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Care and Management of Horses on the Ranch

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Basic Health Care

Proper health care and nutrition of the ranch horse is vitally important. Whether considering a working ranch horse, evaluating horses for potential purchase, raising prospects or ranch horses for resale, they all must be healthy.

Horses should be on a routine deworming and vaccination schedule and a sound nutritional program. Ranchers should consult with their local veterinarian as to which vaccinations are currently recommended in their area. Veterinarians also can provide important information about health requirements for hauling horses to events, sales or out of state. Since other states' requirements change quite frequently, it is recommended to consult your local veterinarian any time you anticipate hauling out of state. Helpful hints for health care management also are available from Texas A&M AgriLife Extension Animal Science publications (Scott, 2008).

Above all else, healthy horses should appear bright, alert and full of energy. Starving down young horses or working ranch horses so they can be ridden, in an attempt to speed up the training process, is a poor substitute for good horsemanship and training. Regardless of their intended use, horses should never be intentionally starved in order to alter their behavior. Feed them properly for the level of work they are asked to do and then spend the time to train them properly. Short cuts will only lead to lethargic, ill-mannered horses that hate every moment of riding or work activity.

Teeth care also is important. All young horses should be checked for the presence of "wolf teeth," which are the small, sharp teeth that erupt in front of the first premolar on the upper jaw. These teeth serve no purpose and they may cause the horse discomfort in carrying a bit. This may lead to behavioral problems during training. Wolf teeth are easily extracted by an equine veterinarian and all yearlings and 2-year-olds should be examined before training begins. Older horses, likewise, require routine tooth care and maintenance to prevent sharp edges from causing irritations during eating and/or riding. Making certain that the horse is in good health before starting into a training or riding program will reap many benefits later on.

Nutrition

The importance of a good, balanced nutrition program for the ranch horse, performance horse or prospect should not be overlooked. Proper early development starts even before the foal is born. A complete, balanced nutrition program for the broodmare, especially during the last 90 days of gestation helps assure that the foal gets off to the right start. Mineral intake is critical. Mares which are on pasture and are not supplemented with adequate high-quality, balanced concentrate should be provided with a free-choice, loose mineral containing approximately 10 to 12 percent Ca and P at a 1:1 ratio. Adequate protein intake for the broodmare, likewise, helps assure adequate skeletal development in foals during the later stages of pregnancy. Do not assume that all winter pastures are going to provide all the nutrients needed for optimal fetal development during late pregnancy.

Once the foal is on the ground, nutrition becomes even more important. Skeletal growth is primarily comprised of three major components: protein, Ca and P. These nutrients should be provided in proper ratios to the caloric intake to assure that needed nutrients are available for the level of energy the horses are consuming. The energy level basically determines how fast the young horse is trying to grow. If adequate protein and minerals are not available as compared to the level of energy in the diet, horses will simply get fat, with a compromised skeletal structure. This can be disastrous as the horses become heavier and their skeleton is not equipped to handle the added weight, especially when they enter the training program. Protein intake will affect growth rate more than any other nutrient. Therefore, adequate attention needs to be paid to the daily amount and the quality of the protein intake. Young horses actually require specific amino acids, not intact proteins. Therefore, horsemen should pay particular attention to amino acid balance, especially lysine, threonine and methionine. Basically, if horses are fed a high-quality protein source such as soybean meal to supply

the daily protein needs, they will receive adequate levels of these essential amino acids. An 18 month-old growing horse needs about 1.8 lbs of crude protein per day to meet their growth requirements (NRC, 2007). A faster growing yearling may need more protein. If a long yearling is also in training, they need about 1.9 lbs per day.

Ca and P also are required in adequate quantities and in proper ratios for optimum skeletal growth to occur. The basic requirements for an 18 month-old yearling for Ca and P are 37 g and 20 g respectively. Ca:P ratio in the total ration (including hay) should be around a 1.5:1 ratio. Since grass hay normally contains about 0.4 percent Ca and 0.2 percent P, a concentrate formulated to be fed with grass hay would obviously require a higher level of both Ca and P, with a closer Ca:P ratio. If feeding alfalfa hay (which contains Ca levels as high as 1.5 to 2.0 percent), Ca and P levels in the concentrate should be adjusted so that the ratio in the total ration does not exceed 2:1. Some trace minerals such as Cu, Zn and Mn also are involved in skeletal growth. A complete and balanced feeding program which provides recommended levels of all trace minerals is crucial to healthy growth and development of the young horse.

