

# **Boots on the Ground: Rehabilitation Protocols Utilized by Rehabilitation Facilities**

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## **Introduction**

Equine rehabilitation protocols elicit much discussion, and some controversy. This is understandable because simple changes in the order, or length of time of treatments may affect the outcome from horse to horse. However, many other issues may also be a factor; such as the breed of the horse, the footing the horse is worked in, the skill of the rider, or the type of discipline the horse performs in, to name just a few.

The problems inherent in developing an appropriate rehabilitation protocol are not unique to the equine world and also exist in human rehabilitation. Two recent studies performed systematic reviews to evaluate human rehabilitation protocols. One study looked at 32 randomized clinical trials to evaluate the similarities and differences in the rehabilitation protocols following anterior cruciate ligament reconstruction.<sup>1</sup> The other study reviewed the role of exercise in the treatment of rotator cuff impingement in 11 randomized controlled trials.<sup>2</sup> When the protocols were compared between these studies, the differences were evident. However, the multiple similarities between the protocols did allow the authors to come to conclusions about which protocols were being utilized the most, and had the best outcomes.

During the keynote address of the 2011 FAEP Promoting Excellence Symposium, Dr. Michael Torry made some interesting comments about the protocols they were implementing at a rehabilitation center for elite human athletes. He discussed that the clinic presented protocols upon discharge of the clients from their facility. However, the therapists learned, after some time, that the athletes were not actually following these protocols. The physical therapists were under the impression that their protocols were working, when in reality the actual protocols the athletes were using were quite different.

In comparison, the protocols utilized in equine rehabilitation centers can be easier to obtain due to the direct supervision of the horses by the facilities. This information would be a good reference as equine practitioners and rehabilitation specialists refine protocols for their practice. The purpose of this paper is to obtain information about the protocols rehabilitation centers are currently using and review the differences and similarities. These interviews will offer a first glimpse of the rehabilitation methods being utilized, which could lead to a more extensive review in the future.

## **Materials and Methods**

Managers of five large equine rehabilitation centers in the U.S. were interviewed. Information was obtained directly from the people who are the “boots on the ground” workers, those who implement the protocols and oversee the horses on a daily basis during the rehabilitation process.

The managers of the facilities were contacted by phone and were questioned about specifics concerning their facilities and clientele. Each facility was then asked to outline the general protocols they used for the majority of their clients in three categories of admission; surgery/fractures, tears/lesions (grade 3), and sprains/strains (grade 1, 2). For the surgery/fracture category, the specifics of the protocol were clarified to determine if the protocol was for one type of surgery, or was a general surgery/fracture protocol. In addition, salient points the manager wanted to bring forward were included at the bottom of the protocol sheets under NOTES. Information was placed into spreadsheets and the results are listed in TABLES 1-5.

All of the facilities wanted to firmly emphasize that the information they were providing was only a general guideline, and that every horse is treated as an individual. The information in this paper reflects what the facilities are doing the majority of the time, and does not cover the full continuum of treatment options, modalities and time for all possible protocols.

**Rehabilitation Protocols  
TABLE 1: Rehabilitation Facility A**

Surgery/Fracture (General Protocol)	0-4 wks	4-8 wk	12-14 wk	14 wk +	
	stall rest or hand walk (2x/day 5min)	tack walk (3x/wk 20-30min)	tack trot (2x/wk 2 sets of 2-3min) gradually increase to (3x/wk 2 sets of 10min)	tack walk 10min, trot 5min, canter 2min every other day	
			ice; 15-20min follows trotting		
		water treadmill (3x/wk 5-20min) water level below fracture	water treadmill increase level of water about knee or hock (3-4x/wk 20 min) alternating with trot under tack	water treadmill deep water to abdomen (2x/wk 20min) alternate w tack work	
	FES topline (1x/wk 35min)	FES both legs if imaging OK (3x/wk 20min) FES topline (1x/2wk 35min)	FES both legs (1x/wk 20min) and FES topline (1x/wk 35min)	FES both legs (1x/2 wk 20min) and topline (1x/2 wk 35min)	
	ice; 15-20min follows FES	ice; 15-20min follows FES	ice; 15-20min follows FES	ice; 15-20min follows FES	
	vibration plate (2x/d 20min)	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)	

