

# U.S. racing can significantly reduce horse fatalities, but do we have the courage to do it?

Charles Hayward | May 21, 2019

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Racing now has some new technological tools and the equine veterinary talent to address the problem of pre-existing injuries and significantly reduce breakdowns in training and racing. Photo: NYRA.com

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*In my most recent View from the Rail, I wrote about a new technological innovation, the Positron Emission Tomography (PET) scan machine, which for the first time provides imaging of the fetlock (ankle) joint while a Thoroughbred is standing.*

This equipment is designed to aid in the detection of pre-existing conditions in horses in advance of a race or training. The Stronach Group had just announced it was collaborating on the purchase of a PET scanning machine with the Dolly Green Research Foundation and the University of California-Davis. It is still being tested and will be installed at Santa Anita for this fall's racing season.

During my research, I took the opportunity to communicate on this technology with Rick Arthur, who is the Equine Medical Director of the California Horse Racing Board and a doctor of veterinary medicine at University of California-Davis.

The PET machine had been developed by a team of veterinary doctors at UC-Davis headed by Dr Matthieu Spriet. At that time, Dr Arthur told me there were many significant projects being funded by the Grayson-Jockey Club Research Foundation on track surface and equine musculoskeletal research projects. Dr Arthur is a foundation board member and a highly regarded equine veterinarian.

Shortly after my article was published, I received an email from foundation president Jamie Haydon with extensive material on the foundation's recent activities, including the 2019 funded projects and a summary of the research recently conducted on track surface and musculoskeletal issues.

A total of \$1,338,858 is going to eight new projects at seven universities, nine continuing projects and three career development awards.

The 2019 slate of research brings Grayson-Jockey Club Research Foundation's total since 1983 to more than \$27.5 million, underwriting 366 projects at 44 universities.

The scope of the work is most impressive, as you will see if you take a few minutes to read through these brief summaries of the 2019 projects. The work will return tremendous value and innovation to the Thoroughbred racing and breeding industry.

To demonstrate the significance and opportunities represented by these research projects, let's examine three 2019 projects that directly relate to the prevention of catastrophic breakdowns in racehorses.

For lay readers like myself, I have asked each of the three lead researchers the same four basic questions, which will provide some insight into the scope and goals of each project.

## **Standing PET imaging of the Thoroughbred racehorse fetlock**

**Lead researcher: Matthieu Spriet, University of California-Davis**

Validation of a PET technology for early detection of fetlock lesions in standing horses to prevent catastrophic breakdowns in racehorses.

*In a sentence or two, could you provide a simple statement about what the main goal is of this project?*

The goal of the project is to validate a new Positron Emission Tomography (PET) scanner to be able to image the fetlock of the Thoroughbred racehorse using standing sedation. This scanner will provide a three-dimensional bone scan, which will allow the detection of early changes that precede fetlock breakdowns not currently amenable to other diagnostic imaging techniques.

*Are there any industry practices or procedures that need to be reviewed or changed based on your current work.*

We know from years of study through the necropsy program that pre-existing changes are associated with most fatal injuries. There is currently no reliable way to identify these precursor signs, especially in the high-risk fetlock joint. Pilot PET data obtained under general anesthesia have shown that PET can identify osseous changes that are not recognized with any other imaging modalities (X-rays, scintigraphic bone scan, CT or MRI).

*If industry changes are required, will they be changes in the state law or the rules for regulatory vets, practicing vets at the track, track operators, trainers and owners?*

The primary goal with developing the standing PET scanner is to provide practicing vets at the track a better tool to diagnose fetlock issues. Gaining more accurate information will help to improve veterinary treatment and rehabilitation of injuries, and, most importantly, prevent from racing horses that are at risk of fatal injuries. I'll leave it up to others to discuss rules and regulations.

*If possible, it would be helpful to know in layperson's terms what you would view as the best outcome for your important work?*

The best outcome would be that the PET images would allow veterinarians to identify specific changes that tell them a horse is at risk of breaking down. Horses undergoing rehabilitation could be monitored with PET. Theoretically, training and racing programs could be studied with PET findings. PET allows for quantification of bone turn-over. We will be measuring the bone turn-over and work on establishing threshold values beyond which horses are at higher risk for breakdowns.

## **Robotic CT for assessing of bone morphology**

**Lead researcher: Kyla Ortved, University of Pennsylvania**

Preventing catastrophic injuries in the Thoroughbred racehorse screening fetlock joints using standing CT and biomarker analysis.

*In a sentence or two, could you provide a simple statement about what the main goal is of your projects?*

The overarching goal of our proposal is to develop a screening method for identifying horses with bone injury prior to development of catastrophic injuries or irreversible joint damage using a standing, robotic CT to assess bone pathology associated with training.

*Are there any industry practices or procedures that need to be reviewed or changed based on your current work?*

The standing CT could be used to screen horses during training or racing.

