A safety mindset around horses.

Dr Lesley A Hawson

BSc., BVSc,

PhD Equitation Science

Why do we need a safety mindset around horses?
I published a review back in 2011 that showed the biggest predictor for having an equine related incident was and remains time spent with horses. Basically people get hurt around horses for every 350 hours we spend with them **(20x more than motorcyclists!)**. And often hurt badly.

This is a picture of my right hand… note the bend on the middle finger. I dislocated the finger tip falling off my horse a couple of years ago. Like most equine related injuries, it is easy to see all the mistakes I made leading up to the injury but at the time I was caught up in the "get the job" done moment and here I am. I got off lightly. Despite doing all the rehab the finger is now permanently bent and developing arthritis. Its hard to type when you have a finger like this and painful to do a lot of the fine motor control movements that vets need! It is just one of many injuries I carry from over 50 years of equine related incidents (ERIs) I am not alone. The statistics from around the world are very consistent. One in five people who are involved with horses will have at least one serious injury in a equine related incident.

Medico researchers have been calling for greater safety awareness around horses and horse riding for a very long time. Did you know that 25% of all sports related deaths of children are horse related? We have seen a reduction in head injuries, thank goodness, as more people are wearing helmets when riding but the equine related incidents continue to cause untold pain, suffering and downtime. The average time away from riding after a serious injury is TWO MONTHS! Even with racing data excluded horse related incidents continue to account for more human deaths than any other domestic animal or sporting activity.

That is why I am here. The most recent research shows that people who had some form of safety training (ANY!) not only did more to control risk around horses but also influenced others around them to do the same. I have drawn together the latest information in equitation science and safety prevention to help you be safer around your horse.

Disclaimers:

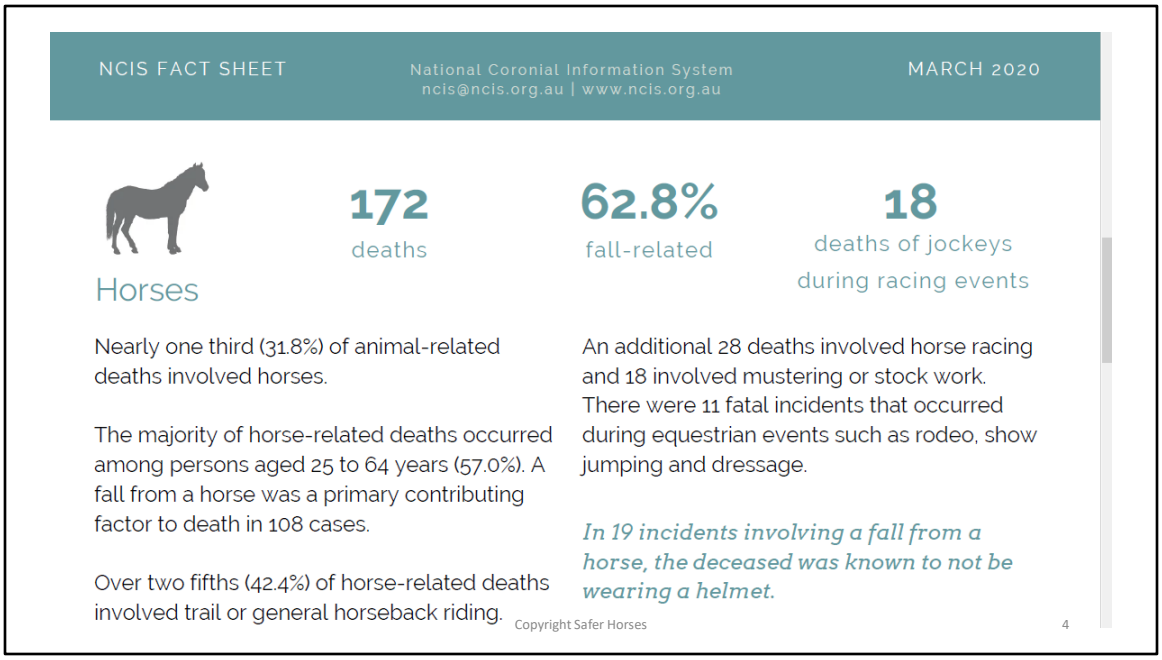
- The information contained in this presentation is for informational purposes only. No material in this presentation is intended to be a substitute for professional advice.
- The author and Project Hope Horse Welfare Victoria do not accept any liability for any injury, loss or damage caused by the use of information contained here or in any other information provided on this website.
- Always seek advice from you veterinarian or other professional horse service provider before implementing any new training process

