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REHAB PROMOTES BETTER OUTCOMES

REHABILITATION



Post-surgery rehab comes in many forms and is an integral part of the healing process

BENEFITS OF VETS AND THERAPISTS WORKING TOGETHER

By CYNTHIA MCFARLAND

WHEN IT COMES to healing after injury and surgery, there is far more research available in the field of human athletic rehabilitation than that of horses. Not to mention the fact that humans can speak directly with their physicians and therapists, while horses do communicate, but without words.

As a result, equine rehabilitation walks a fine line as veterinarians and therapists closely monitor their equine patients to determine how they are navigating through recovery.

Rehab centers utilize a combination of specialized controlled exercise programs, physical modalities, devices, and manual therapies.

What does recent research show about advances in equine rehab and what are veterinarians recommending as they work with

COURTESY OF COLORADO STATE UNIVERSITY/JOHN EISEL/CSU PHOTOGRAPHY

recovering equine athletes? For answers we turned to rehab centers in three states.

COLORADO STATE UNIVERSITY

While every owner wants the best outcome for a horse they send to rehab, Dr. Melissa King emphasizes that equine rehabilitation is not about the number of rehabilitation modalities applied, but about the therapeutic exercise programs that are designed for each horse.

A board-certified equine sports medicine and rehabilitation specialist, King is an associate professor for the equine sports medicine and rehabilitation service at Colorado State University.

King notes that all the horses at the Gail Holmes Equine Orthopaedic Research Center at CSU are recovering from an injury or are post-operative rehabilitation cases.

"Rehabilitation programs/protocols are customized for each individual equine athlete, designed specifically to target not only the injury but the additional comorbidities that the horse has developed as a result of the injury itself," she explained. "The goals of a target therapeutic exercise program include restoring function, improving range of motion, strength gains, enhancing core stability, and stimulating healing."

Some of the same modalities used for conditioning also play important roles in rehabilitation following injury and/or surgery.

For example, an international survey published in 2018 reported that 40% of rehabilitation centers are using underwater treadmills for rehabilitation, while 60% use the modality for conditioning purposes.

"The utilization of various modalities are adjuncts to the rehabilitation program; they are not stand-alone therapies," said King, who has done extensive research in aqua therapy.

"Although modalities do play a vital role in the multimodal approach to rehabilitation, they represent only a fraction (20%) of the total treatment program for comprehensive management," she said.

One recent advancement in treating horses with clinically diagnosed back pain has been

BEMER blanket application. (BEMER is short for bio-electro-magnetic-energy-regulation.)

After the blanket is applied, a low intensity pulsed electromagnetic field stimulates the muscles while the blanket is in place. King has worked closely in studies on the BEMER blanket therapy and seen significant benefits.

"BEMER therapy modulates back pain immediately after application and has a sustained pain modulation influence for at least 24 hours," she noted.

"BEMER therapy improved postural control. Kinematic studies of spinal motion indicate that BEMER therapy improves spinal flexibility in flexion and thoracolumbar lateral bending," she added.

Another tool proving beneficial when horses in rehab have significant leg swelling or "stocking up" is the EQ Press, a pneumatic compression device that works to move swelling and edema out of the limb.

"The compression device cycles from the bottom of the limb to the top encouraging lymphatic drainage," said King. "The EQ Press enhances lymphatic drainage from the limbs, which removes waste products and metabolites, and reduces inflammation."

A study published in February 2023 in the American Journal of Veterinary Research showed that pneumatic compression therapy using the EQ Press accelerated lymphatic flow in healthy equine forelimbs.

King points out that recent studies using whole body vibration show multiple benefits.

"Whole body vibration recent research has demonstrated that 30 minutes, two times a day for 60 days, can increase the cross-sectional area of the multifidus muscle along multiple levels of the horse's back, implicating an improvement in spinal stability," said King.

She notes a separate study demonstrated that the rate of hoof growth increased by 41%, but only in the first 30 days of use. Horses in that study stood on the vibration plates for 30 minutes, two times a day, five days a week for eight weeks.

Some rehab centers, including Colorado State, are equipped with class 4 lasers.

Using this laser therapy, King has seen

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THE AFTERCARE AND REHAB OF THE HORSE IS AS IMPORTANT AS SURGERY.”

