



# ENOUGH PLAY, TIME TO WORK

**W**alk three steps backward. Walk three steps forward. Three more steps backward, and on the next "forward" the ground suddenly starts moving!

On the equine treadmill for the first time, the young horse is a little confused, but not to the point of panic. With eyes wide and legs spraddled for balance, he's reassured by the presence of the barn manager and staff interns who have handled him every day for the last month. Within seconds, the yearling has figured out that all he needs to do is to keep walking forward! At that moment, the little bay gelding steps into his role as a member of the team at Kentucky Equine Research.

Ten Thoroughbreds, bought as long yearlings at the Keeneland and Fasig-Tipton fall sales, are the most recent generation of research subjects at KER. "If you want to study bone development in young horses, you have to keep adding youngsters to the herd," said company founder Joe Pagan. "The horses we acquired a few years

ago are fully grown, and their skeletons are mature. To track growth, bone mineralization, and the effect of management and training on skeletal properties, we need animals that are still in the developing stage."

KER's stated goals are to study equine nutrition and exercise physiology and then to apply the resulting knowledge to the production of healthier, more athletic horses. Pagan explained that sound skeletal development is influenced by a number of factors including genetics, feed type and amount, and exercise.

"To find the effect of a specific factor, you can't do a field study where you occasionally visit someone else's horses," he said. "By having the horses here, we can control all aspects of their management. Previous studies have shown that bones need continual exercise to develop properly. When young horses are taken out of the pasture and put into stalls at the beginning of race training, we know that their bones demineralize in response

to the decrease in free movement. How much exercise do these horses actually need? What are the effects of different nutritional plans? These are critical questions that can be answered only by controlled studies.”

So, how do researchers find out what’s happening inside a horse’s legs? At KER, various methods will be used to monitor changes in bone shape and density. Radiographs will be taken frequently as the horses grow, and blood will be drawn periodically to look for biomarkers of bone metabolism. Results can be measured against a base of knowledge built after years in which hundreds of Thoroughbred foals have been followed from birth through race training. Using this database, the results of specific management practices can be pinpointed.

Meanwhile, the ten young horses have experienced a lot of changes. Once delivered to the KER research farm, they were turned out to pasture for several weeks in groups of two or three. After settling in, the colts were gelded and then introduced to the many things they will encounter as members of the research team.

Barn manager Johanna Nicole commented, “Some of these horses obviously hadn’t been handled a lot before they came to us, but they’re all learning the routine and doing well. They are certainly individuals and respond differently to what we ask them to do. Marvin, for example, had a lot of trouble learning to keep all four feet on the scale at the same time. Pi, the smallest one, is our star. He’s really laid-back—walked right onto the scale and the treadmill with no problem. And Murphy is sort of bullish, one of those horses that wants to go his own way, even if that’s not where you want him to go. The first time we wanted him to get on the scale, he just planted his feet and refused to move! But he’s coming around. Every day he’s a little easier to handle.”

Research intern Nicola Crowley agreed. “The horses are learning the routine,” she said. “When Irish first arrived, he liked to stand on his hind legs and invite us to play. Peter was hard to catch at first, and now he’s no trouble. They’ve all settled down.”

Tiffany Dobbs, another intern, said, “Albert, the tall chestnut, always has his ears back. He’s not really mean, just has a lot of funny facial expressions.” She added, “These horses are generally good to work with. They’re easy to handle, compared to some yearlings.”


Ralph and Pi are among the calmest, according to Rachel Moxon, the third intern, while Albert, Peter, and Marvin are a little more nervous. “Flash and Lewey are ‘people horses,’” she commented. “They run to the fence every time someone walks past. Lewey is a little mouthy, maybe even nippy, but that may improve now that he’s been gelded.”

The geldings have already participated in their first study, a supplement preference test. In this specific trial, horses were offered plain fish oil, deodorized fish oil, or soy oil mixed into their ration of sweet feed. As an excellent source of anti-inflammatory omega-3 fatty acids, fish oil is beneficial in the equine diet, but the taste is not appealing to many horses. Measuring how quickly horses eat feed mixed with different oils may yield solutions to the problem of how to get horses to accept products enhanced with this substance.



*Shortly after arriving at the research farm, Peter and Irish get acquainted. The young horses were turned out in groups of two or three and given a few days to settle into their new surroundings before starting any type of research project. As KER research horses, they will participate in various nutrition and exercise trials, the results of which may one day change the way horses are fed.*

Assuming all the young horses take to the treadmill, their next contributions to the research effort will include various exercise regimens that simulate the race training undertaken by their peers at the track. While race trainers usually have to wait for a horse to develop obvious discomfort from bucked shins or other signs of overwork, the treadmill horses will be carefully monitored by x-rays and blood tests that will warn of harmful skeletal changes before bone damage or pain can be seen by an observer.

By developing ways to detect problems in their earliest stages, researchers at KER hope to provide trainers with methods to minimize skeletal problems, from minor lameness to catastrophic breakdowns on the track. Combined with superior nutritional programs for growing horses, monitoring and responding to the earliest signs of bone injury may lead to healthier equine athletes in the years to come. 



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