

Preventing Injuries to Your Horse During Training

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The most common musculoskeletal injuries of horses in work include tendon and ligament injuries, stress fractures, chip fractures, joint sprain/strain and foot soreness. The severity of the injury a horse may have depends on the type of training it is undergoing. Harness racing horses rarely develop bucked shins, while most flat racing horses often have some shin soreness during their early training period. A horse in dressage training is unlikely to develop a chip fracture, but may develop back soreness as it strengthens its top line and neck muscles. Some injuries, such as joint swelling due to osteochondrosis (OCD), occur because of an abnormality in joint development.

What are the major problems and how often do these problems occur?

Information regarding this question has primarily been researched in the racehorse. A study by Dr. Peter Rossdale of the U.K. evaluated the number of training days lost for racehorses in training centers at Newmarket (Vet Rec 1985;116:66-69). Over a 2 year period 6 stables were evaluated for a total of 114,933 days of training. 9,826 (8.5%) days of training were lost in this study group. Lameness was the most common cause of lost days of training (68%). Lameness was most commonly localized to the foot (19%), muscle (18%), carpus (14%), fetlock (14%), tendon (10%), and sore shins (9%). Respiratory disorders were responsible for 20% of the lost days of training. Wounds, unthriftiness and other problems accounted for 12% of lost days. A more recent study by Oliver and colleagues from South Africa had similar results in Thoroughbred racehorses and found 8.1% of training days were lost with 72% of the lost days due to lameness (J S Afr Vet Assoc 1997;68:125-129).

In another study, a group of 169 Australian Thoroughbred yearlings sold at auction were followed for their 2 and 3 year old seasons. Fifty-six percent of these horses lost training days due to lameness. Eighty-five percent of 2-year-old horses lost training days due to injury or illness. Sore shins in 2-year-olds was the cause of 42% of the lost days. Other causes of lost training included fetlock lameness (25%), coughs and nasal discharge (16%), lacerations (13%), foot problems (9%), carpal problems (7%), tying-up (6%), and ligament sprain (5%) (Bailey, et al. Vet Rec 1999;145:487-493). Days lost to training averaged 2.7% of the total training days available.

In a study of equine facilities in the U.S. during 1992-1994, the 10 most frequent problems with horses of any use were lameness, dermatitis, respiratory disorders,

hoof/foot problems, reproductive problems, and colic (Kaneene, et al. *Prev Med* 1997;29:277-292).

From these studies we can determine that lameness is the most common reason horses lose days of training- whether they are racehorses or pleasure horses.

Early development

The manner in which a young horse is raised has an influence on strength and future soundness. A study of Dutch Warmblood foals from birth to 11 months of age found that the musculoskeletal system underwent rapid and profound changes that were influenced by exercise (van Weeren, et al. *Proceedings AAEP* 2000;46:29-35). Foals were evaluated under 3 different exercise regimes from 1 week of age until weaning at 5 months. The first group was confined to a stall. The second group was also maintained in box stalls, but was trained with increasing gallop sprints in a 48 × 15 m enclosure. The third group was maintained at pasture during the entire study. From 5 to 11 months of age, all foals were housed in a large stall with free access to a small paddock. Tendon, muscle, cartilage and bone were analyzed at 5 and 11 months of age.

Continuous turn-out in pasture was superior to the other exercise regimes. The box stall-confined group had retarded development of some tissue components, particularly cartilage. The trained group of foals had increased bone density compared to pasture and box stall groups at 5 months, but tissue quality parameters for cartilage, bone and tendon were less in this group at 11 months compared to the other groups.

Another study determined that appropriate exercise in young horses may lead to lower incidence of tendon injuries in adults (Smith, et al. *Equine Vet J Suppl* 1999;30:201-209). A protein thought to influence development of tendon strength (COMP) is present at higher levels in tendons of horses less than 2 years old compared with older horses and may be responsible for helping young tendons build strength.

