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Sports Medicine – Leading the Way

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WHY EQUINE SPORTS MEDICINE?

In a nation obsessed with sports from Pop Warner football and Little League to the NCAA and Major League Baseball, it’s little wonder that Sports Medicine for humans is a thriving, ever-expanding specialty. What’s less well-known is that, with the possible exception of dogs in activities as diverse as field sports, agility and dog-sledding, the horse is probably the most elite athlete, competing at the highest numbers of any animal in the world. Horses are flown, trucked, trailered and rail-roaded to competitions all over the US and the world in numbers second only to human travel.

The American Horse Council, in its most recent Economic Impact Study of the horse industry, reported that the combination of racing, showing (all disciplines – hunters, jumpers, eventers, dressage, reining, barrel racing, roping, etc.), recreation and “other” totaled 9.2 million horses. Humans associated with this astonishing number totaled 4.6 million, accounting for owners, trainers, farm employees and volunteers. What did this mean for the nation’s gross domestic product? Nothing less than $101.5 million.

It’s not surprising, then, that Penn Vet’s New Bolton Center responded to the tremendous growth in horse sports in the latter decades of the 20th century by pioneering veterinary medicine’s equine sports medicine specialty. Long known for its work with Thoroughbred racehorses, New Bolton Center also serves a significant sport horse population that calls south-east Chester County home. But its Sports Medicine clinicians also see horses from much farther afield, and its board-certified clinicians willingly travel to farms all over the country and abroad to consult, diagnose and advise clients in the best interests of their athlete horses. In addition, with the technological advances in viewing imaging studies, consultations can be performed on images obtained by veterinary colleagues examining horses at off-site locations.

SPORTS MEDICINE RESOURCES AND EXPERTISE

So what should a client expect to find when he or she brings an animal to New Bolton Center’s Sports Medicine Section for evaluation? What does this Section provide that is special and possibly not available elsewhere?

The Sports Medicine Section at New Bolton Center comprises a team of board-certified, internationally recognized clinicians with extensive experience in the areas of poor performance evaluations, complex lameness evaluations and cutting-edge treatment options, pre-purchase examinations, general and sports cardiology, diagnostic ultrasound, MRI, CT and nuclear medicine imaging. Knowledgeable, professional sports medicine
technicians assist in providing exceptional patient care and in optimizing the client experience. This team is committed to keeping equine athletes healthy and “in the game” as well as assisting owners, trainers and riders to meet their athletic goals.

The Section is led by Dr. Virginia Reef, a world-renowned leader in the field of equine cardiology. Dr. Reef’s many national and international collaborations speak to her advanced expertise. She is board certified by the American College of Veterinary Internal Medicine and the new American College of Veterinary Sports Medicine and Rehabilitation, and is an associate member of the European College of Veterinary Diagnostic Imaging. Other members of the Sports Medicine and Imaging team include Dr. JoAnn Slack, board certified by the American College of Veterinary Internal Medicine, and Drs. Elizabeth Davidson, Benson Martin and Michael Ross, all board certified by the American College of Veterinary Surgeons. Each of these exceptional clinicians is a leader in different aspects of Sports Medicine and Imaging, enabling a comprehensive evaluation of all different types of sport horses and their problems to be performed by specialists in the field. These clinicians also are involved in training an elite group of interns, residents and fellows in these subspecialties.

As a result, an owner who brings his or her horse to New Bolton Center has a wealth of knowledge and experience to draw on from all of the clinicians and technicians who make up the Sports Medicine Section. This knowledge and experience comes from years of seeing one of the highest case loads in the country. It is also born of the collaboration with their New Bolton Center colleagues in Surgery, Medicine and Ophthalmology, Neurology, Radiology (including CT scans and MRI capability), Reproduction and Equine Behavior, Critical Care and Emergency Medicine, Anesthesia and Farrier Services. There is no private practice that can offer such a wide range of specialties and services in one location or have them performed by individuals who are considered experts in each specialty and subspecialty.

**FLEXIBILITY AND SCOPE**

New Bolton Center is proud to offer the client what might best be described as “one-stop shopping” for a variety of sophisticated tests, as needed. All appointments can be made for the client before he or she arrives at New Bolton Center to ensure the most efficient use of his or her time. Stress on the patient is also reduced. Instead of making multiple trips to a variety of practices for different tests, all can be quickly and expertly handled at New Bolton Center in a day or two, depending on the initial findings. Follow-up visits may be needed and can be quickly arranged, again reducing stress on both patient and client. Clients receive detailed descriptions of their animals’ diagnosis, treatment and follow-up care, and clinicians are readily available to address any concerns or questions they may have.

In addition to this clinical expertise, the Sports Medicine services are housed in one of New Bolton Center’s more recently constructed buildings – The Scott Equine Sports Medicine facility, which was dedicated in 2002. This state-of-the-art facility consists of two diagnostic areas, one with two sets of stocks for diagnostic ultrasound and one with a single-stock space dedicated to cardiology, plus three holding stalls and a Cardiology/Ultrasound Office where studies can be examined. The latest in high-tech ultrasound, echocardiography, EKG and radiotelemetry equipment is available, and
the generous space, great footing and high ceilings make it a welcoming space for patients, owners, clinicians and students.