—DR. ALI BROYLES,
EQUINE SPORTS
MEDICINE & SURGERY
IN TEXAS

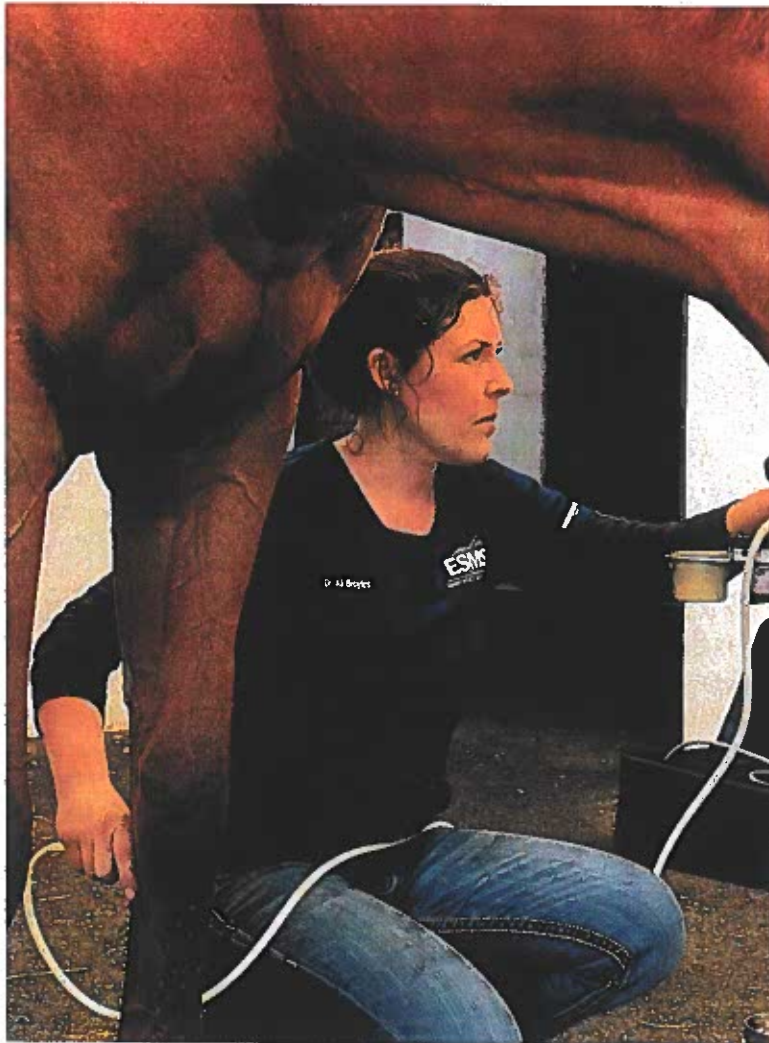
improvement of one to two lameness grades in horses with distal hock joint osteoarthritis.

"In a model of suspensory ligament branch injury, class 4 laser therapy improved histologic tissue healing in both the short-term and long-term groups," she added.

Based on the latest research and evidence-based support, King says these modalities can be used for pain modulation, tendon/ligament healing, restoration of spinal flexibility, and increases in hoof growth.

As she explains, the goal of equine rehab is to optimize function and reduce existing disabilities with the goal of restoring the horse to full athletic function and preventing reinjury.

More information on the services at CSU can be found at: <https://vetmedbiosci.colostate.edu/vth/services/equine-sports-medicine/>



Dr. Ali Broyles says the benefit of utilizing rehab centers for a horse's recovery is that the staff is adept at managing post-operative care

EQUINE PERFORMANCE INNOVATIVE CENTER

Having been a veterinarian since 2006, Dr. Alberto Rullan knew he could help more injured horses through an equine rehab center than with only a private veterinary practice. That's what drove him to purchase a rehab facility in 2017 and expand its offerings.

Equine Performance Innovative Center is a full-service rehab center in Ocala, Fla. Rullan notes that about 75% of horses at the rehab center are there because of surgery or injury.

"The horses that come right from surgery recover much faster. Unfortunately, many horses come when they develop complications post-surgery and then are sent to rehab," he said.

