

Dressage

T O D

January 2009

BREED OUTLOOK

**HOW TO MATCH
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**YOUNG HORSE
PROGRAM UPDATE**

with Coach Scott Hassler

**YOUNG HORSE
TRAINING**

Longeing Youngsters

Starting Lusitanos

Prepare for Materiale Classes

**THE PRAGMATIC
PERFECT POSITION**
Courtney King-Dye Explains

**CLINIC
CRITIQUES**
with Yvonne and
Kim Barteau

MORE INSIDE:

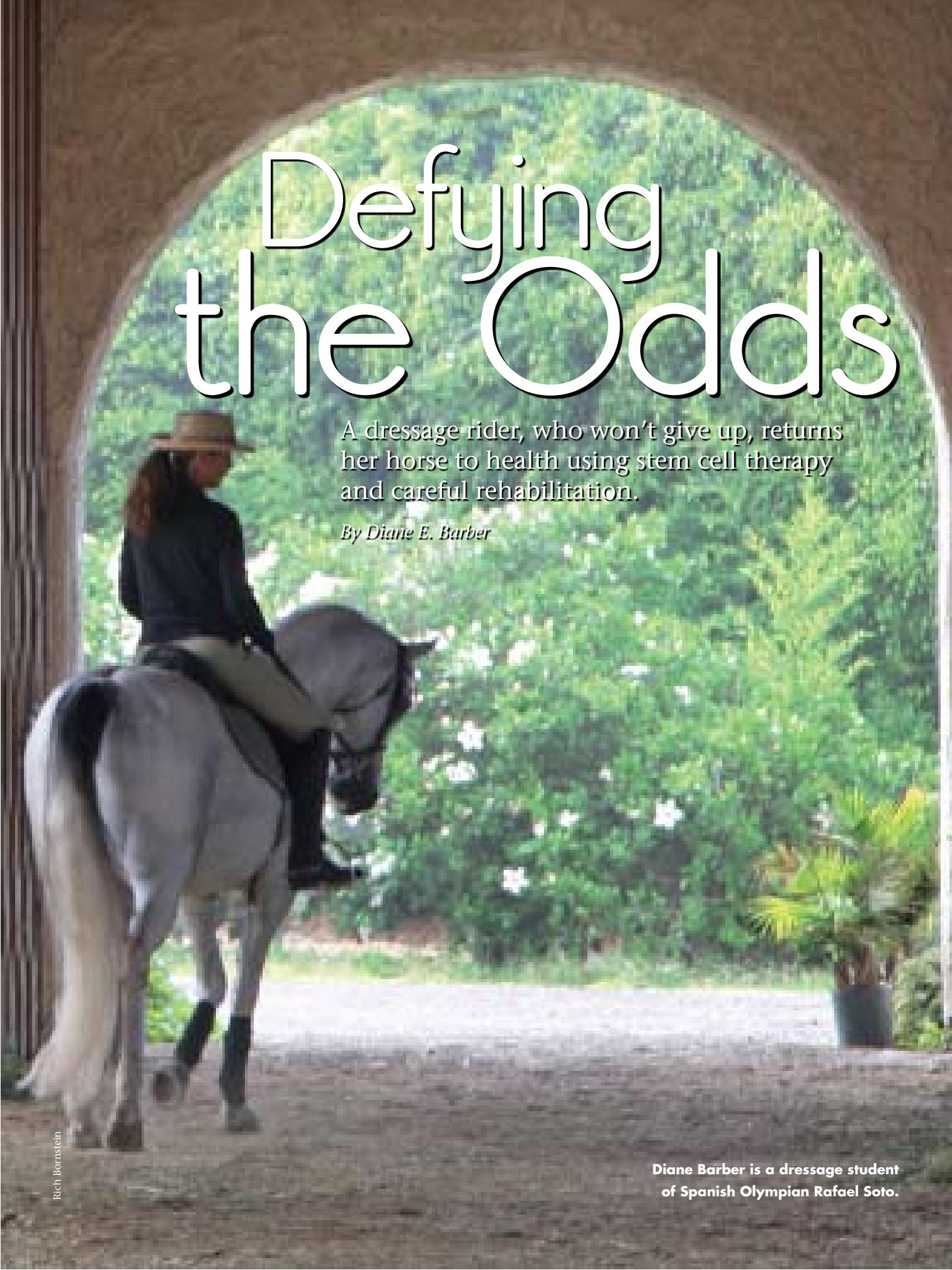
Stem Cell Therapy, p. 74

Vaccination Plan, p. 82

Weanling Training, p. 90

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Defying the Odds

A dressage rider, who won't give up, returns her horse to health using stem cell therapy and careful rehabilitation.