**Rehabilitation Protocols**  
**TABLE 1: Rehabilitation Facility A**

<b>Tendon Tears/ Lesions (Grade 3)</b>	<b>0-4 wk</b>	<b>4-8 wk</b>	<b>8-12 wk</b>	<b>12-16 wk</b>	<b>16 wk +</b>
	stall rest or hand walk (3x/day 5min)	hand walk (2x/day 10 min)	hand walk (2x/day 15min)	tack walk (3x/wk 20-30min)	tack trot 2x/wk 2 sets of 2-3min gradually increase to 2-3x/wk 2 sets 10min
					ice; 15-20 min follows trotting sets
		water treadmill shallow to fetlock water (3x/wk under 5min)	water treadmill gradual increase to knee or hock (3x/wk 5-10min)	water treadmill deep water to abdomen (3x/wk 15-20min)	water treadmill deep water to abdomen( 2-3x/wk 15-20min)
					walker, walking (2-3x/wk 1 hr)
					tack trot, water treadmill and walker alternated every 3 days
	FES both legs if imaging OK (3x/wk 20min) FES topline (1x/wk 35min)	FES both legs (2x/wk 20min) FES topline (1x/wk 35min)	FES both legs (2x/wk 20min) FES topline (1x/wk 35min)	FES both legs (1x/wk 20min) FES topline (1x/wk 35min)	FES both legs (1x/wk 20min) FES topline (1x/2 wk 35min) decrease legsto 1x/2 wk and topline to 1x/2 wk
	ice; 15-20min follows FES	ice; 15-20min follows FES	ice; 15-20min follows FES	ice; 15-20min follows FES	ice; 15-20min follows FES
	vibration plate (2x/d 20min)	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)

**Rehabilitation Protocols**  
**TABLE 1: Rehabilitation Facility A**

<b>Strain/Sprain (Grade 1,2)</b>	<b>0-2 wk</b>	<b>2-4 wk</b>	<b>4-6 wk</b>	<b>6-8 wk</b>	<b>8-12+ wk</b>
	hand walk (1x/d 10-15min)	hand walk (2x/day 15min)	tack walk (3x/wk 20min)	tack trot; walk 10-15-20min, trot 2 sets of 2-10min every 3rd day	tack canter; walk 10min, trot 5min, canter 2min every 3rd day
				ice 15-20 min follows tack trot sets	ice; 15-20 min follows tack canter sets
		water treadmill; if imaging shows OK; shallow water fetlock (3x/wk 20min)	water treadmill deeper water to knee or hock (3x/wk 5-20min)	Water treadmill water to abdomen 2-3x/wk 20min every 3rd day	Water treadmill water to abdomen 2-3x/wk 20min every 3rd day
				walker, walking 1 hr every 3rd day	walker, walking 1 hr every 3rd day
				tack trot, water treadmill and walker alternated every 3 days	tack trot, water treadmill and walker alternated every 3 days
	FES both legs (1x/day 20min) FES topline (1x/wk 35min)	FES both legs (1x/day 20min) FES topline (1x/wk 35min)	FES both legs (1x/day 20min) FES topline (1x/wk 35min)	FES both legs (1x/wk 20min) FES topline (1x/1-2 wk 35min)	FES both legs (1x/2 wk 20min) FES topline (1x/2 wk 35min)
	ice; 15-20min follows FES	ice; 15-20min follows FES	ice; 15-20min follows FES	ice; 15-20min follows FES	ice; 15-20min follows FES
	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)	vibration plate (1x/d 20min)

**Rehabilitation Protocols**  
**TABLE 1: Rehabilitation Facility A**

**NOTES:**

Long stall rest time if used, is usually off facility. Don't always get horses at onset of injury. Try to walk if at all possible within first week if get at onset.





