Physical Therapy

Owners, therapists, and veterinarians can use manual therapies to aid equine recovery and support maintenance

BY ERICA LARSON
ANNE M. EBERHARDT PHOTO

Physical therapy integrates technical and manual therapies

No matter the discipline, horses in training can benefit from physical therapy, say some of the veterinary community's leading researchers, physical therapists, and veterinarians.

Physical therapy has garnered much attention in the past decades. What started as a modality supported by a few veterinarians' anecdotal evidence has blossomed into a popular field backed by a growing body of peer-reviewed research. Here, we'll explore what physical therapy is, how horses can benefit from it, and the science behind it.

What Is It?

Dr. Kathleen M. Anderson, managing partner of Equine Veterinary Care at Fair Hill Training Center, near Elkton, Md., describes physical therapy as a combination of art and science.

"I would call it the art and science of integrating technical and manual therapies (tools vs. hands) to renew the health or optimize function of targeted areas of the horse," she said.

Dr. Narelle Stubbs, a research associate and clinical physical therapist at the Mary Anne McPhail Equine Performance Center at Michigan State University's College of Veterinary Medicine, describes it as taking the theories behind human physical therapy and applying them to horses. She says PT also encompasses exercise-based therapy and stretching techniques similar to Pilates or yoga for humans.

"Physical therapy (includes) a lot of different manual therapy techniques—all different types of soft tissue (treatments) like massage techniques or myofascial release (a form of stretching designed to release soft tissue from the grip of tight bands of fibrous connective tissue)," Stubbs said. "Then there are also manual therapy techniques that affect joint complexes. That might be mobilizing a joint all the way through to a manipulative technique or an adjustment."

PT for Healthy Horses

Veterinarians might advocate physical therapy to increase healthy horses' (particularly athletes') strength, flexibility, and

range of motion while potentially reducing injury risk.

For years Stubbs and MSU colleague Dr. Hilary M. Clayton, the Mary Anne McPhail Dressage Chair in Equine Sports Medicine, have advocated that horse owners employ mobilization techniques to accomplish these goals.

Anderson agrees: "I think it's similar to people (exercising) to develop core strength and decrease athletic injuries by having stronger, more flexible muscles and tendons."

Stubbs added, "The things we would advocate for owners of any discipline are to maintain and improve their horses' range of motion in their vertebral column, their neck, and their back."

She relays that a variety of baited mobilizations (carrot stretches) promotes dynamic flexibility and stability while strengthening the horse's core musculature through his neck and back, hindquarters, and thoracic sling area (muscles, tendons, and ligaments connecting the shoulder blades to the rib cage).

Some of the stretches Anderson recommends owners perform on the ground are rounding (bringing the horse's chin to his chest or between his front legs) and lateral bending exercises (bringing the horse's nose around toward his hip).

In their book *Activate Your Horse's Core*, Stubbs and Clayton also recommend and demonstrate additional mobilization, strengthening, and balancing exercises designed to help any healthy horse.

"We encourage people to cross-train their horses, train on different surfaces and gradients (using) different types of exercise, and that's all part of getting all the muscles stimulated, active, and strong," Clayton said. "It's more of a whole-horse approach, all the way through the horse's training to try to prevent the injuries. But, in spite of our best efforts, injuries sometimes occur, and when they do, our goal is to get the horses back into work quickly but safely."

PT for Recovering Horses

The main goal of using physical therapy in a horse recovering from injury or surgery is to return him to his prior level of function and performance successfully. Before turning to physical therapy to help with rehabilitation, though, owners should first obtain a diagnosis to ensure additional veterinary treatment isn't needed.

"If you have a condylar fracture, for example, there's no point in talking about physical therapy until you have repaired the fracture," Anderson said. "Then the horse would heal, and you might come back to physical therapy."

Stubbs said the more specific goals of physical therapy for recovering horses vary case by case.

"For example, if you've got a horse that's had surgery in its carpus (knee) and has been in a splint, he might have lost range of carpal motion," she said. "A goal might be to return (the carpus) to its pre-surgical range of motion."