As a horse begins a training program, bone remodeling is initiated and protein, Ca and P levels in the diet should be increased accordingly. Research by Nielsen et al. (1997), demonstrated that bone remodeling takes place in the young race horse at about 50 to 60 days of training. It has been suggested that by increasing the level of nutrition in the diet prior to this remodeling phase, the chance of injuries to the developing young performance horse may be reduced.

Nutritional status undoubtedly plays a major role in bone integrity during the early stages of training. Given the investments currently being made in young equine athletes, it is simply not advisable to skimp on the nutritional program. Not only will malnutrition compromise skeletal development, it may limit muscular development and repair. It also will compromise the immune system of the horse, which could further reduce the number of days the horse can stay in training, due to illness.

The primary nutritional concern for the mature ranch horse is for total caloric intake, or energy. Anytime a horse does any type of physical work, they burn energy and that energy must be replaced in the diet. In comparison, a mature riding horse, which does one hour of hard exercise per day, requires about twice as much digestible energy in the diet as the mature horse at maintenance. This means that the diet of the exercising horse must contain some high energy feedstuffs such as grain or added fat. Supplementing the diet with additional fat is an excellent way to provide needed calories without the danger of carbohydrate overload and without creating the "sugar high" that many horsemen seek to avoid. Even in the mature horse, it is important to feed a balanced diet and to be sure horses receive adequate protein, vitamins and minerals, including salt. The easiest way to assure that the diet of the horse is balanced is to select a concentrate mix which has been formulated for the exercising horse and the type of forage or hay being used in the diet. Adjustments can then be made in the hay:concentrate ratio to meet the horse's energy needs. Horses should always receive a minimum of 1 percent of body weight in hay or roughage and any adjustments to the diet need to be made gradually over a 2 to 3 week period. Total intake of hay and concentrate normally should be between 2 to 2 ½ percent of body weight, with close to half of that being hay or roughage.

Principles of Exercise and Conditioning

All horsemen should have a basic understanding of conditioning concepts. Far too many horses have to be pulled out of training or out of the working string, because they have been pushed too hard, too fast and were not physically fit to do what the rider asked of them.

Physiological conditioning of the equine athlete, unfortunately, is often dictated by tradition, practiced the same as it has been for the past century. Trainers have been slow to adapt new science and technology or to experiment with new training techniques. Consequently, some horses never reach their peak performance level and musculoskeletal injuries in young race and performance horses during training are still far too common. These injuries and/or sub-par performance can have significant negative effects on the economic outcome for race and performance horse trainers and owners.

Cardiovascular and musculoskeletal conditioning involves two basic principles. The overload principle is the basis for all conditioning responses. This means that the system must be overloaded in some manner (intensity, speed, time) in order to elicit a training response. Basically, when the system is overloaded it relays that fact to the rest of the body and passes on the message "hey, that hurts and we should get better prepared in case that happens again." Another important concept of the overload principle is that in order to continue to have an improvement in fitness, we must continue to increase the work load. Otherwise, the horse reaches a plateau of fitness relative to the current level of physical exertion and stays at that level. Gradually increasing the workload is the only way we can get a horse progressively more fit. Of course, if we overload the system too much or too quickly, serious breakdowns can occur before they have time to become fit.