Frequently, an owner tries to keep the horse at home after surgery, and finally sends the animal to a rehab center when problems arise.

"When horses come to rehab, for a lot of them this is the last effort, so it makes it more difficult on the horse and on the rehab team," Rullan said.

He says the single most significant advancement he's found in equine rehab is hyperbaric oxygen chamber therapy.

Rullan has used it to heal antibiotic-resistant infections, bad wounds, and fracture; to treat "bleeders" to help the lungs recover; and for many other cases.

"We've been able to prove that we can shorten the healing time by half," he said. "We know that when you put a horse on antibiotics in the chamber, it increases the efficacy of the antibiotics."

In a nutshell, the HBOC concentrates the oxygen in the air the horse is breathing. This essentially "loads" the blood plasma with oxygen, which is then delivered throughout the horse's body to repair cells and fight infections or diseased tissue/bone.

"It's scientifically proven to increase the stem cell release from bone marrow 100%, so it basically heals the whole horse," said Rullan. "Back in the day people used to think this was a myth, but it's been proven. A 2006 study by the University of Pennsylvania's human medical school proved this, and it 100% crosses over to the horse."

Rullan began doing his own research using HBOC therapy at his own rehab center.

"In 2017, we started gathering data. The FDA and Medicaid approved HBOC therapy for humans in multiple accounts. Medicaid doesn't approve services unless there is significant overwhelming evidence that it helps patients. The Army is also



Aqua therapy is a popular modality post-surgery to promote range of motion and prevent stiffening

Happy Holidays

FROM



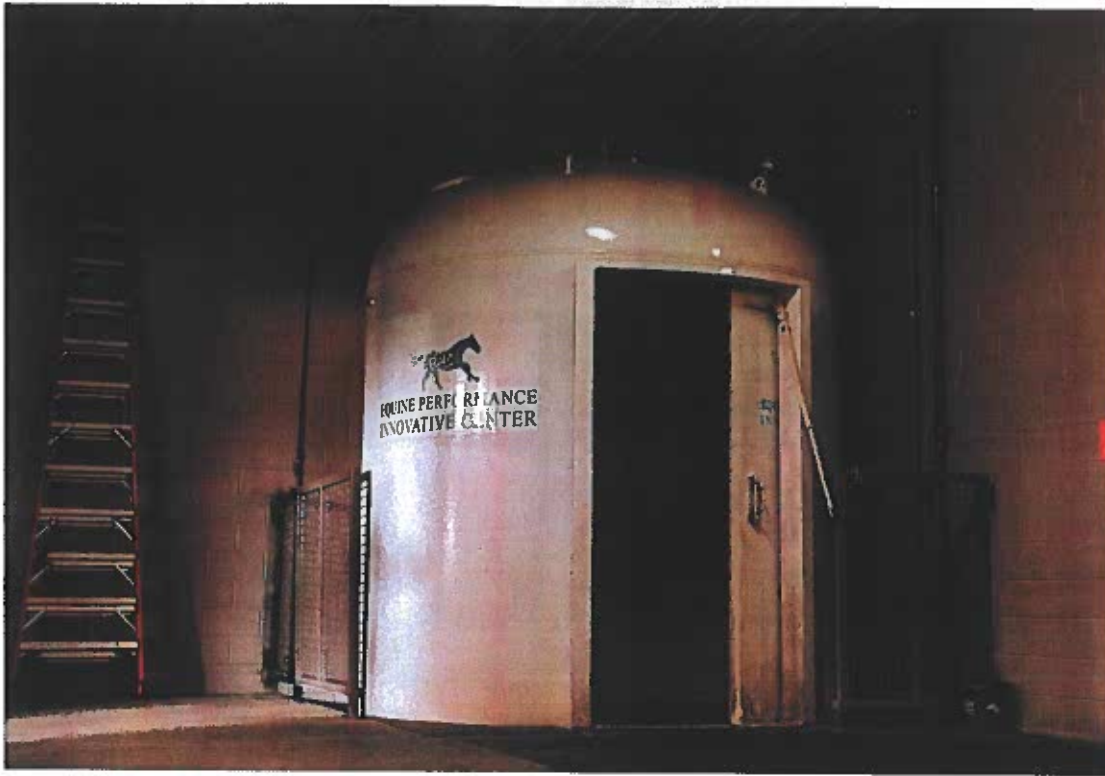
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The use of the hyperbaric oxygen chamber is believed to accelerate the recovery time in equines, particularly when it involves infections

using it to treat soldiers with PTSD," he noted.

