Training for Standardbreds

The American Standardbred racehorse is subjected to an outmoded and frequently harmful training program, according to Tom Ivers, trainer and owner of Olympic Stable in Delaware, Ohio. The Palo Alto training system, developed in the mid-1800’s by Leland Stanford, a former governor of California, rests on the assumption that trotters are born rather than made, and that their inherent ability need only be “awakened” through short mileage sprint training at an early age. Training and racing yearlings also offered the attraction of accelerated returns on breeding investments. This philosophy gained acceptance in the racing industry at a time when horses jogged the major part of a course and sprinted the final quarter. However, the style of Standardbred racing has changed to an all-out mile sprint, and under these conditions the Palo Alto regimen is, in the words of Mr. Ivers, a “guaranteed crippler.”

Ivers supports his statement with racing industry data on injuries to Standardbred horses. Veterinarians attribute 70% of Standardbred racing injuries to lack of conditioning and fatigue, i.e., weakness in the muscles and tendons of the lower leg. According to Dr. Matthew Mackay-Smith (Equus 21:63, 1979), both the way horses are trained and factors in the horses’ form and structure determine their susceptibility to lameness. The Palo Alto system, with its emphasis on developing speed in a relatively heavy-boned horse bred for trotting, fails to build essential heart-lung and local muscle strength and endurance. The animal welfare implications are obvious: a high percentage of track breakdowns (physical injury which prevents a horse from finishing a race) and the increased pre-race administration of drugs to alleviate symptoms without really attacking their cause. [See: Legislation/Regulation.] Ivers believes that the emphasis must shift from pharmaceutical treatment of symptoms to prophylaxis by means of an appropriate training program.

Studies in exercise physiology have given rise to a training principle known as neuromotor specificity, which refers to the fact that neuromotor and biochemical changes produced by training are specific to the demands of the activity. Training for an event such as the Standardbred mile race, which incorporates speed, strength, stamina and coordination, must combine aerobic and anaerobic exercises designed to develop these different qualities. Although selective breeding plays an important role in producing animals which embody the optimum features of temperament and physique for racing, proper conditioning remains the crucial factor in ensuring that these animals reach their full athletic potential.

Mr. Ivers, in collaboration with exercise physiologist Paul Lessack of Bethlehem, Connecticut and former Ohio State track coach Frank Lubovich, has developed a training program engineered to bring both aerobic and anaerobic metabolisms to peak efficiency. Training begins with light aerobic exercise, gradually building up to cover longer distances. Long, slow workouts strengthen the heart.
and local muscles, thicken the bearing surfaces of bones (thus reducing the changes of stress fractures), and increase the oxidative capacity of muscle cells. The second phase, intended to build heart-lung and local muscle endurance, combines aerobic and anaerobic exercise in a series of long, strenuous intervals punctuated by shorter periods of complete rest. The third phase consists of fast intervals at near racing speed, anaerobic workouts in which exertion demands exceed the heart’s capacity to supply oxygen to the local muscles. Running on oxygen debt results in the production of lactic acid in the muscle cells, inhibiting contractions and causing fatigue, pain, soreness and often, injury. However, proper anaerobic conditioning prepares the body to handle the increased workload by raising the level of blood alkalines which in turn prevent the excessive accumulation of lactic acid in the muscle tissue. Only in the fourth and final stage, short sprints at 100% efforts, does the development of pure speed become the focus.

Ivers and his colleagues have tested this alternative training program on eight horses with previous racing injuries. After one year of testing on the training track, the horses were in condition and exhibited no behavioral or physical signs of pain or injury.

The Ivers system challenges the idea of the racehorse as ‘natural athlete’ and for this reason may encounter resistance from trainers who are reluctant to devote the additional time and energy this system requires. Nonetheless, as Mr. Ivers points out, breeders and owners are losing their horses on low sodium diets. B.O. Hughes and C.C. Whitehead, in a study performed on laying hens under field conditions in Great Britain 1978, found that the type of cage floor rather than the cage size was the primary factor in choice of housing (Brit. Vet. J. 134:469, 1978). Birds exposed to both battery cage and hen-house/run environments were presented with contrasting pairs of cages in a T-maze construction. Although the birds which had been kept in (not merely exposed to) an outdoor facility displayed quicker responses to all proffered environments than their battery-caged counterparts, both sets of birds reacted faster to the same alternatives when presented with the contrasting pairs: large/small, grasswire, the hens chose the large cage and the grass floor, respectively. However, when size and floor type appeared in combination they chose small grass cages over large wire ones.

Preference tests which allow the animal rather than the keeper to choose between different environments sometime produce surprising results. In this case, the disadvantage of battery cages is seen to lie more in the type of interior and not so much in the degree of confinement. It follows that housing improvements designed from the vantage point of animal welfare might concentrate on better equipping presently available cages rather than on the costlier proposition of increasing space.

