

Standard Operating Procedure: Operation of the high-speed equine treadmill

Recommended instructor to student ratio:

- If operated by student, ratio = 1 to 1
- If operated by trained staff during student prac, then 1 operator PLUS 1 instructor for 10 students performing observations. NO MORE THAN 10 students should be present during operation with no fewer than 2 staff.

Category

6. Minor physiological Challenge

Although horses may be run at high outputs, these are normal expected high output runs for horses *without* other stressors.

Objective

To define the operation of the high-speed equine treadmill within standards that assure safety to operators while specifically avoiding welfare problems for equine subjects.

Alternatives to animal use

Because the procedure is for the running of horses, there are no non-animal alternatives.

Equipment

The usual rules for any laboratory work apply: all people present should wear

- Clean protective, close-fitting clothing
- Covered in, structurally sound boots/shoes
- Any long hair tied neatly and held up or back

Further special requirements include:

- Hearing protection (ear plugs should be provided)
- A fire extinguisher should be present (and is permanently located in the room)
- All people in the room should know the presence and operation of the emergency stop button.
- Jewellery should not be worn during the running of the treadmill

Pertaining to the location:

- Two high speed fans directed at the treadmill platform for physiological cooling of the equine subject.
- Appropriate farrier's implements for removal of horse shoes
- The provision of a functioning immediate emergency off switch.
- A whip is often used to touch the horse (*Not under any circumstances* for whipping). If use, this must be done in a sedate manner that will not startle the horse; neither is there any advantage in rendering a horse "with an attitude", especially not in this environment.

Safety and Risk considerations

The following risks exist:

- An ill-tempered or excited horse harming a person present
- An ill-tempered or excited horse harming itself
- A startled horse may behave in a way harmful to itself or others
- The flinging of a horse shoe during high-speed run can cause serious damage to a human behind the horse

- The flinging of faeces, urine, or any other material that can make it onto the tread platform may also cause damage, be it by high speed impact injury or simply by spraying a person and infecting them.
- Hearing damage in a high decibel environment
- Overheating of horses caused by incorrect, unmatched windspeed
- Break-down of a horse on the platform, followed by being projected off the end, or being squashed or torn in the machinery
- Catching a part of a person in the machine, and squashing or tearing them. (Untied long hair, loose clothing and jewellery are common causes of this kind of accident)
- Falling of a person onto the tread during operation and being conveyed to underneath the horse, followed by trampling.
- Horses may overheat if not allowed proper air cooling

With these risks in mind, the following principles are applied:

1. People are only to be admitted to the treadmill facility during operation after they have demonstrated familiarity and conformance with all these principles.
2. Minors are *not* allowed to be present during operation.
3. People may not stand behind the horse during operation
4. People may not stand in front of the horse during operation
5. People may not stand in areas marked with yellow warning paint during operation
6. People may not stand on the tread belt during operation
7. People may not enter or leave the room during operation, except in human emergency, in which case operation should be terminated anyway.
8. Mobile phones must be switched onto silent when during operation and the sending or receiving of calls is not allowed. (They may stay on only because they are often useful timing devices.)
9. Surplus equipment must be removed from the room and needed equipment must be set as far back from the treadmill as possible giving a free space around the horse.
10. Doors must be kept shut during operation
11. Fans must always be running when there is a horse in the room.

Drugs, chemicals or biological agents

None required.

Procedure

Prior to procedures:

- Book treadmill through vet clinical centre staff
- Ensure that monthly belt lubrication has been done by checking the maintenance log
- Turn the key in the control unit and turn on power switch
 - located at the rear left side of the control unit
- Set the desired incline using the black lever at the control panel.
 - The SEL button will toggle the indicator between % incline or degrees incline.