**Rehabilitation Protocols**  
**TABLE 2: Rehabilitation Facility B**

<b>Strain/Sprain (Grade 1,2)</b>	<b>0-3 wk</b>	<b>3-6 wks</b>	<b>6-12 wks</b>	<b>12-14 wks</b>	<b>14-16- wks</b>	<b>16 wk +</b>		
NOTE: juvenile tendonitis 10 days in spa then start back to work	hand walk/graze (1x/day 5-45min)	hand walk/graze (1x/day 45 min)					breeze or discharge	
		water treadmill; if imaging OK; water level to 1/2 height of cannon bone (1x/d 20min)		water treadmill water level to forearm (1x/d 20min); reduce treadmill work as increase tack work				
	cold salt water spa (2x/d 20min) reduce to (1x/d 20min)	cold salt water spa (1x/d 20min)	cold salt water spa (1x/every other day 20min)					
				tack walk in shed row; if imaging OK (1x/day 10-20min)	tack walk to and from track (1x/day 10-20min)			
				tack trot in shed row will be added after walking 2-3d (1x/d, 3-7min x 2 both directions)	trotting on track (1x/d 1 mile; if imaging OK gradually increase to 2 miles on track)			
				jogging on track; added after 14min trotting completed (1x/day 5-20min)	gallop on track added after 2wks track trotting (1x/d 0.5-2mile)			
		vibration plate 1x/d 20min	vibration plate 1x/d 20min	vibration plate 1x/d 20min	vibration plate 1x/d 20min			

**Rehabilitation Protocols**  
**TABLE 2: Rehabilitation Facility B**

**NOTES:**

Water treadmill important for conditioning, not necessarily primary for healing. Tack work more important for healing because of weight bear required. Facility has a place to exercise horses which is a benefit because can send horses back with supervised pre-training. Do not use walker for soft tissue rehab need controlled movement.

**Rehabilitation Protocols**  
**TABLE 3: Rehabilitation Facility C**

<b>SURGERY</b>	<b>0-3 wk</b>	<b>3-5 wk</b>	<b>6-8 wk</b>	<b>8-12 wk</b>	<b>12 wk</b>		
arthroscopic chip removal	Stall rest	cold salt water spa (2x/wk 10min)	underwater treadmill (1x/d 15min)	walker; 1x/day trotting 2-8min wk11 add 80# lead walk then jog)	discharge for turnout for 4-6wk; then gradually return to work		
	vibrating platform (1x/d 15min)	underwater treadmill; ~14 d remove stitches; ~21 d start water work(2x/d 10-15min) water to chest height	walker; walk (1x/d 10-30min)	turn out in small corral			
	FES, chiro or acupuncture on back as needed	walker (at 5 wks walk 10-30 min)	cold salt water spa (1-2x/wk 10min)	underwater treadmill (3x/wk 15min)			
		vibrating platform until start walker (1x/d 15min)					

**Rehabilitation Protocols**  
**TABLE 3: Rehabilitation Facility C**

<b>Tendon Tears/ Lesions (Grade 3)</b>	<b>2-3 d</b>	<b>0-1 wk</b>	<b>1-3 wk</b>	<b>3-5 wk</b>	<b>8-10 wk</b>	<b>10-12 wk</b>	
more difficult because wide range	stall rest				follow up imaging to check progress	discharge to work under tack	
		cold salt water spa (2-3x/d 10min)	cold salt water spa (1x/day 10min)	cold salt water spa (1x/day 10min)	cold salt water spa (1x/week 10min)		
			underwater treadmill (2x/d 13-15min) water to chest height	underwater treadmill (4-5x/wk)	underwater treadmill not jogging 3-4x/wk (13-15min)		
				walker (1x day 5-20min)			
		FES on both legs (1x/d 20min ea) FES back if needed (3x/wk 35min)	FES on both legs (2x/wk 20min ea) FES back if needed (2x/wk 35min)	FES on both legs (1x/w 20min ea) FES back if needed (1x/wk 35min)	FES on both legs (1x/every 2wk 20min ea) FES back if needed (1x/wk 35min)		
		vibrating platform (1x/d 15min)	vibrating platform (1x/d 15min)				