Why then has HBOC therapy been dismissed by many veterinarians?

For success, the number of treatments is crucial, but many horses were only getting a handful of treatments.

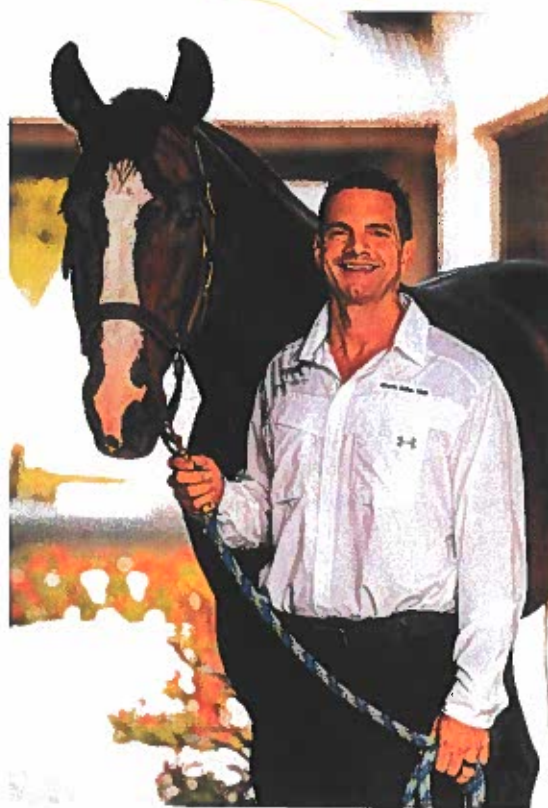
"When I looked into human accounts of patients getting HBOC therapy after bone loss and infection following radiation, these patients were getting 20-to-30 treatments, so the benefits were compounded, while many horses were only getting four or five treatments," said Rullan.

"Yes, one treatment is better than nothing, but you see a tangible difference after 10 treatments. Once we developed the research, we used it for new cases," he said.

Rullan has used HBOC therapy for a wide variety of cases with remarkable results.

One dramatic case was that of a young Quarter Horse foal born prematurely who developed multiple joint infections, an abdominal infection, and kidney disease. The foal's prognosis was so dire that euthanasia was planned, but in a last-ditch effort, the owner reached out to Rullan and asked about trying HBOC therapy.

"The foal had severe infections and I warned her it might not work, but it worked," said



Dr. Alberto Rullan said about 75% of horses at his Ocala, Fla., rehab center come there after undergoing surgery or being injured

PHOTOS COURTESY OF SHANNON CASTANEDA PHOTOGRAPHY

Rullan, noting that after 40 treatments, the colt was completely healed. He is currently in training to be a barrel horse.

Another dramatic case was that of a Thoroughbred show mare whose shoe shifted on a jump landing, driving a nail into the navicular bone. The mare went through three surgeries, developed sepsis in the navicular bursa, and had an infection that was resistant to all antibiotics available to treat it.

Six weeks later upon her arrival at EPIC, she was still grade 5 non-weight-bearing lame. Radiographs showed severe navicular remodeling.

"The horse stayed on the same antibiotics and the only thing we changed was adding HBOC therapy for two 45-minute treatments a day," said Rullan. "After 10 treatments we saw significant improvement."

These and many other cases convinced Rullan of the effectiveness of the therapy.

"I get to see the benefits every day," he said. "For doubters, I encourage them to read the studies and do an unbiased objective analysis of the data. Start with a clean slate, analyze the data, and look at the research."

More information about EPIC and HBOC therapy can be found at:

<https://epcrehab.com/>
<https://equinehyperbaric.com/>

HIGHLANDER FITNESS & THERAPY CENTER

Located in Sulphur Springs, about 70 miles east of Dallas, Highlander Training Center opened in 2017. Owned by Dallas businessman and long-time Thoroughbred owner

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— DR. ALBERTO RULLAN,
EQUINE PERFORMANCE
INNOVATIVE CENTER
IN FLORIDA

Larry Hirsch, Highlander launched its Fitness & Therapy Center in April 2021.