Please watch this video:
https://www.youtube.com/watch?v=IjrWOZby8s8&ab_channel=Movieclips

In this clip Jason Bourne not only shows amazing situational awareness skills but he also gives us some insight in how horses might interact with the world. They are equipped with a set of skills and abilities that get triggered when the situation requires them. There is no why or how, it just is.

Like the amnesic Bourne character, horses have excellent recognition memories which leads to immediate reactions to situations. This allows for immediate reactions There is no thinking involved. This is why things can happen with horses fast. While we mere humans might still be thinking about how we should respond horses (and Jason Bourne) have already reacted and escaped.

As you will learn in this presentation relying on a hyperactive 500kg to keep you safe is not sensible. We start with a reality check.



This schematic for the years 2001 – 2017 from the Australian National Coronial Information System. It shows that horses kill more humans in Australia than any other animal. They leave sharks and snakes behind!

Note that there were only a small percentage of deaths in competition… I take great heart from that. In situations that do have health and safety management parameters applied there are fewer fatalities even though the activities are inherently risky. That means we can do so much to prevent horses related injury and death by changing our management strategies. The challenge is that we all have to:

A. Recognise horses CAN hurt we humans very badly
B. Recognise it is only we humans that are capable of making the process and behavioural changes to prevent us and our horses getting hurt. **You cannot rely on the horse, any horse, to do this!**

32% of all animal related deaths between 2001 and 2017 involved horses.

2/5ths (72) of these deaths related to trail or general horseback riding.

Who gets injured?

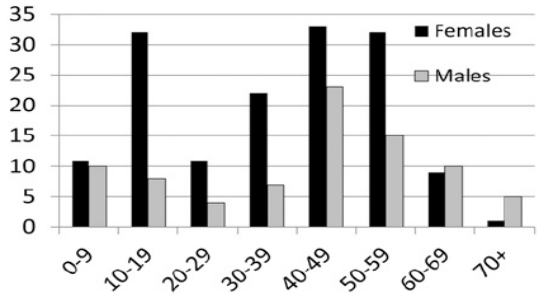


FIG. 1. Age and gender of injured equestrians (x axis number of patients, y axis age in years).

Guyton, K., Houchen-Wise, E., Peck, E. and Mayberry, J., 2013. Equestrian injury is costly, disabling, and frequently preventable: the imperative for improved safety awareness. *The American Surgeon*, *79*(1), pp.76-83.

Horse-related injuries is well researched around the developed world. The research consistently identifies young inexperienced (amateur) female riders under or around 20 years of age as a major at-risk-group for accidents and fatalities.

This finding follows that of risk of injury at work. Riders/horse handlers are very likely to be seriously injured in the first 100 hours of exposure to horses. This is the same time frame that naïve workers in other industries are very likely to be seriously injured.

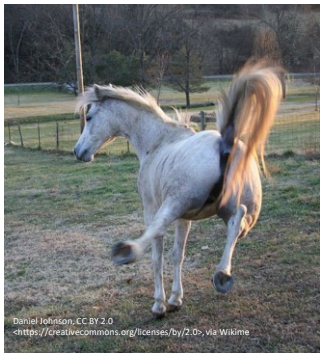
After this 100 hours danger period things get even more interesting. Risk around horses seems to be **CUMULATIVE.** The more exposure, the greater the chance of a serious injury. What is going on here?

