

Training Insights from Thoroughbred Racing with Romy Borrione

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I first met Romane (Romy) Borrione in 2023 when I invited her to appear on the Sport Horse Podcast, which I was co-hosting at the time. I had found her Instagram page and was impressed by the work she was doing with Thoroughbred racehorses in Australia - blending classic training principles with new tools to optimize training programs and identify early warning signs of injury. We have stayed in touch over the years and occasionally hop on Zoom to catch up and share ideas. Originally from France, after a Master of Equine Science, she moved to Australia and participated in implementing sport science and data analysis in prominent racing stables (eg CMR, LPR) before launching her independent business focusing on performance and data analysis for racehorse trainers. This article covers some of the key discussion points that I believe are applicable to show jumping horses.

Theme 1: Utilizing Different Environments to Maximize Training Benefits

I have spent most of my time around North American jumping programs, where the training is primarily done in a single ring at the home facility. Occasionally, horses may go for hacks on trails or do some flatwork in a field, but in general most horses are being ridden in the same ring at least 5 days a week. This is typically due to limitations with property size or costs associated with building more infrastructure.

When Romy and I first started chatting, and she shared that Australian Thoroughbred racing stables use many different training environments to optimize their training, it was exciting to learn about the impacts of this approach.

I think everyone appreciates that variation in training, especially relating to surfaces, is protective against injury in jumping horses. This was also reported by Egenvall et al. (2013) in their paper that looked at training practices and injury in 263 show jumping horses. Deeper sand surfaces, which are usually less firm and responsive, have longer stance times, slower speeds, and rely on a higher proportion of muscular activity to generate movement. Conversely, synthetic, all-weather competition surfaces tend to be firmer and have increased responsiveness, allowing for faster speeds with increased demands placed on tendons, ligaments and bone. By varying the surfaces horses work on, their bodies are exposed to different stimuli and the likelihood of repetitive, overuse injuries is reduced.

However, an under-appreciated, but arguably just important, aspect is the role that different training environments will play on a horse's mind and their perceptions of the work to be performed. Anyone who works with horses knows that they form strong associations between environments and past experiences. Taking this one step further, by only doing certain types of training in specific environments, it is possible to 'prime' horses to understand the work they will be doing; leading to arousal states and physiological readiness appropriate for the demands of the task.

Many of the large Australian training stables have built training programs to create environments adapted to getting the most out of their horses based on goals. For example, these stables may have 6 or more different tracks that are different in surface type, dimensions, grade (flat vs hills), ability to

add jumps, and so on. Additionally, the stables will have trails through the forest or to the beach, small sand rings, walkers, treadmills, paddocks, etc. Importantly, specific workouts are almost always done at certain tracks (i.e. max speed work will be done on the polytrack, slower speed work will be done in deeper sand, low-intensity work will be done on trails or at the beach, etc).

As horses learn what types of work will be performed in which locations, they will pre-emptively prepare themselves when going toward those areas. For example, when horses go toward the polytrack, because past workouts there have been high-intensity and high speed, the horses pre-emptively display high levels of excitement and arousal - increasing their heart rate, breathing rate, and so on in preparation for the work to come.

Conversely, if trainers want to give horses a low-intensity workout, they can take them to the beach or for a hack in the forest. Because these horses always do low-intensity, relaxing workouts in these areas, they do not become excited, allowing the riders to easily communicate with the horses and achieve relaxation for that ride. Interestingly, some young Thoroughbreds are even worked with a simple snaffle in a dressage ring, where they display a focused mind and willingness to listen to the rider's gentle cues to perform dressage movements.

Conversely, for Thoroughbred racehorses that only have one track to train on due to infrastructure constraints (think horses that live at tracks with limited space), jockeys report that these horses have a 'dead mouth', can be unresponsive to rider cues, and are mentally much more difficult to control.

For jumping horses, there is a lot that can be learned from the above concept. I think any speed work or high-intensity jumping needs to be done in a separate ring (or ideally separate location) from the horse's home environment. Too often you will see riders spending 20 minutes at the start of the ride to get their horse relaxed and listening for cues in the ring that, a day before, pushed the horse's neuromuscular and physiological systems to the extreme. It makes the job of the rider much more challenging when the horse is pre-emptively reaching arousal levels appropriate for jumping a 1.60m course (the type of work it is expecting in that location), while the rider is hoping to do a low-intensity workout focused on developing a light contact and flexibility.

Key points:

- Whenever possible, use different environments (i.e. rings, surfaces, locations) to perform different types of workouts (i.e. big jump schools, gymnastic work, gallops, flatwork, hacks, etc).
- If the horse correctly anticipates the type of effort expected in each location, then it will be much easier to train vs a horse that is thinking it will be jumping or galloping while the rider plans to do a recovery flat session.