How do we know if we are sufficiently overloading the system or more importantly, overloading too much? Heart rate (HR) in response to an exercise bout is the easiest way the average horseman can assess exercise stress. In a research setting, blood lactate concentration gives us a more accurate

measure of relative fitness and exercise stress to a specific exercise bout. However, by taking the horse's HR by hand or by using one of the widely available on-board heart rate monitors, any horse handler can immediately ascertain cardiovascular response to exercise. Table 1 shows approximate HR response to different levels of exercise. Obviously, these HR's would vary slightly with different levels of fitness in the horse. In order to improve the horse's anaerobic (without oxygen) system we must push the horse hard enough to get HR's over 150 beats/min. It is important, in the latter stages of training, to get anaerobic training, to assure that the horse has the capability to continue to work in times of oxygen deficits such as at the end of a 1- mile race or at end of a long cross-country cattle drive.

TABLE 1. Estimated Heart Rates (HR) at Different Exercise Intensities (Adapted from Gibbs, et al., 1995)

Activity	HR (beats/min)
At rest	36-40
Walking	60-80
Slow Trotting	80-90
Fast Trotting (200 m/min)	110-120
Fast Trotting (300 m/min)	130-140
Slow Cantering	100-120
Galloping (500 m/min)	180-200
Galloping (800-1000 m/min)	200-220

The other principle of conditioning is specificity of exercise. This simply means that the horse should be conditioned to the type of athletic activity it will be performing later on. Most performance horses have to go through months of psychological training in order to get them ready for competition. A cutting horse, for example, does plenty of stops and turns in practice, similar to the activity they will be doing at the actual competition. So while they are learning to turn and stop with a cow, they are also getting more fit for the specific type of exercise they will be performing. However, in all events or activities, we must be sure that horses are conditioned to do the type of exercise they will be asked for in actual competition. Obviously, we would never ask a horse to run a race at a full gallop when all he had ever done at home is long trot. But, how many times do we ask him to run a mile and quarter when all we have ever run at home is a half-mile breeze? Or how many barrel horses are exercised everyday at a long-trot ("legging them up") and then go to a jackpot barrel race or a practice session and make two or three hard runs at a full gallop. Ranch horses which have only been long-trotted and slow galloped on the ranch may not be physically fit to go to a roping on the weekend and run 10 or 12 hard steer roping runs in a row. The horse should not be asked to perform at a level in competition that they have never done at home. Is it any wonder why horses break down at the track or while competing in some high-level performance event? Some of them have never been asked for that level of physical exertion before in their life.

How long does the conditioning process take? With the right kind of training, we can actually get significant cardiovascular conditioning in as little as 4 wk. However, it takes much longer than that to get bones, tendons and ligaments conditioned. Normally it is recommended that we train the horse using 9 to 12 wk of slow, long distance type exercise before introducing any speed work.

Once past this period, we can gradually start introducing speed work 1 to 2 times per wk in order to get the horses over the anaerobic threshold and to begin to get more bone density and strength. After 3 to 4 wk of gradually introduced speed work, the horse can put on an interval training schedule, which involves a combination of distance work and speed work which can continue to build aerobic capacity and also build strength and speed.

Training of Young Horses

On many ranches, young ranch, performance and race prospects are put out in the back pasture and forgotten until they are approaching their 2 year-old year. At that time they are brought in and started into a training program. However, the high incidence of musculoskeletal injuries in young horses, indicate that management practices of these young horses possibly should be reevaluated. Considering the value of these young prospects, any management practices which may help improve the success rate of these horses would be of economic benefit to ranchers and horse owners and would greatly improve the well-being of the horse. The chance of a long career on the ranch, in the show ring, or on the track can be improved by implementing sound management practices on a routine basis.

Much of the training and conditioning of performance horses typically occurs toward the end of the skeletal maturation process. This is unfortunate, as there is now research which shows the advantage of pre-conditioning young horses. If horses are conditioned during the early growth and development stage, considerable bone remodeling and strengthening can occur during this stage. Since bone is living tissue and responds to mechanical loading by adapting itself to those gradual increase in strain, it is very likely that young horses will benefit from well-designed, gradual conditioning programs early in their weanling and yearling years. Research (Young et al., 1991) has shown that during training, bone rapidly remodels to decrease bone porosity and increase wall thickness and mineralization, to enhance the bone's ability to withstand stress during exercise.