The Scott building is adjacent to the Jeffords High Speed Treadmill Facility, opened in 1992 as one of the first of its kind in the country. More than 3,000 patient evaluations have been carried out on the Jeffords Treadmill for poor performance issues such as lameness, upper and lower respiratory tract changes, cardiac disease and sub-clinical myopathy (“tying-up”). The tailor-made treadmill offers the ability to follow up a comprehensive lameness exam for a poorly performing horse with a brief schooling test, during which the patient may have arterial catheters placed in a facial artery and an endoscope passed into the pharynx. A typical test is run for 1600 meters at a speed designed to increase the horse’s heart rate to 200 beats per minute. The horse is then immediately taken off the treadmill and a post-exercise echocardiogram is performed. An ECG is taken before, during and after exercise, and a post-exercise bronchoalveolar lavage (endoscopic washing with sterile fluid of the lungs, allowing clinicians to examine cell samples that aid in diagnosis) is performed. Subsequently, all of the data is taken from each test and a solution is proposed to the client to improve the performance of his or her horse.

**TREATMENTS AND THERAPIES**

Many other services are available to the client, as well, including diagnostic nerve blocks, wireless digital radiography, nuclear scintigraphy, joint injections, IRAP (interleukin-1 receptor antagonist protein), PRP (platelet-rich plasma), stem cell therapy, extracorporeal shock wave therapy, Lameness Locator® gait analysis equipment, therapeutic ultrasound and acupuncture.

Not only do the remarkably gifted clinicians at New Bolton Center treat animals brought to them for everything from pre-purchase evaluations to sophisticated diagnostics, treatment and care, but they also are responsible for teaching future veterinarians the latest advances in equine sports medicine. Penn Vet students have unique opportunities for equine sports medicine-focused training that is not available to students at other veterinary schools. A four-week course of concentrated training in diagnostic imaging, sports cardiology, lameness, advanced therapeutics and farriery is available to select students with an equine focus. This is an integrative program in equine sports medicine and imaging in which students develop the ability to synthesize information from the clinical examination, diagnostic imaging service and patient management, preparing them for clinical sport horse practice. Following graduation, these students are highly sought after for internships, residencies and private sport horse practice jobs because of their reputation for excellent knowledge and clinical skills.
The most recent addition to Sports Medicine’s resources is the brand new Ilona English Equine Performance Evaluation Facility – a bright, airy indoor riding hall with one of the most advanced footings in the world. New Bolton Center is the first and only veterinary facility in the US to boast this footing, and it is deemed superior to all others for the clinical work being done by the Sports Medicine clinicians. The facility is perfect for lameness evaluations of horses that are ridden, as well as other exercising examinations.

THE IMPORTANCE OF RESEARCH
Advances in the clinical practice of equine sports medicine cannot be made without research that expands our understanding of various disease processes and potential therapeutic options. New Bolton Center’s Sports Medicine Section is internationally recognized as a leader in studying horses with poor performance, with a particular focus on upper and lower airway diseases in racehorses and cardiac causes of poor athletic performance. International collaboration is underway with the Universities of Zurich and Ghent, looking at atrial stunning (when the electrical function of the heart has been restored, but the contractile function has not yet returned to normal) following conversion of horses with atrial fibrillation to normal sinus rhythm. Another collaboration is proceeding with Washington State University and the University of Barcelona, looking for coagulation abnormalities in horses with atrial fibrillation (common in people with atrial fibrillation). Atrial fibrillation is one of the more common heart abnormalities in horses, and its implications can be very serious for both horse and rider. Ongoing collaborative work with the University of Veterinary Science in Norway is focused on evaluation of exercising heart rhythms in the Norwegian Coldblooded Trotter. In addition, New Bolton Center’s work performed in association with the Pennsylvania Harness Horsemen’s Association at Pocono Downs and Chester Downs and the Meadows Standardbred Owners Association has looked at cardiac arrhythmias and heart muscle injury in apparently healthy racing Standardbreds.

Research within the Sports Medicine Section is not confined to poor performance in the sport horse. Independent and collaborative research efforts have produced new information in the areas of neonatal ultrasound, ultrasound evaluation of the high risk mare, cardiovascular changes during experimental endotoxemia, effects of dehydration on cardiac ultrasound, the accessory sex glands of geldings, ultrasound of the lower urinary tract and cardiac arrhythmias in patients with severe hemorrhage. A large prospective study evaluating the accuracy of abdominal ultrasound in cases of acute colic is also currently underway.

LEADING THE PROFESSION
If further proof is needed of why an owner would want to bring an animal to New Bolton Center for evaluation and work-up, it is important to highlight that New Bolton Center is one of the leaders in providing national continuing education to practicing veterinarians in the areas of equine cardiology and diagnostic ultrasound. New Bolton Center clinicians have delivered presentations at the annual meetings of the American Association of Equine Practitioners and the American College of Veterinary Internal Medicine, and have participated in professional meetings in Europe, Scandinavia and South America. Dr. Reef’s textbook *Equine Diagnostic Ultrasound*, and Drs. Ross and Dyson’s textbook *Lameness in the Horse* are the primary reference books in their field. It is also true that New Bolton Center has trained most of the leaders in equine ultrasound and cardiology in North America.

New Bolton Center’s Sports Medicine Section is undoubtedly a leader in its field. The Section’s scope of expertise, services and resources is truly incomparable. Penn Vet can be justly proud of its work, as with so many other areas of veterinary medicine in which the School excels.