By Diane E. Barber

When I looked at the pain in the eyes of my 11-year-old Spanish Arabian, Bold Brahim (Jesse), and saw his non-weight-bearing front leg, I promised I would do everything possible for him. At that particular moment on a rainy day in February, the mystery of how he suddenly went lame did not matter as my focus shifted to healing. With a grade-5 lameness rating (5 being the worst), I continued down the path of typical vet care—hoof testers, X-rays, visual assessments, feeling for heat, pain medication and waiting. But after several weeks, Jesse's condition worsened and I realized it was time to explore other diagnostics.

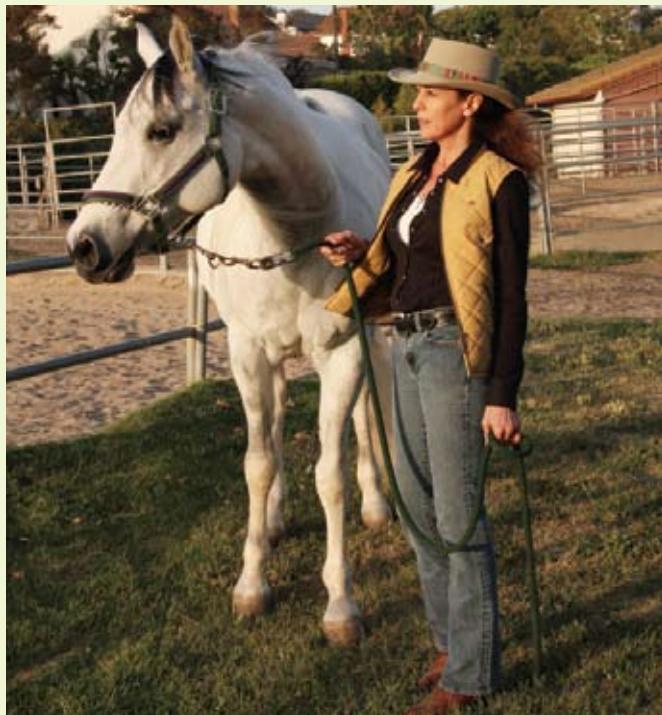
Bone Scan & MRI

In April, we took a two-hour trailer ride south to California Equine Orthopedics in San Marcos, California, to see Dr. Mark Martinelli for a bone scan and standing MRI. There would be no more speculation and process of elimination. I would finally know what was wrong. The next day, I learned that Jesse had a deep flexor tendon injury. The severity of it was written across Dr. Martinelli's face. He suggested that I return to meet with him and his colleague, Dr. Norm Rantanen, which I did. They shared in detail the harsh reality of Jesse's condition, explaining that he had a very uncommon injury in the right front hoof capsule and that three centimeters of his deep flexor tendon were completely destroyed.

Then, they introduced the possibility of stem cell treatment with the caveat that, though there had been several successful soft tissue recovery cases, there were no other cases like Jesse's for them to reference and no guarantees. Since there weren't any pieces of tendon to surgically put back together, filling the empty space with stem cells seemed the only option, but I wasn't convinced. They recommended another MRI in four to six weeks to see how the tendon was doing. I was also referred to Dr. Sylvia Greenman, an equine rehabilitation/leg specialist, who would soon become a new friend.

Walk This Way

At our first appointment, Dr. Greenman prescribed pain relievers, anti-inflammatories, medications to increase blood flow to the tendon and something to protect Jesse's stomach. After the prescriptions were filled, I was delighted to learn that we were going to begin physical therapy—hand-walking to promote healing and prevent adhesions, leg wraps for extra support during walks and barefoot farrier instructions that included “a lot of hoof.” Then came the difficult reality



Rich Bornstein

The veterinarians encouraged Barber to consider increasing the odds for Jesse's recovery with stem cell treatment.

check. She said that it would take a minimum of 15 to 18 months for the tendon to heal, *if* it was going to heal.