Some of the early research concerning the beneficial effects of training on bone remodeling in young race horses showed that repetitive loading of the bone and the related strain

contributes to bone remodeling and reshaping (Nunamaker et al., 1990). These authors further concluded that one of the contributing factors to the high incidence of bucked shins in Thoroughbred race horses is that young horses are repeatedly conditioned at slower speeds and then higher speed work is introduced only once every 7 to 10 days. This practice models the bone for slower gallops but does not condition the bone for the speed work that is introduced occasionally in training or the actual race at the track. This dooms the young horse for possible failure when speed work is introduced abruptly. Neilsen et al. (1997) found that bone modeling does occur in young horse in race training and that bone density is at its lowest point at about 50 to 60 days of training. This time frame coincides with the time when many race trainers start to introduce some speed work. Incidentally it also is the time when many bucked shins start to show up in young horses which are being asked for more speed. Exercise pre-conditioning of yearlings also has been investigated. There appears to be some advantage in bone density and strength in yearlings which have been pre-conditioned on a treadmill for 14 weeks prior to going into race training (Hiney et al., 2002). More recently, Rietbroek et al. (2007) also showed a positive effect of training weanling horses in a show jumping environment in improving hind limb muscle development.

The type of training and surfaces on which young horse are trained also contribute to bone development. Bruin (1993) reported that weanlings worked on a hard surface develop fewer bone abnormalities than those worked in deep sand. Anderson (1991) reported higher incidences of OCD lesions in weanlings which stood in dry lots with no forced exercise than weanlings which were forced exercised and fed a high protein, high energy ration.

There is no doubt that pre-conditioning of young horse will positively affect bone development and possibly contribute to longevity of the horse in subsequent training programs. Proper conditioning as well as a balanced feeding program early in the equine athlete will make a difference in the performance capability and longevity of ranch, performance and race horses. Breeders, trainers and owners should be more aware of factors that will improve the ultimately usability of horses. Considering the cost of producing and training outstanding athletic horses, and for the well-being of the horse, it is only logical that we do everything we can to improve performance capabilities and at the same time improve longevity.

Foot Care and Shoeing

Foot care cannot be overlooked in considering the overall care and management of the ranch horse. Proper foot care not only reduces the chance of developing unsoundness, but better equips the horse to do his job. A good balanced nutritional program is paramount to good overall hoof health. Maintaining cleanliness, moisture balance and overall balance in the foot are essential to maintaining a healthy hoof and proper hoof function. Spending a little extra time in daily foot care is well worth the time investment. If you don't do your own trimming and shoeing, spend a little extra and hire the best farrier you can find. If you do your own shoeing, take every opportunity to learn and improve your skills by attending shoeing and foot care seminars and get tips from other farriers. A horse with less than four healthy feet is not going to be much help on the ranch or in any other enterprise.

Saddle Fit

Saddle fit and comfort play a major role in allowing the horse to do his job to the best of his ability. A sore back created by an ill-fitted saddle will cause a horse to try to adjust their stride, how they stop, turn or otherwise move in order to try to get away from the pain. This will eventually lead to behavioral problems, soreness, lameness and other characteristics which will keep the horse from performing up to par. Saddles which may otherwise fit, but don't allow the rider to get in balance with the horse or to help the horse better do his job, may also create some of the same problems. Be aware of how a saddle fits each horse, especially in the wither area and in the loin, and how the rider sits in that saddle, in relationship to the horse's center of balance. It is also important to use good quality pads, keep them clean and keep all other tack such as cinches, clean and in good repair.

Summary

A healthy ranch horse has to feel good on the inside and outside. A good health care program, adequate and balanced nutrition, foot care, good saddle fit and proper and gradual conditioning of riding horses are all essential parts of a complete ranch horse program. Short cutting any one of these areas will result in lost revenue due to a loss of service or by lowering the resale value of the horses on the ranch. With the value of good, sound, broke ranch horses in today's marketplace, it pays dividends to devote a little extra attention to the care and management of these horses. In cases where horses play an essential role in the day-to-day operations, having sound, healthy horses ready to go each and every day has to be part of the overall management plan of the ranch owner or manager.

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