**Rehabilitation Protocols**  
**TABLE 3: Rehabilitation Facility C**

<b>STRAIN/SPRAIN (Grade 1,2)</b>	<b>1-3 wk</b>	<b>3-6 wk</b>	<b>6-8 wk</b>	<b>8 wk</b>			
				Horse sent home to gradually return to work			
	cold salt water (1x/d 10min)	cold salt water (1x/d 10min)	cold salt water (1x/wk 10min)				
	FES on both legs (2x/wk 20min ea) FES back if needed (3x/wk 35min)	FES on both legs (1x/wk 20min ea) FES back if needed (2x/wk 35min)	FES on both legs (1x every 2wk 35min FES back if needed (1x/wk 35min)				
	underwater treadmill (2x/d 13-15min) water to chest height	underwater treadmill (4-5x/wk)	underwater treadmill (3-4x/wk 13-15min)				
		walker (1x/d for 5-20min)	walker; (1x/day trotting 2-8min) wk 7 add 80# lead walk then jog)				
	vibrating platform 1x/d 15min)						

**Rehabilitation Protocols**  
**TABLE 3: Rehabilitation Facility C**

**NOTES:**

Watch the horse as you progress from step to step, protocols can change if there is a problem. First 8-12 weeks it is a good investment to send a horse to a rehabilitation center. Then the tissue is stronger and it is easier to complete the rehab at home under tack. You have better control of the horse under tack. Don't have much control over the horse during handwalking. Don't do handwalking because have the underwater treadmill that offers controlled environment for walking. In ground water treadmill so don't change height of water.

**Rehabilitation Protocols**  
**TABLE 4: Rehabilitation Facility D**

Surgery	0-4 wk	4-12 wk	12 wk				
arthroscopic chip surgery	hand walk (2x/day 5min)	hand walk (2x/day 10-20min)	discharge for tack work				
	Class IV laser; Total of 13tx - 3 consec tx; 6 tx every other day; last 4tx, 3-4 day interval (4-9min depending on size of area tx)						
		water treadmill; water treadmill 1st wk 5min ankle height; increase water height and time 1 min/day to 20 min/day up to abdomen (3-6x/wk 20min);					
	cold salt water spa (1x/day 20min) 2-3 days after sutures removed	cold salt water spa (1x/day 20min) after treadmill					
	hyberbaric 1st wk 1x/day 1 hour; 2nd wk every other day 1 hour; 3rd wk 2x/wk 1 hour	vibration plate; if imaging shows Ok 1x/day 20 min					

**Rehabilitation Protocols**  
**TABLE 4: Rehabilitation Facility D**

Tendon Tears/ Lesions (Grade 3)	0-4 wk	4-8 wk	8-20 wk	20 wk			
	hand walk (2x/day 5min)	hand walk (2x/day 10- 15min)	hand walk (2x/day 10- 15min)	discharge for tack work			
	Class IV laser; Total of 13tx - 3 consec; 6 every other day;last 4, 3-4 day interval (4-9min depending on size of area tx)	Class IV laser (2x/wk Tx 4- 9min)					
	hyberbaric 1st wk 1x/day ; 2nd wk 3x/wk;3rd wk 2x/wk		water treadmill; if imaging shows OK; water treadmill 1st wk ankle height 3- 4x/wk 5min; increase water height and time 1 min/day to 20 min/day up to knee or hock (1x/d 20min)				
	cold salt water spa (1-2x/day 20min)	cold salt water spa (1x/day 20min)	cold salt water spa after treadmill (1x/day 20min)				
		vibration plate (1x/day 20min)	vibration plate (1x/day 20min)				