Theme 2: High-Speed Treadmills

While relatively rare in North America (I only know of a few research institutions using them), high-speed treadmills (which can take horses up to 42 km/h or 700 m/min - <https://ggtreadmill.com/>) are a common training tool in Australian racing stables. Advantages include the ability to work horses without a rider on their back, the predictable speeds and surface conditions, proceeding with workouts when there is a rider shortage, and training the horses indoors when weather conditions outside are prohibitive.

Additionally, it is an easier method to assess horses while performing moderate or high-level exercise. For example, if a trainer would like to do a standardized exercise test, it is much simpler to perform a reproducible protocol on the treadmill and to collect blood lactate measurements as compared to ridden exercise tests on tracks. Further, you can perform detailed assessments of limb movement mechanics, hoof-surface interactions, and so on by collecting video from the side, front, back, and above the horse. However, it is important to remember that moving across ground and moving atop a treadmill are two different actions (requiring slightly different mechanics and neuromuscular activation).

While I do not know of any high-level jumping horses that are regularly exposed to high-speed treadmills, I do wonder if this tool does have potential to ‘unlock’ additional speed and strength in these horses. With jumpers, we are limited in the types of work that can be done, and as mentioned in the first theme, many stables are located on smaller properties where it is not possible to build tracks that would allow horses to safely get up to higher speeds (500 m/min+). Further, these treadmills do have the ability to increase the gradient of the surface, providing access to ‘hill work’ for properties that are in flat areas.

It is important to acknowledge some of the challenges that exist when deploying this technology. First, safety should always be the top priority. This is a moving surface beneath the horse, and there is always the possibility a horse reacts negatively and does something to place itself in a compromising position. However, in all of Romy’s time in Australia, she has seen just a handful of horses refuse to exercise on treadmills and while she has seen some incidents, they are relatively rare vs the number of horses trained daily on it, and she has never seen a catastrophic injury on the treadmill. Romy notes that even Thoroughbreds never exposed to a high-speed treadmill in their younger years will willingly work on the treadmill when asked in their later years. This is similar to what I have been told by researchers using high-speed treadmills with research horses. Further, there is the potential that ‘normal’ work on this treadmill, over time, could lead to musculoskeletal injury. However, it is important to remember that all training carries some risk, and would a high-speed treadmill be more or less safe than longeing horses in small circles, for example?

Lastly, horses on treadmills will move with a self-selected pattern that may be counter to the movement quality required in the ring when jumping. This is something that would need to be monitored closely to ensure horses do not canter or gallop with a stride that is too open, on the forehand, and so on.

Key points:

While incorporating new tools always requires careful consideration, I do believe that high-speed treadmills could be successfully integrated into show jumping stables to provide:

- another method to develop specific athletic qualities.
- as an opportunity to create a new training environment in locations where there is not enough space to build a gallop track or to work on hills.
- to provide additional information to veterinarians, farriers, therapists who want to see how a horse moves at certain gaits without rider input.

Theme 3: Technology in Racing

The Australian Thoroughbred industry is ahead of most with respect to incorporating technology into each horse's daily workflow. From deploying heart rate monitors and inertial measurement units to data management platforms in the stable, these trainers and managers have a lot of information at their fingertips to help guide training and wellness decisions.

Perhaps the biggest benefit of the increased integration of data into training workflows has been the ability to individualize training for each horse. By closely monitoring workloads and recovery scores, trainers can ensure horses are receiving enough work to maintain form while simultaneously avoiding overtraining.

Romy uses speed gene testing, where possible, to identify which horses have the genetic profile to thrive when racing over longer or shorter distances. Combined with data from standardized exercise tests and workouts on the track, it is possible to predict over which distances, and at what times of the year, certain horses are most likely to perform near their best.

Injury avoidance is always top of mind for trainers, and variables such as stride length, stride frequency, amount of time galloping at high speed, and recovery scores can help to identify subclinical issues before they become significant injuries (Romy uses the Arioneo Equimetre system to collect this data). In general, decreases in stride length and speed, increases in stride frequency, as well as poorer recovery scores, are indicative of musculoskeletal or cardiorespiratory issues requiring further investigation by the healthcare team.

Key points:

- Novel tools can provide detailed profiles for each horse to guide training and racing decisions.
- Parameters such as stride length, stride frequency, recovery scores, and time spent training at high speeds can be easily monitored with wearable devices and utilized to identify horses at risk for injury.
- New AI tools help to streamline work in the stable to enhance communication and free up a trainer's time.