"Highlander Training Center encompasses 190 acres and includes our main dirt training track, a 1½-mile turf gallop, 11 pastures, and 16 paddocks or turnout pens," said Jeff Hooper, chairman and CEO. "We have three state-of-the-art barns with a total of 79 stalls, with one of those barns being our fitness and therapy center."

Treatment for horses in rehab post-surgery or injury falls under the supervision of Dr. Ali Broyles of Equine Sports Medicine & Surgery in Weatherford, Texas.

Day-to-day management of the horses in the Therapy Center is the responsibility of Dakota Holmes, who came to Highlander after

working at Equine Sports Medicine & Surgery for 10 years.

"It's a team approach designed to maximize positive outcomes," said Hooper.

Therapy modalities are used in combination with veterinary care to promote better healing and shorten the recovery phase.

"In surgery we've gotten more successful at fixing serious fractures," noted Broyles, adding that rehab centers play an important role in getting horses back to racing.

"The aftercare and rehab of the horse is as important as surgery," she said. "The benefit of a rehab center is that the staff is well versed at dealing with post-operative care. The personnel are closely monitoring these horses every day. They are following the veterinarian's instructions, but they also know what to look for on a daily basis and they'll call the vet if they see something wrong."

A crucial point in every horse's recovery is when exercise is added to the equation.

"When we start exercise is when you need to pay attention. Say a horse is 60 days post-surgery and you start jogging. Not every horse is going to recover the same, so having someone closely monitoring them who can tailor that exercise plan to the individual horse is very important," said Broyles.

She finds it highly beneficial when a horse is in rehab at Highlander because of the on-site training track.

"It's nice for me to be able to keep a close eye on horses as they're going back to the track. We don't always get to see that if a rehab center doesn't have a track," she said. "I get to see them progress all the way up to being ready to breeze and then can feel confident the horse is ready to go back into full training."

One frequently used treatment after joint surgery is IRAP. Considered "regenerative medicine," IRAP



Highlander Training Center in Texas opened its Fitness & Therapy Center in 2021

is short for interleukin-1 receptor antagonist protein.

Blood is drawn from the horse, cultured for 24 hours, and centrifuged. The harvested serum is then injected intrarticularly.

Although the treatment doesn't directly repair or help regenerate damaged cartilage, it inhibits the inflammatory cascade by blocking IL-1, the cytokine that initiates inflammation. The goal is to prevent the inflammatory cascade from occurring in the joint and provide a better environment for healing.

"I frequently use IRAP in post-op arthroscopies for prevention of arthritis. It has plenty of validated studies and specifically targets the inflammatory cascade that causes arthritis," said Broyles.

She notes that IRAP is much more commonly used today than, say, 10 years ago.

"I usually inject IRAP at

suture removal and then once every two weeks for three treatments, and then usually again 30 days after that before the horse goes back into training," said Broyles.

Highlander has two AquaTread underwater treadmills (in-ground and above-ground). Broyles recommends this therapy after arthroscopy when a horse has had chips removed.

"The AquaTread has been beneficial on post-op arthroscopy cases to encourage range of motion and prevent joint capsule stiffening," said Broyles. "We might start using the treadmill at one month or six weeks post-surgery."

In addition to horses who have had arthroscopy, the AquaTread is also used in post-op fracture repairs to start exercise while decreasing load on the leg.

Therapy on underwater treadmills is a key part of recovery further along in

recovery when the horse is getting back to weight-bearing exercise.

"A lot of times the horse is not ready to jog every day, so we'll have them jog three times a week and go in the AquaTread two days a week," Broyles said.

Highlander has two stalls where the entire floor features a vibration plate.

"The vibration plate can be used on horses post fracture. We might put the horse on the vibration plate every day for 30 days, at least until the horse can start hand walking," said Broyles.

"You don't want them bearing weight early in the fracture repair, but this might stimulate the bone to remodel without the risk of load-bearing exercise," she explained.

More information about Highlander can be found at: <https://www.highlander-trainingcenter.com/> **BH**



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