**Rehabilitation Protocols**  
**TABLE 4: Rehabilitation Facility D**

<b>Strain/Sprain (Grade 1)</b>	<b>0-4 wk</b>	<b>4-8 wk</b>	<b>8 wk</b>				
	hand walk (2x/day 10-15min)	hand walk (2x/day 20 min)	discharge for tack work				
	water treadmill 1st wk at ankle height 3-4x/wk 5min; increase water height and time 1 min/day to 20 min/day up to knee or hock (1x/d 20min)	water treadmill; if imaging shows OK; at hock/knee height (1x/day 20min)					
	cold salt water spa after treadmill (1x/day 20min)	cold salt water spa after treadmill (1x/day 20min)					
	vibration plate (1x/day 20min)	vibration plate (1x/day 20min)					

**Rehabilitation Protocols**  
**TABLE 4: Rehabilitation Facility D**

**NOTES:**

Typical protocols, but some owners/vets opt to use fewer interventions than listed. Attending will always be in charge of protocol and progress. Facility does not prescribe therapies or diagnosis.

**Rehabilitation Protocols**  
**TABLE 5: Rehabilitation Facility E**

<b>SURGERY</b>	<b>0-2 wk</b>	<b>2-3 wk</b>	<b>3-5 wk</b>	<b>5-7 wk</b>	<b>7-9 wk</b>	<b>9wk</b>			
arthroscopic chip surgery ankles, knees	stall rest	hand walk (1x/d 15-20min)	hand walk/grazing (1x/d 15-20min)	hand grazing or turn out (1x/d 1-2 hr) depending on temperment	hand grazing or turn out (1x/d 1-2 hr)	discharge			
	hyperbaric (1x/d for 5 days; 1 hr)		use imaging to determine next step						
			underwater treadmill (1x/day 5-18min) or circular swim (1x/day) choice depends on temperment, discipline and injury	underwater treadmill (6x/wk 5-18min) or circular swim (6x/wk)	underwater treadmill (4-5x/wk 18min) or circular swim (6x/wk)				
		cold salt water spa 3 days after sutures out (1x/day 8min)	cold salt water spa (3x/wk 8-10min)						
		vibrating platform (1x/day 15min)		tack walk indoor first 2 days (1x/d 15-20min)					
				tack jogging indoor; walk (1x/day 10 min); jog (1x/d 3-15 min)	tack jogging; walk (1x/d 10-15 min) jog (1x/d 15-30min)				
			Indoor walker (1x/day walk 15-20min) trotting (1x/d 2-8min) wk 5 add 80# lead walk then jog)	indoor walker after work (1x/day 30 min)	inside walker after work (1x/day 30 min)				