Sodium and Egg Production

Feeding laying hens a low sodium diet to induce a pause in egg production is gaining popularity. The purpose is either to reduce egg productivity over a short period in times of market surplus, or to prepare a flock for a second laying cycle. Earlier studies have suggested that this technique may be more humane than starvation and water deprivation to induce ‘forced moulting’ and that no specific behavioral problems appeared. Behavior problems such as toe and foot pecking have been reported under field conditions in birds on low sodium diets. B.O. Hughes and C.C. Whitehead, in a paper entitled “Behavioral Changes Associated with the Feeding of Low-Sodium Diets to Laying Hens” (Appl. Phot.”

FARM ANIMALS

Hens Take to Grass

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Anim. Etha/. 5: 255-266, 1979) investigated this welfare question and summarized their study by stating that:

"... A pilot experiment showed that under some circumstances damaging pecking did occur when low-sodium diets were fed, particularly so in combination with high calcium levels. Sodium-deprived birds showed an increased tendency to peck at novel objects, but did not increase their intake of sodium-supplemented diet when offered a choice."

"The problem was then investigated on a larger scale by allocating hens of 2 separately caged strains to one of 9 treatments, housed in bright light and in groups of 6 per cage, with 3 levels of sodium and 3 of calcium. The increased calcium levels had no effect on either cannibalism or feather condition, but cannibalism was seen in birds receiving both low (0.003% Na) and intermediate (0.03% Na) levels of sodium, although not in the controls (0.13% Na). The effect was more marked in the hybrid medium hybrids than in the light hybrids. Feather condition was unaffected by sodium deprivation. It is argued that the problem is a husbandry and management one and that, in spite of these adverse effects, sodium depletion remains a useful method for inducing a pause in egg production."

The authors addressed the ethical question of depriving birds of an essential nutrient as follows:

"It has not yet been established how much suffering is involved, when an animal is deprived of an essential nutrient but it may be substantial if the period is a long one. It is probable, however, that suffering is less in the case of sodium than in the case of calcium, for example, for three reasons. Firstly, the very weak selection response suggests that there is not very much positive postingestional feedback, implying that the adverse effects which are being reversed are not severe. Secondly, the birds do not lose body weight (Whitehead and Sharp, Br Poult. Sci. 17:601 1976) as they do under most nutritional stresses. Thirdly, there is evidence that once they are out of egg production they go back into sodium homeostasis."

They concluded that this method would be more acceptable from a welfare viewpoint if the birds were kept under reduced illumination in small groups of no more than four per cage.

Dairy Cow Housing Systems
Professor J.L. Albright (Purdue University) discussed the various housing needs of dairy livestock and developments in housing systems at the 1979 Farm Builders Conference in West Lafayette, Indiana. He noted that the long-term effects on livestock housed on concrete floors throughout their productive life have not yet been adequately analyzed.

There is present concern over this type of environment in relation to the behavior, reproductive functions, udder health, and foot and limb structure of cattle.

Many dairymen now remove the cows from concrete, at least during their dry period. Cows have also been moved to exercise or pasture areas whenever feasible in order to let their feet, legs and udders. Some new confinement systems employ a combination of concrete flooring and dirt lots to allow cows to be programmed off concrete for several hours each day.

Steel and concrete slatted floors have never been totally satisfactory for dairy cows, reported Albright, and their use has decreased over the past 15 years. In a two year study at Purdue University, 32 Purdue Holsteins housed on a natural dirt base with sawdust/shavings bedding were compared with cows housed on slatted floors with permanent bedding on concrete. Those cows housed on dirt produced an average of 3 pounds more milk per day, had lower leukocyte counts during three quarters of the study, stayed cleaner, exhibited fewer cases of clinical mastitis (13 vs. 29), had fewer foot and leg injuries (5 vs. 12) and also rested easier, lying down an average of one hour more per night. These results indicate that increased productivity and improved animal welfare can go hand in hand with conscientious management methods.

WILDLIFE

Inbreeding Mortality in Ungulates
As the world's wildlife population continues to decrease due to human encroachment and intervention, the issue of inbreeding takes on a new significance. Drs. K. Ralls, K. Brugger and J. Ballou recently completed a study at the Smithsonian Institution in Washington, D.C. on the relation between inbreeding and juvenile mortality in small populations of ungulates (Science 206: 1101-1103, 1979).

The researchers analyzed data primarily from records of the National Zoological Park in Washington, D.C. of 16 species of captive ungulates which recorded the number of inbred calves (all young with an inbreeding coefficient greater than zero) and noninbred calves (those young with unrelated parents) that survived six months or more. The records showed that the mortality rate in inbred young was higher in all but one of the species reviewed. Significantly higher mortality rates were found in half of the species studied (four species with the largest sample sizes and four in which the sample size was small but the mortality of inbred young was very high). The authors admit that they did not analyze most of the data with respect to variables which might have influenced the juvenile mortality figures, except in the case of one species where factors such as birth season, management improvements, birth order and possible differences between wild and captive born females were examined and proven insignificant in their effect on the high mortality rates of the inbred young.

These findings lend credence to the claim that inbreeding within captive populations of exotics is a serious problem which often goes unrecognized when zoos fail to maintain detailed records. The authors urge that in order to preserve genetic variability in small populations of ungulates, sound genetic management programs should be instituted prior to the appearance of inbreeding deficiencies in individual species.