These studies have made us aware of the rapid changes that occur in foals during early development. Some day, when we better understand the process, we will be able to manipulate exercise of growing youngsters to better prepare them for their athletic endeavors. Overprotective housing scenarios may not be in a foal's best interest. Access to turn out in terrain that is safe but that challenges the growing foal's level of condition may be best.

Where the rubber meets the road: shoeing and footing

Musculoskeletal injuries can be minimized with attention to shoeing and footing. Shoeing is easily adjusted, while footing often is problematic to modify.

Foot and shoe imbalance are major contributors to lameness. The foot should be balanced from medial to lateral (side-to-side) and the toe angle must be correctly conformed to the horse's pastern confirmation. Heel support must be continually evaluated. Lack of heel support, especially in a foot with a long-toe and an under-run heel, results in excessive strain on the heel region of the lower limb. High stress in this region may result in injury to the navicular area, distal tendons and ligaments, digital cushion and the pastern and coffin joints. Consult with your farrier regarding proper shoeing techniques to maximize your horse's soundness. Regular evaluations by your

farrier are crucial to the soundness of your horse. Your veterinarian can help determine the proper toe and heel angles for your horse and verify correct medial to lateral hoof balance by taking x-rays that reveal the position of the coffin bone within the hoof capsule.

Footing is not very easy to change but careful attention to this aspect of training can pay big dividends in your horse's soundness and longevity. At racetracks, training centers and horse stabling facilities, the managers and owners take responsibility for the footing. It may still fall on the user of these facilities to suggest footing upkeep and care if circumstances dictate.

Good working surfaces are developed through attention to detail during construction and by good maintenance. A site with good drainage, a well leveled and compacted sub-base which lies under the appropriate base material makes for a good working area. The base should be impenetrable to hooves and water. The base is usually made of decomposed granite or limestone and should be at least 4 - 6 inches deep. The surface layer should be no more than 2 - 4 inches deep and is often composed of angular sand. Footing that is too thin does not provide sufficient concussion protection to the horse, while footing that is too deep results in excessive strain on tendons and suspensory ligaments. Other footing materials include wood products or mixtures of the above with rubber or binding agents that decrease dust or increase resiliency.

Maintenance of the footing is crucial. Most footing materials absorb shock best when the moisture content is between 8 and 12%. The area must be harrowed when ruts or holes form, or when the surface layer is thin in some spots, while deep in others.

How to bring a horse back into work

A rational protocol for returning a horse to work after a lay up for injury or after a normal break from riding over the winter is crucial for soundness. The watch word is "gradual". The cardiovascular and respiratory system can return to full capacity within 6 to 8 weeks of a return to serious exercise, while the bones, muscles, and especially the tendons and ligaments may require a considerably longer time.

My recommendations for return to training are based on gradual, steady increase in work. I start all horses that have not been ridden for at least two months at 20 to 30 minutes of under saddle work at the walk, 5 – 6 days per week. For the first two weeks I recommend no trotting. After two weeks of loosening up at the walk only, 5 – 7 minutes at the trot may begin. The trot should be done only after a solid 10 minutes of warm-up at the walk and the trotting time should be broken in 1 to 2 minute segments. All rides should finish with a relaxed 10 minutes at the walk.

The most conservative way to increase work is to add 10% of time at a specific gait each week. If you are working your horse a total of 30 minutes, with 20 minutes at the walk and 10 minutes at the trot, the next week you can trot 11 minutes and walk 22 minutes. Add 3 to 4 minutes at the canter after three weeks of riding. These recommendations for re-training are very conservative. In many cases the process can be accelerated somewhat. The rider must be careful to not work the horse to fatigue until he has sufficient strength of the musculoskeletal system. You should expect a reasonable level of fitness in a horse that has been laid up for over two months to require 3 to 4

months of re-training. Remember, your horse that has been out on pasture from January to March won't be safely ready for a 25 mile endurance competition in April.

Retraining your horse carefully, with attention being paid to trimming and shoeing, the riding surface and the exercise plan, all will benefit the long-term soundness of your horse. Gradual retraining is crucial to a trouble free season in competition or on the trails.