**Rehabilitation Protocols**  
**TABLE 5: Rehabilitation Facility E**

<b>Tendon Tears/ Lesions (Grade 3)</b>								
<b>0-2 wk</b>	<b>2-3 wk</b>	<b>3-5 wk</b>	<b>5-7 wk</b>	<b>7-9 wk</b>	<b>9-11 wk</b>	<b>11-13wk</b>	<b>13+ wk</b>	
stall rest; used more with larger horses that can't handle load	hand walk (1x/d15-20min)	hand grazing (30 min)	hand grazing (30 min)					discharge
hand walk at 5 days (1x/day 15-20min)			underwater treadmill (1x/day 5-18min) or circular swim (1x/day) choice depends on, discipline and injury	underwater treadmill (6x/wk 5-18min) or circular swim (6x/wk)	underwater treadmill (4-5x/wk 18min) or circular swim (6x/wk)	underwater treadmill (3-4x/wk 18min) or circular swim (6x/wk)		
	cold salt water spa (1x/day 8min)	cold salt water spa (1x/day 8min)	cold salt water spa (1x/day 8min)	tack walk indoor first 2 days (1x/d 15-20min)	tack walk indoor first 2 days (1x/d 15-20min)			
				tack jogging indoor; walk (1x/day 10 min); jog (1x/d 3-15 min)	tack jogging indoor; walk (1x/day 10 min); jog (1x/d 15min)	tack jogging; walk (1x/d 10-15 min) jog (1x/d 10-30min)		
	vibrating platform (1x/day 15min)	vibrating platform (3-5/wk 15min)	indoor walker (1x/day walk 15-20min) trotting (1x/d 2-8min) wk 7 add 80# lead walk then jog	indoor walker after work (1x/day 30 min)	indoor walker after work (1x/day 30 min)	indoor walker after work (1x/day 30 min)		

**Rehabilitation Protocols  
TABLE 5: Rehabilitation Facility E**

<b>STRAIN/SPRAIN (Grade 1,2)</b>								
	0-2 wk	2-4 wk	4-6 wk	6-8 wk	8 wk			
	Stall rest 2-3 days	hand grazing (30 min)	use imaging to determine next step		discharge			
	cold salt water spa (1x/day 8min)	cold salt water spa (1x/day 8min)	cold salt water spa (1x/day 8min)					
		underwater treadmill (1x/day 5-18min) or circular swim (1x/day) choice depends on , discipline and injury	underwater treadmill (6x/wk 5-18min) or circular swim (6x/wk)	underwater treadmill (3-4x/wk 18min) or circular swim (6x/wk)				
		Indoor walker (1x/day walk 15-20min) trotting (1x/d 2-8min) wk 4add 80# lead walk then jog)	tack walk indoor first 2 days (1x/d 15-20min)					
			tack jogging indoor; walk (1x/day 10 min); jog (1x/d 3-15 min)	tack jogging; walk (1x/d 10-15 min) jog (1x/d 10-30min)				
			inside walker after work (1x/day 30 min)	inside walker after work (1x/day 30 min)				
	vibrating platform (1x/day 15min)							

**Rehabilitation Protocols**  
**TABLE 5: Rehabilitation Facility E**

**NOTES:**

Treat each horse as an individual. Rehab may not shorten the healing time but it will produce a better quality of healing, which makes for a better result in the long run. The time saved is when the horse returns to their job, not only are they in better condition but are less likely to reinjure themselves due to lack of conditioning. Younger horses have less complicated compensatory problems than older horses. Generally, horses need closely supervised turn out during early stages of rehab. Swimming and water treadmill are very different modalities, one no better than the other. Understanding of the two modalities is important. For instance, the water treadmill is not good for lower hind end soft tissue injuries. It's important that you don't over-condition during early rehab. Wait until you start under tack to begin the fitness building process.

Other therapeutic modalities can also be added during the early stages of the healing process. The first and primary benefit of water therapy is buoyancy. In-ground water treadmills and saltwater spas are preferred because of better safety. Safety, above anything else, is of great importance because rehab is generally a voluntary therapy for equine athletes. Helping an athlete return from a soft-tissue injury or other sports related injuries is not typically a life or death situation. But, if you disregard safety (by having poorly trained help, lack of horsemanship skills, improper equipment, improperly maintained equipment, or etc) you turn this voluntary therapy into one that can negatively affect the quality of life of the horse; or even result in the horse's death.

## **Discussion**

A review of the information obtained from the five rehabilitation facilities showed that they admitted a total of approximately 2,650 horses annually. Although the total number of facilities in this survey was small, the total number of horses that were serviced by these facilities every year was large. All of the rehabilitation centers were pleased to be of assistance to this survey and expressed great interest in the results, commenting that they are always searching for more information to refine their protocols further. In addition, the managers were pleased that someone was interested in the work they were doing, and they were interested in sharing their results.