So, one hoof and one boot at a time, side by side, seven days a week, our rehabilitation journey began with Dr. Greenman as our coach. Jesse's body became our compass as the painfully slow process of growing the tendon back began. We started hand-walking on hard surfaces in straight lines for five minutes and carefully increased the time as he improved. When we reached 20 minutes, all medications were stopped so Jesse's leg could “talk” to us without symptoms being masked by drugs. To my dismay, short stepping returned, and the rehabilitation rollercoaster began.

Stem Cell Treatment

The veterinarians encouraged me again to consider increasing the odds for Jesse's recovery with stem cell treatment. After researching online and getting approval from my equine insurance carrier (The Equestrian Group in Scottsdale, Arizona), I agreed. Dr. Greenman harvested fat from Jesse's left hind buttock, which is a newer process than the more common sternum harvesting. Then, she packaged the sample and sent it to Vet-Stem in Southern California for the lab process of separating the stem cells and preparing syringes. We intended to harvest enough cells to freeze some for another treatment

Defying the Odds

later but, due to the cell count in the sample, the lab work only yielded one syringe. One chance for the procedure was all we had, unless I chose to put Jesse through another difficult cell-harvesting surgery.

We made another trip to San Marcos for a second MRI before Drs. Martinelli and Rantanen carefully piloted the ultrasound and MRI-guided injection of Jesse's cells into the void in his tendon. After the procedure, they shared new MRI images with me that indicated a reduction of swelling and a very slight improvement in the tendon with no visible adhesions. But, along with that glimmer of hope, Dr. Rantanen cautioned that the tendon was the consistency of oatmeal. It would take very little to cause it to fall apart.

Two Years of Rehabilitation

The daily walks continued. Jesse and I patiently persevered. My sense of humor returned as we increased our walks to 30 minutes and then, in late summer, we reached 60 minutes with no signs of lameness—a major hurdle overcome. Our reward, four months after diagnosis, was to finally incorporate weight-bearing and walking under saddle. The light at the end of the tunnel finally began to shine.

More methodical work was before me, coupled with trying to keep my spirited horse quiet. We started with 30 minutes of hand-walking followed by 30 minutes of walking under saddle, then 20 minutes in-hand followed by 40 minutes under saddle, until he stayed sound at 60 minutes under saddle.

Trotting under saddle was incrementally added in the fall. First, we did five minutes of trotting after 55 minutes of walking with the goal of 20 minutes of trotting before moving on to canter. In November, we had almost reached our 20-minute mark when we had our first major setback. One cool

and breezy morning while I was riding, Jesse let his pent up energy go—bucking, twisting and turning. Our hard-earned soundness disappeared. Short-term medications were prescribed, and we were back to hand-walking only. Per Dr. Greenman's request, his front feet were carefully shod to provide additional support.

We worked through the November setback until April when Jesse was again diagnosed as sound at the walk and trot. Then, shortly after we received

(Continued on p. 80)



Rich Bornstein

Jesse's body became Barber's compass as the painfully slow process of rehabilitation began.

Stem Cell Science

Dr. Mark J. Martinelli, DVM, PhD, explains that "stem cells are considered biological 'building blocks' that have not yet differentiated into specific lines (i.e., bone, tendon, ligament) and therefore may aid in the healing process by providing these building blocks in large numbers to the injured area." He says that definitive research proving all this has not yet been done, however, "Stem cell therapy is gaining acceptance but is still considered 'new science' in many circles. Stem cells are not a panacea, but they definitely have their applications." He advises looking at the Web site vet-stem.com to find out more about stem cells, the research that has been done and case studies.



Dr. Martinelli practices at California Equine Orthopedics in San Marcos (californiaequineorthopedics.com). He took these MRI images showing Jesse's damaged deep flexor tendon (left). Note the space between the arrows, where the tendon is absent. The photo on the right shows a normal tendon.

Defying the Odds

Stem Cell Therapy

By Sylvia Greenman, DVM diplomate ABVP
and Heather M. Larson, DVM

There have been many advances in the last few years regarding treatment options for healing and regenerating damaged tissues. One of the most interesting and cutting edge procedures available in veterinary medicine today is stem cell therapy. Stem cells may be derived from bone marrow or from adipose (fat) tissue. It is harvested from the horse's own body, processed and re-injected into the damaged area. There are now a few companies that provide this service. The process has a two-step approach:

1. A small incision in the gluteal region (the area next to the tail head on the rump) is made just under the skin. We collect fat and send it to Vet-Stem in Poway, California, for processing. The stem cells and growth factors are harvested and concentrated. The syringe is then returned the next day for injection into the site.