Note: Women are overrepresented in all age groups until after 60. This probably reflects the number of women involved in horses rather than a bizarre gender bias for injury. That said the data continually shows that men, if hurt in an ERI are more likely to be badly injured.

How do we get injured?

Around 80% of ERI are from falling off horses

Around 20% of ERI are from being kicked/trampled by horses



See here for information on falling: https://howtheyplay.com/animal-sports/how-to-fall-of-a-horse

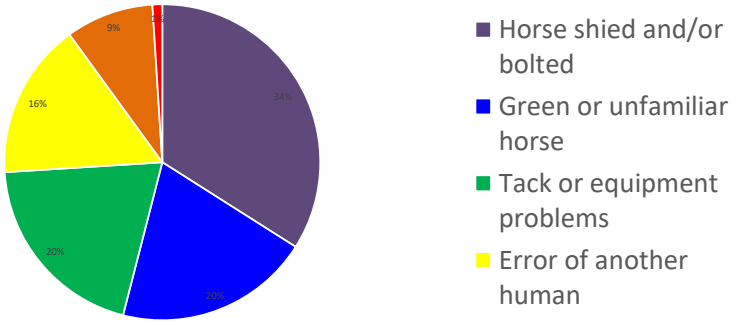
One of the most disturbing findings of Chapman et al's 2020 study is that people around horses are MORE LIKELY to take safety short cuts when they have more experience and/or they work with horses for a living. Why is this? Turns out it is the same reason experienced workers the world over are more at risk of suffering serious injury – it is how the human brain tends to work. The human brain is super efficient. It must be. Thinking takes energy. So, our brains are all primed to look for mental short cuts (heuristics) – we will use so-called educated guesses or intuition to make what can turn out to be inaccurate, biased safety decisions…e.g. putting on a helmet when spending more time on training or selecting a more suitable horse for the task would be a safer option.

The next step is WHY we get into trouble. Each time we take a short cut and nothing bad happens we tend to attribute the success of the venture on OUR ability to manage the situation when, quite often, it is just circumstances that got us through. It was nothing to do with our extraordinary horse skills (much as we would like to think it was).

As Marlin et al found in their insightful paper "Do equestrians have insight into their equine-related knowledge (or lack of knowledge)?" we horse people "had an inflated confidence in their equine-related knowledge indicating that equine-related individuals have only moderate insight into their abilities,".

We tend to overestimate our ability to manage horses safely.

Cause of injury (ridden)



60% of the incidents in this research were found to be PREVENTABLE

Camargo, F., Gombeski Jr, W.R., Barger, P., Jehlik, C., Wiemers, H., Mead, J. and Lawyer, A., 2018. Horse-related injuries: Causes, preventability, and where educational efforts should be focused. *Cogent Food & Agriculture*, *4*(1), p.1432168.

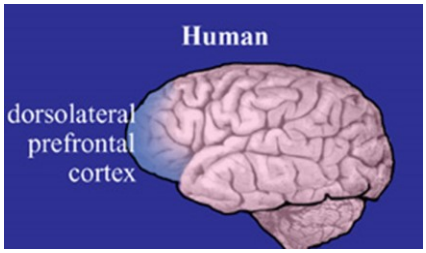
Majority of reported injuries were explained by 5 factors.

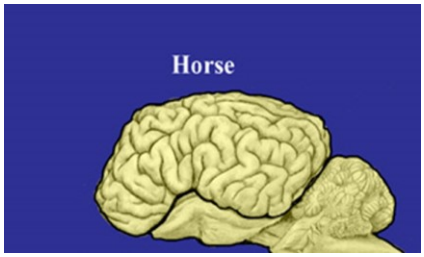
1. Horse shied and/or bolted
2. Green or unfamiliar horse
3. Tack or equipment problems/failure
4. Error of another human*
5. Error involving another horse

These researchers found that at least 60% of the incidents reported were PREVENTABLE.