The primary type of horses the centers had as clients fell into two basic categories of 50% racing (mostly Thoroughbreds, some Standardbreds and Quarter Horses) and 50% Sport Horses (mostly Warmbloods, Quarter Horses and Saddlebreds). One of the centers (Facility B) specialized in racing, with 85% of their clients being Thoroughbred racehorses.

The primary reason horses were admitted into four out of five facilities was due to soft tissue injuries, with one facility having arthroscopic chip surgery as the primary reason for admission.

The second most common reason for horses being placed into rehabilitation, in three out of five centers, was for conditioning of yearlings, weanlings, 2-year-olds and mature horses. The other two facilities commented that their second most common admission reasons were for arthroscopic chip surgeries, stress fractures and bone bruising, or problems in the fetlock and below.

Only one facility felt that the majority of the veterinarians did not value their opinions and did not ask for advice when deciding on the appropriate rehabilitation protocol. Unfortunately, due to the lack of collaboration between this rehabilitation facility and the veterinarians, some of the protocols the practitioners wanted executed were impractical, and at times impossible, to perform by the manager.

Follow-up treatments or evaluations of the horses, after the protocols were completed, was 30-50% in two facilities, with the other three centers commenting that they followed up on less than 30% of the horses treated at the facility. The low percentage of the follow-up information about the long-term results of the rehabilitation protocols reduced the value of the data, because there was limited information to see if the horses were able to sustain the improvement. If a means existed to obtain follow-up data, this may prove to be an asset for the centers to further refine their protocols.

However, all centers were pleased with the progress of the horses during rehabilitation, and felt their protocols were working well while the horse was under their care. In addition, the periodic re-checks by the attending veterinarians also indicated if the protocol was appropriate and healing was occurring. All facilities scheduled sequential imaging to determine how the rehabilitation protocol was progressing and if the horse should continue to move forward with more strenuous rehabilitation.

There were three modalities that all facilities utilized and found effective; cold water spa, underwater treadmill and vibrating platform. Two of the facilities noted that they would use other modalities when needed with certain horses, or if they had specific requests.

Comparisons between the protocols in TABLES 1-5 shows many differences as well as similarities. Upon first glance it appears that there was a large variation in the amount of time spent in rehabilitation for the three categories. However, it must be noted that some facilities continued the rehabilitation process longer than others, which included riding the horses. Three of the five centers included work under tack in their rehabilitation protocols, while two of the five facilities discharged the horses when they were ready for work under tack.

The comparison of the time the horses spent in stall rest among all five centers is found in TABLE 6. There was a general consensus that minimal stall rest was preferred, and all centers attempted to get the horses out walking as soon as possible. Only one facility used a longer period of three weeks of stall rest after arthroscopic chip surgery. However, the stall rest at this center was supplemented by daily use of the vibrating platform.

	Facility A	Facility B	Facility C	Facility D	Facility E
Surgery	0; if possible	0-2; with hand grazing	3; with vibrating platform	0; if possible	0-2; with hyperbaric
Tear/Lesion Grade 3	0; if possible	0-2; with hand grazing	2-3 d	0	0-2
Strain/Sprain Grade 1,2	0	0-3; with hand grazing	0	0	2-3 d with vibrating platform

TABLE 6. Time in weeks spent in stall rest

One similarity between all five protocols (TABLES 1-5) was the utilization of a water treadmill. TABLE 7 compares the minimum time when each of the facilities began walking the horses on the water treadmill. When walking was begun after surgery (two-four weeks) or with sprains/strains (zero to three weeks), the time frame was similar. However, a wider variation (one-eight weeks) existed with the protocols for tendon tears/lesions. Every center commented that the protocol for tendon tears/lesions was the most difficult to generalize because it contained the most variation when implemented. This point is evident when comparing the time frames to initiate water treadmill work among the five different facilities. However, interestingly the minimal stall rest time for tendon tears/lesions is similar (TABLE 6).

