

# How to Safely Restrain a Laterally Recumbent Horse

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Recumbent horses are notoriously difficult to safely restrain. It is important for equine practitioners, technicians/nurses, and their staff to know how to safely, efficiently, and effectively restrain animals without injury either to the horse or to personnel. Every equine practitioner and technician/nurse is expected to perform this task on demand, but is taught on the job. The purpose of this paper is to provide guidelines and information for improving safety and effectiveness of animal handler(s) when attempting to restrain a laterally recumbent equine for field, clinical, or technical rescue procedures and introducing the foot-in-neck method of physical restraint. Authors' addresses: Technical Large Animal Emergency Rescue, Inc., 1787 GA HWY 18 E, Macon, GA 31217 (Husted); Delmarva Equine Clinic, 1008 South Governors Avenue, Dover, DE 19904 (Egli); Horner and Nash, DVM, PC, 255 McGarity Road, Canton, GA 30115 (Davenport); e-mail: delphiacres@hotmail.com. \*Corresponding and presenting author. © 2020 AAEP.

## 1. Introduction

Horses that are “down” in recumbency experience fear, they may cause self injury, or they may injure a person while struggling to rise. The musculoskeletal region of the neck is a powerful lever and is used by the horse to rise from recumbency. Thus, restraint by a handler (Fig. 1) is useful to minimize struggling while the practitioner is deciding on a protocol for treatment, chemical restraint, or euthanasia.

Rotating the head back, aligned with the neck, and tipping the nose up delays the horse's attempts to roll into a sternal position, then stand.<sup>1,2</sup> Even if a horse is physically incapable of standing, such as while waking up from general anesthesia, it can make uncoordinated efforts to stand and flail (Fig. 2) due to powerful flight instincts if sympathetically stimulated.<sup>3</sup>

## Legacy Knee-on-Neck Method

The Legacy “knee-in-the-neck, tip-the-nose-up” method has been used for generations, especially since effective chemical sedation and anesthesia weren't available to equine practitioners until the 20th century (Fig. 3). This Legacy method of attempting to hold down a laterally recumbent horse during clinical veterinary procedures places the handler's knee onto the neck of the horse, using the full weight and pressure of a kneeling person to physically restrain the horse, then the handler uses upper body strength to rotate the head and tip the nose skyward by pulling on the halter. Legacy methods have caused injuries to personnel via kick, strike, and ergonomic injuries. Practitioners, technicians/nurses, and professional animal handlers in the industry share personal narratives of being thrust backward, kicked or struck by a hoof, or suffering rope injury while

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## NOTES



Fig. 1. Laterally recumbent horse waking up from general anesthesia is restrained with the animal handler standing dorsal to the animal's neck (instead of sitting or kneeling), with their foot placed approximately behind the atlanto-occipital joint, the nose is tipped upward, and with protection for the downside eye. Photo courtesy of Dr. Michelle Egli.



Fig. 3. Horse in lateral recumbency. Any stimulation can cause the horse to struggle violently. The handler shows the Legacy position and is holding the halter to tip the nose up. Note the use of a helmet by the handler to prevent head injury. Blindfold and head protector have not yet been applied. Photo courtesy of Dr. Tomas Gimenez.

attempting to hold down a 1,000-lb (453-kg) or larger recumbent horse.<sup>a,b</sup>

Clearly, a larger, heavier, and stronger person increases the odds of success at restraining an animal that is far quicker, stronger, and heavier than

one person, or even several persons. As the equine industry (and technician/nurse population) has become predominantly female, with generally smaller body weight, frame size, and strength compared



Fig. 2. Veterinarians are expected by clients to address debilitated or downed horses. Here, personnel are forced to take dangerous positions between the front legs and the animal's head when they do not have assistance from an animal handler. A limitation for practitioners is the number of personnel available to conduct "free" versus "attended" recoveries in the field. Photo courtesy of Raymond Phillips; Photo courtesy of Caren Chellgren.