When using physical therapy to rehabilitate a horse, it's important for the physical therapist to work closely with the attending veterinarian.

"Physical therapists are not trying to diagnose a lameness or an injury," Clayton said. "They're complementary to the veterinarian."

Stubbs explained, "When possible, the veterinarian will make what we call a pathoanatomical diagnosis—they'll identify a structural or medical cause of why the horse is being presented for treatment. After that, the physical therapy is a functional examination of the entire horse. Say, for example, the horse has had joint disease of the hock. (Therapists will) look at what functional changes have happened in the entire horse, such as secondary muscle imbalances including muscle atrophy (wasting) in the entire hindquarter on the side of the arthritis."

After the physical therapist examines a horse, he or she will create a list of problems to address during therapy and develop a treatment schedule, she said. Then, the physical therapist and owner will decide whether to treat the horse at home or send him to a rehabilitation center.

"If money is no object, maybe you'll (elect to) keep him at a therapy center," Anderson said. These facilities allow professionals to (provide therapy to) horses daily, with access to…modalities such as underwater treadmills or swimming pools.

Otherwise, the owner could choose to keep the horse at home and complete the exercises on his or her own under physical

Low Intensity Ultrasound—A New Concept in Therapy for Horses

Recently a new concept in therapeutic devices has come forward to offer horsemen an easy-to-use, safe, and effective choice for stimulating tissue repair. Low Intensity Therapeutic Ultrasound Stimulation (LITUS) is a new innovation and an effective extension of traditional therapeutic ultrasound. The advantages are many and include:

• The only setting required is the on/off button, eliminating the need for intensity, mode, or frequency decision-making required for traditional therapeutic ultrasound. Your veterinarian can assist you with treatment site selection and anyone can apply the device.

• The device is wearable, meaning that the horseman applies it to the problem site, secures it with the accompanying wrap, and leaves it in place for the prescribed time period. The horse remains in his stall and there is no need to supervise the treatment. This is a great savings in man-hour expenses.

• Scientific study supports the use of LITUS. It has been field-tested by veterinarians and equine therapists and proven to be a sturdy and effective therapy.

LITUS has been shown to promote the restoration of mechanical strength and collagen alignment in healing tendons when applied in the early stage of healing.

Fracture healing is promoted with LITUS by stimulating bone cells to grow and repair. The sound waves produce micro-mechanical stresses to which bone cells respond. Sound waves cause an increase in nitric oxide production resulting in vasodilation and angiogenesis (increase in new capillary formation), which plays a role in early bone and soft tissue repair.

Studies have shown that LITUS promotes the synthesis of type II collagen in articular cartilage, making this tool useful in treating arthritis. Type II collagen is a major constituent of articular cartilage, representing 90–95% of total collagen content and giving cartilage its tensile strength.

Low intensity ultrasound is now being used by veterinarians and equine therapists, proving its effectiveness in treating common injury problems in horses. Currently the only LITUS system marketed for use on horses is the UltrOZ Elite therapy system. *By Mimi Porter*

therapist and/or veterinarian supervision.

"I might not be able to see the horse every day, so I might want the owners to perform a certain soft tissue technique, or perform a specific exercise, or perform tactile stimulation," Stubbs said.

In these cases she'll teach an owner certain exercises to complete with the horse to help him progress toward recovery.

Our sources agree that one major key to rehabilitating injuries successfully via physical therapy is maintaining a team dynamic. Owners, veterinarians, and physical therapists should stay in close contact regarding the patient's progress or, possibly, regression and ensure the prescribed exercises are sufficient to keep recovery going. Once treatment concludes, the veterinarian should examine the horse to give a final bill of health.

Use Caution

Although the intent of using physical therapy is to improve horses' conditions, it can be harmful or ineffective if performed improperly.

"For example, if you have a strained tendon, you want it to gradually regain its resilient strength and improve the fiber alignment (in the repairing tendon), but if you push the horse too quickly, the fibers will (tear and) become reinflamed," Anderson explained.