*If changes are needed, will they be implemented by changes in the state law or the rules for regulatory vets, practicing vets at the track, track operators, trainers and owners?*

I believe changes will need to be adopted by the entire team provided the CT is a useful way of screening horses. If all stakeholders buy in, I believe screening tools will be much more effective at preventing injury.

*If possible, it would be helpful to know in layperson's terms what you would view as the best outcome for their important work?*

The best outcome would be determining that the robotic, standing CT is a useful tool for monitoring the fetlocks of training and racing Thoroughbreds so that we can catch injuries at an early stage, thereby preventing catastrophic injury and/or development of arthritis. Horses with early damage detected can have modifications to their training made to allow the bone to heal and the horse to return to its normal routine following healing.

## **Training programs for prevention of fetlock injury**

**Lead researcher: Sue Stover, University of California-Davis**

Predicting proximal sesamoid bone fractures in racehorses from a calibrated computational model that incorporates training programs, track surface properties and bone's reparative processes.

*In a sentence or two, could you provide a simple statement about what is the main goal of your project?*

Our goal is to prevent proximal sesamoid bone fractures, and thus the largest cause of fatalities, by understanding how horses' training and racing programs and race surface properties promote, or protect horses from, the development of this fracture. In addition to improved understanding, novel training and racing programs and surface recommendations will be designed for injury prevention.

*Are there any industry practices or procedures that need to be reviewed or changed based on your current work?*

Sesamoid bone fractures are known to occur in horses that exercise at a high level of exercise intensity, and on stiff, hard surfaces. Changes to reduce the pressure on trainers to train and racehorses at a very high intensity should be beneficial for injury prevention – and not only fatal injury prevention but reducing racehorse attrition due to mild injuries (and the associated insidious, huge economic costs to the industry).

Standards need to be developed for the mechanical behavior of surfaces to allow the design of surfaces using different materials in different environmental conditions to achieve a standard behavior optimized for injury prevention.

Catastrophic injuries are only the tip of the iceberg. Mild injuries, which are the earlier stages of catastrophic injuries, adversely affect the ability of the racehorses to perform and remain sound – and cause huge attrition (loss of racehorses from racing) to the industry. Preventive measures to reduce catastrophic injuries will also prevent milder injuries and reduce racehorse attrition.

*If changes are required, will they be implemented by changes in the state law or the rules for regulatory vets, practicing vets at the track, track operators, trainers and owners?*

Possibly – all of the above. First, we need to understand the pressures that influence how trainers train and race horses and how racetrack managers manage racetracks. We can give the best recommendations for injury prevention, but, if the recommendations are not implementable under the socioeconomic structure of racing, they will never be followed.

For example, if a racetrack says a trainer can only have a stall for a horse if the horse races frequently, a recommendation to exercise less intensely is unlikely to be followed. In this example, the inventory of racehorses at a racetrack needs to be sufficient for horses to train and race at a level that allows them to remain uninjured, while filling the races of the racetrack.

Race dates, foal crop, owners with money, all influence a trainer's behavior. A similar concept would apply to the management of race surfaces – what surface materials for what climate and how can the race dates be managed to allow refurbishing of materials when needed.

*If possible, it would be helpful to know in layperson's terms what you would view as the best outcome for your important work?*

Prevention of injuries – racing a horse should be as safe as flying in an airplane (barring the 737Max debacle) – and it can be. We know how injuries develop. We know the risk factors. We need to take risk and implement change, then assess the response to the change and change again, until injuries and safety are no longer an issue.

[Click here for full descriptions of each of the three projects](#)

I chose these three initiatives because they all are concerned with developing technology and protocols that can surface and identify pre-existing conditions before a horse races or trains resulting in a breakdown.

Moderate progress has been made since the creation of Equine Injury Database, but it is not enough. The mainstream media, social media and animal rights groups are demanding a reduction in racehorse breakdowns in training and races.

The industry knows that an overwhelming majority of breakdowns occur with horses that have pre-existing injuries. The industry now has some new technological tools and the equine veterinary talent to address this problem and significantly reduce breakdowns in training and racing.

I hope that everyone has come to understand that a spike in breakdowns at one track in the country is not a regional issue. Santa Anita is certainly a high-profile racing association but, if a smaller regional track has the next breakdown spike, the entire industry is going to pay the consequences.

Dr Sue Stover said it best in answer to one of my questions, “We can give the best recommendations for injury prevention, but, if the recommendations are not implementable under the socioeconomic structure of racing, they will never be followed.”

We are fortunate to have an organization like the Grayson-Jockey Club Foundation that is willing to do the research in funding and paying for the talent that can advocate for and protect our most valuable asset, the horse.

We all need to work to support the Grayson-Jockey Club Foundation important initiatives, which will save and transform our racing industry.

People in the industry bemoan the fact that racing does not have a commissioner. Think of the Grayson-JC Foundation as the commissioner of important equine welfare on and off the racetrack.