Horses don't have the control we do….

- The horse's emotional stimulus centre (amygdala)is larger than any other domesticated animal
- The amygdala generates emotional behaviour and permanently stores fear responses
- In humans the frontal lobes of the brain spend a lot of time inhibiting the amygdala
- Horses do not have this much control





Horses are emotionally labile – they can flip from calm to complete panic in seconds mostly due to the enormous amygdala which directs what emotion in the mammalian brain. Horses heart rates will jump to 130 bpm just on the bang of a feed bin. This is no doubt linked to the FAST and FAR approach to escaping predation – higher heart rate means more blood available to the muscles needed to get fast and far.

We humans have much the same arrangement BUT with the additional extra control system associated with our frontal lobes…. which become more active as we mature. Horses are more like 500kg toddlers. Do NOT rely on 500 kg toddlers to "do the right thing". That is both unfair and unsafe.

Situational awareness

Korean War – U.S. Airforce

The process of not ONLY knowing

- **where the possible threat is**
- **but also predicting what its next move will be.**
  - Gathering information
  - Analyzing it
  - Making projections based on that analysis and THEN making decisions based on those projections.
  - **OODA Loop: observe – orient – decide –act (John Boyd)**

So if we accept that:

A. Horses can hurt humans
B. Humans are the only one who can manage interactions between humans and horses safely

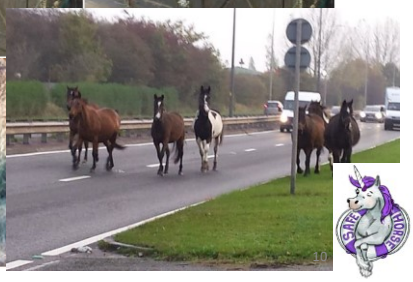
Then we have to find a way to make manage horse/human interactions in a safer ways.
Hausberger et al. reported that observational skills and attentional skills were pivotal in preventing accidents specific to humans and horses.

And that is why I am going to talk to you about situational awareness.

ORIENT is the most important skill around horses.

OBSERVE includes listening, smelling, feeling

- What are the elements of the environment that you need to take into account?
  - SAFE escape routes (you and the horses)
  - Ground surfaces
  - Fencing
  - Weather
  - Visibility
  - Noise
  - Obstacles/vehicles
  - Equipment
  - Proximity to roads
  - Vulnerable people



Use all your senses. The horse is using all his.

ORIENT

What is going on here?

- Stay calmly aware
- Assess the situation:
  - Put yourself in a position for optimal observation.
- **Establish what is at BASELINE for the circumstances**

Humans physiologically CANNOT pay attention to everything at once because our brains can only handle so much information so we can use some heuristics to help us. **What is "situation normal"(BASELINE)?**

Look for “the unicorn”.

- Every situation, person, horse has a baseline
- A baseline is what’s “normal” in a given situation
- We establish a base line so we can spot anomalies
  - Anomalies are UNICORNS
  - They should not be there
  - *They are things that either do not happen and should, or that do happen and shouldn’t*
- UNICORNS tells us where to focus our attention BECAUSE UNICORNS ARE DANGEROUS

Is the horse behaving in a way that I would expect in this situation?
What makes that horse, person, thing, stand out?

Anomalies: horse lying down, not getting up with herd mates, limping, horses all looking over at the next paddock. Trail bikes being ridden in the hills behind, Anomalies are associated with more risk.