2. Next, a veterinarian uses ultrasound, radiographs or MRI to direct the stem cells into the area of need. Stem cell companies can also bank extra cells for future injections, if needed and if enough stem cells were harvested.

Benefits: The cells harvested and injected will turn into the type of cell needed in the area where it was injected. This helps provide the body with the necessary building blocks to repair the damaged tissue instead of waiting for the body to try to repair that area on its own. Other growth factors are also injected with the stem cells to help promote healing and inflammation relief in the area.

Rehabilitation: All of this new technology, however, will not work without a plan of rehabilitation. As with human medicine, physical therapy is an important part to healing the damaged areas and limiting the amount of scar tissue and adhesions that may form. This scar tissue can weaken an area in the long run and limit the flexibility of the tendon or ligaments in question, causing continued pain and lameness. The unfortunate reality of rehabilitation in horses is that we cannot tell them to stay off the leg for a while. This means that, initially, while we are trying to reduce the pain and inflammation of the area, we have to keep in mind that they will still be walking on the injured limb. Stall rest and anti-inflammatories are the initial key to the comfort of the horse.

Once the pain and inflammation have subsided, then hand-walking begins. It is important to start hand-walking early to prevent adhesions from forming. Starting slowly and increasing the time spent and the walking surface are important. Over the next few weeks to months, depending on the type and location of the injury, frequent assessments are made to determine if the horse is sound enough and the injury healed enough to move on to the next level. Each level consists of introducing increased time of a type of exercise (hand-walking, walking under saddle, trotting, cantering) and type of footing (hard ground, soft ground, sand, straight lines only or adding turns).

If a setback occurs, then you will have to reassess the program and take a step back until the horse is sound enough to move forward. This can be a long process depending on the severity of the injury. Not all injuries can be cured. Some are severe and may never result in a sound horse; however, trying to get the horse as comfortable as possible is a realistic goal. Time and patience are a necessity, but the rewards of a sound horse are priceless.

Cost: The cost of the procedure from the harvest to the injection typically starts at \$2,500. This is without any additional fees for imaging or diagnostics. Many insurance companies are starting to cover these expenses.

Results: Although we cannot say for sure whether the stem cells worked, past case experiences tell us that this lesion would most likely not have healed with conservative therapy alone. Jesse's positive clinical response to stem cell therapy is what we use to gauge this treatment as a success.



Dr. Sylvia Greenman with Jesse

Diane Barber

Drs. Greenman and Larson practice at Greenman Equine in Monrovia, California (greenmanequine.com).

Defying the Odds

(Continued from p. 76)

approval to go back to walking and trotting under saddle, he had another energy explosion in-hand. *Say it's not so!* was all I could think as Dr. Greenman announced a grade 2 out of 5 lameness—the worse Jesse had been in many months. Medications for a short time and walking on hard surfaces in straight lines was again the all-too-familiar regime. Over the next four months, Jesse improved significantly but, in September, there was still a slight lameness—grade 1. So, we stopped trotting, continued walking and scheduled monthly vet checks as faith and perseverance grounded me.

Two years after Jesse's injury, Dr. Greenman met me at the stables and I held my breath as I snapped a longe line on his halter. With his head held high, he sure-footedly trotted, cantered and bucked as our wonderful vet looked on wearing a telling smile. He was sound again. We did it! Rehabilitation now shifted to improving Jesse's overall fitness. We gradually increased the load on the tendon at the trot and canter and began working in the sand arena again, instead of just on hard surfaces.

During the uncertainty of our long healing journey, I always believed in my heart that the human/animal bond can, indeed, overcome obstacles. As I walked beside Jesse each day with a prayer on my lips, the light never left his eyes and the special people we needed appeared as we defied the odds together. 🐾

Diane Barber welcomes inquiries about her healing journey with Jesse at her Web site equestriandesignery.com.

TO LEARN ABOUT THE
alternative therapies Diane also
used to help Jesse in his recovery,
go to DressageToday.com.