Stubbs also said some electrical PT modalities, such as ultrasound or laser, can cause problems if someone applies them incorrectly.

"Having an educated physical therapist to advise on the use of that sort of equipment is definitely necessary," she stressed.

To lessen injury or reinjury risk during physical therapy, Stubbs recommends finding a qualified physical therapist to work in conjunction with the horse's regular veterinarian on a specific problem area.

Stubbs said that in Australia, England, Spain, and several other countries individuals can earn equine physical therapy degrees at the master's level. None of these degree programs currently exist in the United States; however, certification courses are available—some directly associated with universities and others not. For this reason she recommends working with a veterinarian to evaluate carefully a potential physical therapist's educational background and experience. She also suggests choosing a therapist who's passed both practical and theoretical (dealing with the theory behind techniques rather than practical application) examinations in their therapy modality of choice.

Switching gears, owner-performed physical therapy for healthy horses typically carries less risk of injury or reinjury because of the self-limiting nature of the mobilizations and core strengthening exercises.

"That's one of the reasons we like these exercises, because the horse does them himself," Clayton said. "It can be dangerous for the horse to have someone who is not adequately trained manipulate or force the horse into an unnatural position. When the horse is moving his own body, he has the op-

tion to stop if he feels pain or becomes unbalanced."

A horse struggling to perform simple stretches could indicate more serious issues brewing.

"If a horse seems to have difficulty doing an exercise correctly, he may be compensating for some problem area in the body," Stubbs explained. "We advocate that if the horse is unwilling (or unable) to perform any of the exercises, to please go back and have him assessed by a veterinarian. Find out why the horse won't come around toward his girth to get a carrot. It potentially may have a neck problem."

Research

Many in the veterinary community consider Clayton and Stubbs the pioneers of physical therapy research, having published many papers supporting its use.

"My interest in this has been doing research to provide evidence-based studies on some of these (physical therapy) techniques," said Clayton. "The therapists believe it works, but you have to prove it."

Using research in humans as a basis for their equine studies, Clayton, Stubbs, and colleagues have demonstrated that a number of mobilization exercises owners can perform on healthy horses can benefit the animal:

- In a 2010 study researchers showed that when the horse performs carrot stretches that round the neck—chin to chest, chin between the knees, and chin between the fetlocks—the joints at the top and the base of the neck move through a larger range of motion than they do usually, and the deeper positions also round the thoracic intervertebral joints, which could have clinical application in rehabilitation;
- At the 2010 American Association of Equine Practitioners convention, one researcher showed that both spinal manipulation and mobilization increased spinal mobility in actively ridden horses;
- Also at the 2010 AAEP convention, another presentation revealed that early mobilization after tendon injury produced a 60% improvement in Type 1 collagen deposition (which is evidence of healing) along with a 20% improvement in both the range of motion and the ability of the tendon to handle ground reaction forces;
- A 2011 study revealed that five repetitions of 10 carrot stretches performed five days weekly for three months increased muscle size and tone in the deep muscles responsible for stabilizing the spine during locomotion. Strengthening these muscles could help decrease back pain in horses the same way it does in people; and
- In a study published in August, Clayton *et al.* found that three lateral bending exercises (chin-to-girth, chin-to-hip, and chin-to-hock) performed to both the left and the right increased the amount of bending in the caudal, cervical, and thoracolumbar regions of the spine, which indicated these exercises could help activate and strengthen the muscles used to bend and stabilize the horse's back.

"Some vets have been very accepting (of physical therapy)," said Clayton. "In fact we now have a veterinary specialty in sports medicine and rehabilitation, and some of the colleges are now starting to train residents in that area."

Take-Home Message

Our sources say physical therapy, if performed properly, can benefit healthy horses as well as those recovering from injury or surgery. Work with a veterinarian and equine physical therapist to develop exercise plans for healthy horses or rehabilitative plans for recovering horses.

the HORSE YOUR GUIDE TO EQUINE HEALTH CARE

Excerpted from The Horse: Your Guide to Equine Health Care. Free weekly newsletters at *www.TheHorse.com*