolism of feeds produces body heat. Metabolism of forage results in the greatest amount of heat, with grains resulting in intermediate heat production and fats the least heat production. Therefore, in winter, it makes sense to increase the forage rather than grain. **Pasture growth slows down considerably in the cold weather and hay becomes more essential to fill the gap, it also helps to keep horses warm.**
- The overall health of the horse relies quite heavily on the health of the hind gut microbial population. An additional benefit is the mechanics of breakdown of hay which is almost entirely accomplished by the hind gut microbes, and because the process is relatively energy efficient, a large amount of heat is produced. This effectively serves to **keep the horse warm from the inside. It is essential to allow unlimited access to good quality hay over the cold months.**
- Since the feed value of pastures decreases over the cold months, it is worth supplementing concentrates with a high-energy product like oil. **Oil is highly digestible in the small intestine and as such is a good source of "cool" energy**. Using oil will help to minimize behavioural problems associated with high carbohydrate diets and it provides nearly two-and-a-half times the energy of the equivalent weight carbohydrate.
- Fat supplementation also may help the horse's performance. An increase in dietary fat potentially increases the amount of muscle glycogen in the horse. Glycogen is the storage form of carbohydrates, and is a primary fuel for energy during anaerobic work, which consists of short bouts of intense exercise such as sprinting, polo or jumping. Therefore, the more muscle glycogen, the longer the horse can exercise. Once the glycogen is depleted, the horse becomes fatigued. So, adding fat can improve performance, particularly that of high-intensity, short-term, anaerobic work. In addition, aerobic work can be improved as added fat can cause muscle glycogen sparing. Instead of using muscle glycogen for exercise, the horse will use fat instead, thus delaying time to fatigue.
- **The benefits of omega 3 oils include decreased blood lipid concentrations, increased membrane elasticity, increased insulin sensitivity and regulated inflammatory response.**

The sample feeding guide shows the change in concentrate to forage ratio for a 15.2 + horse weighing around 450 – 500kg+, as per most polo ponies. Polo is regarded as high – intensity work especially when horse are exercised and played daily.

SAMPLE DAILY FEEDING GUIDE	Concentrate[1]	Lucerne Hay	Eragrostis Hay[2]
Maintenance and Light Work	1-3 kg	-	2.5-7 kg
Medium Work	2-5 kg	1-2 kg	3-8 kg
Full Work	4-7 kg	1-2 kg	3-6 kg

[1] As a general rule, as the work rate increases, select product with higher "Estimated Digestible Energy" values.

[2] Ideally, good quality hay should be provided ad lib to all horses.

NB: This table serves as a guide only.

High concentrate meals should be fed no less than 4 hours before playing. Blood glucose levels are lowest 90 minutes after feeding. If exercising at this time, fatigue comes on sooner due to low blood glucose.

Teeth

- Horses' teeth should be checked and "floated" every 6 months, or at least annually, by an equine dentist, preferably before the season starts.

- Sharp edges on teeth make chewing difficult so the horse will swallow larger particles of food, resulting in choke in some cases, and reducing the efficiency of the digestion process. The horse may also waste food by dropping it from his mouth or "quidding".

Worms

- Worm damage results in scar tissue which can accumulate over a number of years, **reducing the area available for the absorption of nutrients and making it difficult for the horse to maintain its weight and condition**. Regular worming assists in promoting good condition throughout the horse's life.
- Apart from weight loss, other signs of worm infestation can also include dull hair coat, lethargy, colic, tail rubbing, coughing and summer sores.
- **De-worming should be done every 8 – 12 weeks, rotating between active ingredients.**

- Horses that have been turned out in the rain, can also suffer from rain scald, mange and sweet itch. It is advisable to treat all horses coming in for the season with an anti-fungal shampoo to prevent itching and mangy coats.