

Preventing Racing Injuries: Are Artificial Track Surfaces the Solution?

For centuries, horses have raced on dirt tracks, and many have sustained injuries while racing on those tracks. With an eye toward reducing injuries, the first artificial racing surfaces were designed more than 20 years ago and various brands have been installed on a number of tracks.

Why were artificial track surfaces developed? Safety was a primary consideration in the development and installation of artificial track surfaces. Anything that makes racing safer for horses and jockeys is good for the sport and its public image. Injuries, especially fatalities that are caught on nation-wide broadcasting, are bad for the sport. Specifics of a training program, the horse's age and level of maturity, nutrition, conformation, rider style, shoeing, genetic concerns, and track characteristics are all factors that can contribute to fractures and soft-tissue injuries. Some factors such as genetic makeup can't be changed to prevent injuries. Track surface condition is often blamed for problems, and it is possibly one of the easiest things to quantify and modify.

What's different about the artificial track surfaces? Synthetic track surfaces were designed to eliminate some of the most common problems that plague dirt tracks: compaction, poor drainage, uneven surface, and variations related to weather and temperature. There are several synthetic products on the market. Four brands—Polytrack (www.polytrack.com), Pro-Ride (www.prorideracing.com), Tapeta (www.tapetafootings.com), and Cushion Track (www.cushiontrackfooting.com)—have been installed on American tracks.

Each product is slightly different in composition. The mixtures may contain sand, fibers, wax or rubber to coat some components, and various polymers to cushion or bind the material. Claims by manufacturers include things like supporting the hoof, giving the horse firm footing, reducing impact for landing strides, and limiting kick-up as the horse takes off again. Because the materials don't absorb or adsorb water or become compacted the way dirt does, synthetic surfaces require less intense maintenance and can be used in all climates and weather conditions.

Are the new surfaces safer? Hopeful predictions indicated that injury rates should decrease with the change. However, at least for catastrophic injuries, the numbers are far from definitive.

- For injuries ending in the death of the horse, there were 3.09 per 1,000 starts in California from 2004 until 2007, the year when all tracks in the state were required to hold races only on artificial surfaces. From that time through the end of 2008, the number of fatalities dropped to 1.87 per 1,000 starts.
- During 2007, dirt tracks in New York reported 1.8 fatal injuries per 1000 starts. In 2008, the state had 1.3 fatalities per 1000 starts on dirt. These figures could be interpreted to mean that racing on dirt tracks is at least as safe as racing on synthetic surfaces.
- Statistics compiled in 2007 from 30 different tracks indicated a fatality rate of 1.47 per 1,000 starts on synthetic surfaces compared to 2.03 per 1,000 starts on dirt.

- Figures from various sources have claimed fatality rates from a low of 0.44 to a high of 2.36 per 1,000 starts for unspecified track surfaces.

In an effort to establish solid figures regarding injuries, The Jockey Club has designed a database to record racetrack injuries. This project, begun in mid-summer of 2008, will use a standardized format to record data on the type and frequency of serious racing accidents as well as the outcome of each injury. Almost 80% of North American tracks are cooperating with the effort. When enough information is accumulated, analysis may point out factors that are common to certain types of injury, and strategies can be developed to make racing safer on both dirt and synthetic surfaces.

What about non-fatal injuries on artificial surfaces? Setting aside catastrophic injuries resulting in the death of the injured horse, there is anecdotal evidence from some trainers of an increase in soft-tissue injuries, especially those involving the hindquarters, on synthetic surfaces. Other reports claim a decrease in the number of these injuries. There may also be a trend toward injuries moving higher on the horses' legs and bodies: Dirt tracks tend to produce injuries at or below the knees and hocks, while horses running on synthetic surfaces show more problems with shoulders, stifles, hips, necks, and backs. Some veterinarians have reported a higher incidence of sore hoof soles on the artificial tracks, despite the fact that the surface is generally softer and less slippery than dirt tracks.

No solid figures exist regarding soft-tissue injuries on dirt tracks, so it is impossible to make a direct comparison between track surfaces. The Grayson-Jockey Club Research Foundation has recently funded a study to look at a particular group of racehorses, recording all injuries and soundness problems within that group. Track veterinarians working with the study will collect and submit information on musculoskeletal problems. One concern is that not every injury may be reported, as trainers might not consult with a veterinarian each time a horse is injured, sore, or unable to work. However, such a study is a starting point that can increase awareness of safety and may yield improvements in the long term.

Are there other ways to assess the safety of synthetic surfaces? Testing the characteristics of dirt track surfaces has been done with a range of devices that have examined hardness, compaction, moisture content, and a host of other factors. The same types of testing are being conducted on synthetic surfaces. In one study carried out at Keeneland Racecourse in Lexington, Kentucky, four horses wore instruments to measure acceleration and force on one front hoof during slow gallops on turf, dirt, and synthetic surfaces. The lowest values for ground reaction force, acceleration, and vibration were found with the synthetic surface in this test. More testing should increase knowledge of track characteristics and their relation to injuries.

What's the bottom line on injuries and synthetic track surfaces? Despite initial hopes and predictions, horses are still being injured while racing on synthetic surfaces. Replacing a dirt track surface with synthetic material may cost upwards of ten million dollars, and racetrack managers are understandably reluctant to jump too quickly onto the synthetic bandwagon. This is especially true for dirt and turf tracks that have had a history of few catastrophic injuries.

While statistics are being collected and examined, answers seem always to be just around the next turn.