Procedure:

- Ensure that at least two people are in attendance
- Ensure that everybody present has been inducted to the facility and understands safety requirements for people and for subjects
- Record the session in the log book including date, temperature, humidity, regimen used, subject name/identity and ACEC protocol number
- Switch fans ON
- Open double doors at east end of building (entry to treadmill) and lead horse (already instrumented as necessary) into the building calmly.

- Place protective rubber hoof covers around each of the horse's 4 hooves
- Walk the horse onto the tread belt while the handler walks up the side platform (unless horse will not load)
- Gently close tail gate by pushing it into the lock position, confirmed by a click.
- Ensure the horse is settled and that all present are standing in safe zones before starting the treadmill.
- Adjust the speed of the treadmill, rising slowly between 0 and the first speed step, and then slowly between further speed steps, using the large metal lever. Use the selection button for display of speed as m/s or km/hr (or trip km). Take 10 seconds for each 2 m/s increase in speed.
 - When desired speed is obtained, the lever can be locked in place by screwing the knob on the lever down.
 - Use a timer to count the time for each setting
 - Always warm horses up to top speeds
 - Always warm horses down from top speeds.
- When changing speeds down, do so slowly also.
- When complete the lever can be pulled all the way back to the stop position.
- Use the emergency stop button **only but invariably** if the horse falls down or if a person become caught in moving parts, or similar emergencies.
- When over, open the tailgate bar and back horse out onto rubber mat behind treadmill
 - If horse cannot back out, then the horse may be led straight out only if no equipment is in the room. Lead to rubber mat.
- Take off rubber hoof covers
- Open double doors and lead horse back outside
- Turn treadmill off at control panel
- Turn fans off
- Clean room, turn lights off and lock on leaving.

Impact on wellbeing of animals

In an unnatural environment to work like a treadmill, horses must be gently habituated to the process. It would never be appropriate to use a horse on the treadmill with any students present, or for any study, without first habituating the horse. This is necessary for safety for all concerned and first exposure is very gentle exercise.

Because horses running at speed is a normal function, the only effect on their wellbeing might be if insufficient cooling were used or if (as in any case elsewhere) they were forced to work too hard, especially if to overheating. Horses normally run and this is entirely physiological if breeze cooling is supplied.

However, suitable warm-up and warm-down protocols must be supplied to maintain normal physiology and avoid damage as with any exercise regimen in any species.

Animal Care

Normal quiet calm and confident handling is required with horses. The only less usual problem that may occur is that the horse must usually be backed off the treadmill. This is not a problem if done quietly and calmly after horse has "warmed down" sufficiently. As mentioned above, habituation is absolutely necessary before full physiological outputs are demanded from a subject on the treadmill.

After the exercise is over, the horse must be walked for a sufficient time (usually 20 minutes) and then hosed down and squeegeed down before being taken back to their home paddock. During this time horses will be observed for any signs of discomfort (such as may occur with heavy

exercise) and any such case will be brought to the immediate attention of a veterinary practitioner. Horses should also be observed the following day for any similar signs.

Pain Relief

No pain is expected.

Reuse and repeated use

As this is exercise, consideration must be given to the horses' improving their fitness as they work on the treadmill. Thus, habituation is required before hand, but the horses must be sufficiently run to have sufficient fitness for the purpose required.

Within these considerations, use of horses on the treadmill for research or teaching may be re-used for this purpose without expectation of harm, naturally in accordance with ACEC protocols. Where clinical use is required, this is at the discretion of the clinician and not governed by ACEC anyway, but is nonetheless expected only to be problematic for the horse as the clinician would determine on a case by case basis.

Qualification, experience or training necessary to perform procedure

The operator/instructor overseeing operation must be a staff member trained by CSU in the operation of the treadmill and fully familiar with the safety requirements for subject and humans. During the operation, at least one registered veterinary practitioner should be present. This person may act as the handler or the operator.

It is also necessary to have at least one handler present who has experience in handling horses; this handler may be a vet, vet nurse or technician, or veterinary student.

References and relevant links

No references are provided.