The two facilities listed in TABLE 7 with the longest time before walking in the water treadmill for tear/lesions (eight weeks) were Facilities B and D. Facility B worked almost exclusively with racing thoroughbreds (85%) while Facility D saw a different demographic of; 50% two-year and younger Thoroughbreds that were not racing, and 50% Sport Horses.

Facility C waited the shortest period of time (one week) before working the horses in the water treadmill. Facility C admitted 60% Thoroughbred racehorses (with a few QH racehorses) and 40% performance horses. It doesn't appear that, with this sample size, any conclusion can be made that the type of horse the center predominately sees dictates the rehabilitation protocol. Although the performance requirements of racing and sport horses are different, the rehabilitation protocols may not reflect a similar difference.

Two of the facilities commented that the reason they felt there was so much variation in the protocols they used for tears/lesions was due to the lack of a reliable diagnosis. When the imaging was performed by two different practitioners, the managers were sometimes given two different diagnoses of the type of tendon injury. Therefore, the facilities were uncertain which protocol to follow. Perhaps the lack of a conclusive diagnosis may be one of the reasons there is a wide variation in the time frames and modalities found in successful protocols.

	Facility A	Facility B	Facility C	Facility D	Facility E
Surgery	4	2	3	4	3
Tear/Lesion Grade 3	4	8	1	8	5
Strain/Sprain Grade 1,2	2	3	1	0	2

Table 7. Minimum time in weeks when protocol included walking on the water treadmill

### Summary

A survey of five large rehabilitation centers in the U.S. was initiated to review the protocols that are currently being utilized. Interviews were taken from the managers of these facilities who are the “boots on the ground” workers who implement the protocols and observe the horses on a day-to-day basis during rehabilitation. All of the centers interviewed were interested in sharing their knowledge and cooperated willingly with the survey.

Information was collected about the general rehabilitation protocols used for the majority of their horses in three categories; surgery/fracture; tendon tears/lesions (grade 3); strains/sprains (grade 1, 2). Annually, these five facilities see a total of approximately 2,650 horses.

Four out of five rehabilitation centers said they work in collaboration with the attending veterinarian to develop a rehabilitation protocol. Only one center said that most of the veterinarians they work with do not ask the manager about their opinion when developing the rehabilitation protocols.

Long-term follow up of clients was difficult for most centers with only one facility having a 50% follow up with the horses once they were discharged. Most facilities were only able to follow up with under 30% of their clients. However, all managers used sequential imaging to determine if healing was progressing and if the horses should

move to the next level of rehabilitation. An improvement in follow-up documentation may assist the centers in better evaluating the success of their protocols.

Similarities among the five facilities were found to exist and included; the types of modalities used, the amount of time they stall rested the horses, and the use of imaging to determine the progression of the rehabilitation. Popular modalities included the water treadmill, cold salt water spa and the vibrating platform. All centers commented that they stall rest the horse as little as possible and get them out of the stall most days to at least graze. Imaging was done by all facilities to check on the progress of the rehabilitation protocols.

Differences between the facilities included how long after the initial injury/surgery the horses were first asked to walk on the water treadmill. These differences could be do to the large variation the centers see in the successful protocols for this type of injury. In addition, some of the centers felt they are not always sure what grade of lesion they are treating due to the lack of a conclusive diagnosis. Another large difference among the facilities, was the total time spent at the center for rehabilitation. Some facilities returned the horses fit and ready to go back to work, while others discharged the horses when they were ready to start work under tack.

This survey offers a first glimpse of what protocols are being used in equine rehabilitation in a select number of facilities. Facilities of this type have an immense amount of valuable information about rehabilitation protocols and this information can prove to be a useful contribution to the science of rehabilitation. Continued data collection will help to refine the results further.

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