Fig. 4. Firefighters work to stabilize a down horse, manipulating it with webbing out of a swale, and then to a sternal position to encourage it to stand. One handler is on the neck in Legacy position, while the other is placing a human personal flotation device (PFD) around the head for protection. Over the years, handlers rejected the “knee-on-neck” as a more dangerous position. Photo courtesy of Katherine Davis/Battalion Chief Darrell Mitchell.

with males—the old methods that worked marginally for a 200-pound (91-kg) man, don’t work well for a 130-pound (59-kg) woman.<sup>c</sup>

One constraint of legacy methods is the handler’s dubious location for safety (on their knees with their head looking down)—limiting their ability to get out of the way if the horse lunges, attempts to roll or to stand (handler would have to be able to stand up faster than the horse can struggle up). Legacy methods have resulted in injuries to personnel including ergonomic injuries (back, hip, knees) by people attempting to rise; horses striking with the hind foot to the person on the head; horse rolling to sternal then standing reflexively faster than the human’s ability to get out of the way when the horse stands up; and pulling the handler headlong into the space between the neck and front legs while struggling, etc.<sup>d</sup>

Fire/rescue organizations work hard to reduce exposure and injuries to fire/rescue personnel responding to incident scenes, depending on “lessons learned” and they make continual improvements to methods and techniques to increase safety.<sup>4</sup> Hard questions about obvious risks of using the Legacy method (Fig. 4) have been asked by first responders. Over the years, fire/rescue organizations adopted mandatory improvements to equine restraint methodologies taught to their personnel for large-animal rescue—including rejection of the

Legacy and adoption of the “foot-on-neck” method. These restraint improvements are shared here with veterinary professionals to improve safety for anyone involved in response to recumbent equine situations.

Modern best practices as taught to fire/rescue personnel now include an improved “foot-on-neck” method that provides greater leverage for the handler while increasing the handler’s ability to move out of the way of a lunging animal (Fig. 5). It improves personal safety for animal handlers while allowing improved jugular and facial area access for the equine practitioner (IV access, catheterization and maintenance, facial artery pulse, ocular reflexes, and oral mucous membrane evaluation.)

## 2. Materials and Methods

### Recommended Personal Protective Equipment

Practitioners and staff should carry some basic equipment to facilitate personnel safety when handling recumbent equines.

- Gloves (high dexterity) to prevent rope burns.
- Boots (with or without steel/composite toe).
- Protective helmet with chinstrap.
- Knife and/or multi-tool to cut rope in an emergency.



Fig. 5. A full-size, jointed horse mannequin<sup>a</sup> is utilized for training of emergency personnel in proper positioning for safe handling and manipulation of recumbent horses. Here, students and veterinarians can practice use of the foot-on-neck method to learn to properly restrain a down horse. Photo courtesy of Dr. Ruth Franczek.

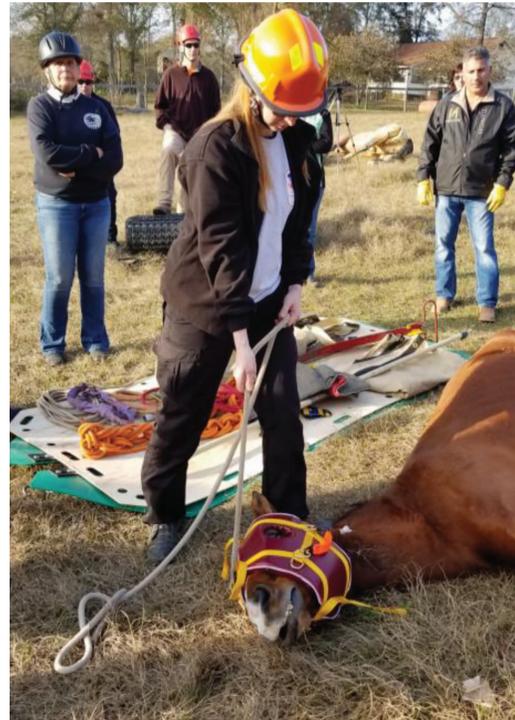


Fig. 7. An anesthetized horse in recovery is restrained effectively in lateral recumbency by a female student that weighs less than 140 pounds using the foot-on-neck method. The head and eyes are protected by a Häst Head Protector.<sup>b</sup> Photo courtesy of Dr. Rebecca Husted.

- Professional shirt/jacket or scrubs with logo to identify yourself.

*Note:* Helmets are proven protective equipment and are mandatory for professional emergency responders due to Occupational Safety and Health Administration (OSHA) rules about situations where there is any possi-

ble impact.<sup>5</sup> They are highly recommended for anyone dealing with horses in recumbent or recovery situations for the same reasons.<sup>6</sup>

Recommended Recumbent Animal Restraint Equipment

- Halter/8-to-12-foot lead rope.
- Head protection and/or blindfold.



Fig. 6. Control of the head by having an animal handler distribute their weight while standing, with the foot located directly behind the atlanto-occipital joint. In this photo, the horse has on a halter and lead, with a Becker head protector and blindfold in place for general anesthesia (castration).



Fig. 8. A horse down in a ditch in a pasture with fire/rescue, law enforcement, and veterinarian on scene. The horse handler and other personnel are in dangerous positions attempting to hold the head or standing between the legs. Photo courtesy of Oxford Fire Department, Michigan.

#### Description of Foot-on-Neck Method

“Best practices” for handling as taught to fire/rescue personnel (who are commonly not familiar with horses) include restraint methods for lateral recumbence to provide greater control to the handler at the head, while increasing their leverage and weight advantage. This increases the handler’s ability to move out of the way if the horse struggles to get up, keeps personnel out of the way of flailing hooves, and prevents potential ergonomic injuries by allowing the handler’s weight to be balanced on their legs instead of kneeling.

The “foot-on-neck” method is more ergonomic. It allows the animal handler to use the lead-rope for leverage to tip the nose skyward, while placing the bottom of their foot on the neck of the horse (directly behind the atlanto-occipital joint; Fig. 6) and using their body weight to discourage the horse from rising. Tipping the nose up slightly is desirable as it makes it more difficult for the horse to rise,<sup>7</sup> and keeps the animal handler out of the way of the neck. This also provides the veterinarian with better access to the jugular vein (catheter insertion and maintenance, administration of drugs) and the fa-

cial area (assessment of capillary refill times, facial artery pulse, orbital, and oral mucous membranes). It is still possible for a trained animal handler to assess respiratory rate (watching chest rise or nostril movements), assess ear and eye reactions, and cover the eye with a blindfold while holding in this manner (Fig. 7).

### 3. Results

Horses do not instinctively comprehend how to let humans help them, nor do they have the capacity to understand that the responders’ intent is to help. When dealing with a fearful recumbent horse, personnel must adopt defensive strategies to stay safe.<sup>e</sup> One person (the handler) must maintain control of the head until the animal is evaluated, treated, recovered completely, euthanized, or packaging is complete (if using a rescue glide for transport). Dangerous places for humans to be positioned include directly in front of the legs or head, between the legs, or standing over/above a recumbent horse (Fig. 8). All personnel must stay clear of the horse’s legs (recumbent horses can flail or struggle with no warning).



Fig. 9. A debilitated yearling is found down and hypothermic, unable to stand. The handler, in full personal protective equipment and under direction of a veterinarian, has assessed minimal concern for struggling; thus, she is supporting the head on her knees in preparation for adding head protection. However, this is a difficult position to arise from quickly if the animal should struggle. Photo courtesy of Washington State Animal Response Team.

#### The Role of the Animal Handler

Proper positioning of personnel can prevent injuries—use of the standing with one foot-on-neck method increases safety of both the handler and the veterinarian treating the horse. Complacency, lack of exposure, or inappropriate training may cause handlers to underestimate the extreme weight, strength, and speed of a recumbent horse. Control of the head is crucial to equine restraint. The handler should place a halter and lead-rope or emergency rope halter on the recumbent horse before doing anything else. Next, place some type of head protection (towel, shirt, cheap human personal flotation device, Häst Head Protector,<sup>f</sup> or similar full head protection device) on and under the horse's head. Special attention should be paid to prevention of nerve paralysis and myopathy, and efficient recoveries prevent medical issues seen with slow response.<sup>g</sup> A blindfold should be used to protect the eyes and limit visual stimulation. From their standing position, the handler can watch the horse for movement reflexes, observe breathing rate by watching the chest rise, and report changes in muscle flaccidity or reflexes, while the veterinarian can access the head and neck more freely.

#### 4. Discussion

In both clinical and field—owners, veterinarians, staff, and first responders have been injured by recumbent horses while attempting to assist or treat them.<sup>h</sup> Proper restraint by a trained animal handler, with or without sedation/anesthesia, prevents needless injuries to both humans and horses. Unless completely exhausted, debilitated, or hypother-



Fig. 10. Horses go down in trailers and other confined spaces where handlers have no ability to easily escape if the horse struggles. These situations require the handler to offer restraint from a safe position until sedated—here—from outside the trailer, using a riding pad for head protection and as a blindfold. Photo courtesy of Basin Fire Brigade.

mic to the point of not struggling, animals should be profoundly sedated or anesthetized for procedures to reduce the chance of injury to personnel.

#### The Horse's Perspective

Recumbency, from the perspective of the animal, is very different from human perception. Horses that may appear to be lying calmly are extremely stressed and fearful (Fig. 9). Recumbent horses often lie quietly for a few minutes due to exhaustion, but their instinct drives them to struggle unpredictably and violently. The primary problem of recumbency quickly becomes overshadowed by the secondary problems (decrease in gut motility, down lung congestion, nerve and muscle impingement and damage), thus a plan must be made efficiently to get the horse to the recovery position (sternal), then on its feet.<sup>8</sup>

For many technical rescue manipulations, the animal handler must be able to lift, support, and move the head in coordination with the team rolling, sliding, moving, and/or packaging the recumbent horse patient.<sup>9</sup> Standardization of animal handler training for technical animal rescues by the fire service is ongoing.<sup>10,11</sup>

#### Factors To Consider

- What is the weight and size of the horse?
- Is there an injury to the horse's neck or head that prevents use of this method?
- What is the disposition/breed/reactivity of the horse?
- Is the horse in pain? Has analgesia been administered?
- Training: Does the animal handler have experience and training with use of physical restraint of mannequins<sup>1</sup> and real recumbent horses? Are they in a safe position?
- Equipment: Does the handler have a good quality halter and lead-rope to maintain control of the head, with head protection or at a minimum a towel to use as a blindfold?
- Is there egress room for handler or are there obstacles? What is footing quality?
- Are there going to be questions from observers about why you are using this method that looks different from past methods (i.e., standing versus knee in neck)?

#### Obstacles Add Danger

Recumbent animals in certain scenarios (confined space: entrapped in an overturned trailer, with a leg through the bars of a stall) are subject to abnormal orientation and make for extremely dangerous positions for the animal handler. Always consider administration of sedation (IM, oral) before putting any handler into such a dangerous position (Fig. 10).

## 5. Conclusion

Use of these updated methods and simple equipment with personal protective equipment will contribute to effective equine restraint and improved ergonomic and kinetic safety for veterinary handler personnel while allowing successful and efficient outcomes of lateral recumbency in clinical, field, and technical rescue incidents.

## Acknowledgments

### Declaration of Ethics

The Authors have adhered to the Principles of Veterinary Medical Ethics of the AVMA.

### Conflict of Interest

The Authors have no conflicts of interest.

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<sup>a</sup>Hanson S, Newnan GA (personal communication) 2015.

<sup>b</sup>Bottger J, Anderson SC (personal communication) 2017.

<sup>c</sup>Mitchell D, Canton GA (personal communication) 2018.

<sup>d</sup>Franczek R, Dover DE (personal communication) 2019.

<sup>e</sup>Lack A, Starkeville MS (personal communication) 2020.

<sup>f</sup>Häst Head Protector, Häst, PSC, Floyd, VA. <http://rescue.hastpsc.com/>. (804) 286–0832.

<sup>g</sup>Miller RM (personal communication) 2014.

<sup>h</sup>Langston MD (personal communication) 2019.

<sup>i</sup>RESQUIP Horse Mannequin, Spring Lake, NC. <https://4hoovessmart.com/online-store?olsPage=products&page=3>. (910) 494–8210.