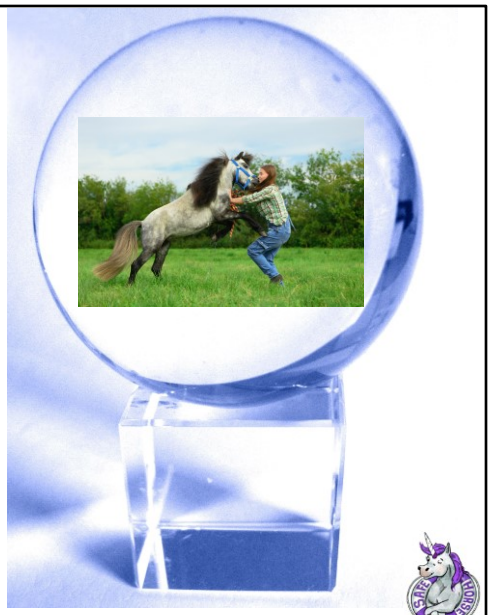
Play the unicorn game

- How many horses?
- What are they doing?
- What size, sex, arousal level?
- Where are the gates?
- Where are the corners?
- Is the horse displaying baseline behaviour *for that horse and that situation*?
- What are the fences safe and secure?
- Are there any obstacles (trees,buildings, floats, stumps, rubbish ?
- Are there any human factors (kids, tractors, fireworks, ridden horses etc)?
- What does not look, feel, sound, smell right?
- Where are the UNICORNS?
- What are YOU going to do about them?

UNICORNS are anything that shouldn't be there or anything off baseline. E.g. horses behaving differently, holes in the training, broken fences, equipment, different people,

Predict what could happen and then CHANGE YOUR behaviour

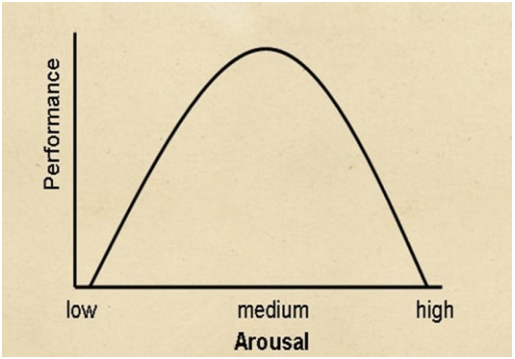
- ASSESS: What is happening?
- COMPREHEND: How do the unicorns impact on my actions?
- MODIFY: How can I modify my goals for the interaction with this horse (these horses) today? (Plan B, C, abort)
- ACTION: Do it as safely as possible.
- **REPEAT**



I am asking you to engage in informed crystal ball gazing, educated guessing.. And to learn from your mistakes. The research suggest that adults have to actively do this for kids. The onus IS on the adult. Kids, like horses, don't quite have the neurological structures yet to be able to do this well

Arousal control is important for safe performance.

- The Inverted-U Hypothesis proposes that increases in stress that results in increased arousal typically are accompanied by increases in quality of performance…only up to a point, though.
- After you reach a certain threshold, you experience diminishing returns where rising stress actually results in deteriorating performance quality in certain tasks. There are sound physiological reasons for this to occur.



The same goes for the horse. As arousal increases too far performance and responsiveness drops off. A frightened horse is too aroused to respond to normal levels of cues from the humans around it.

Why you need to control your own arousal levels….

Condition	Arousal	Approx HR	Situation
White	At rest	Normal for activity level	• Secure in house or asleep
YELLOW	Relaxed but alert for anomalies	Normal for activity level	• Outside secure environment • Situation appears at baseline
ORANGE	Increased arousal, Anomaly identified, something isn't quite right	Elevated into higher performance zone HR increasing up to around 115 bpm	• Anomaly identified • Cognitive processing increasing • Motor skills primed.
RED	Optimal level for dealing with enacting plan to deal with danger.	HR now 115 - 145 bpm - optimal for physical action	• Enact action plan • complex practiced motor skills, visual reaction times and cognitive reaction times are at their peak.
GRAY	Fear and over arousal occurring. Perception is altered and best can do is escape situation.	HR now 145 - 175 bpm	• Mental and physical performance impaired • Tunnel vison and loss of depth perception. • Auditory exclusion. • Time will appear to slow down. • Gross motor skills like running and jumping still optimal.
BLACK	Thinking stops, may freeze or fight inappropriately.	HR > 175 BPM	• Loss of body function control • Blood shunted to vital organs • Deterioration of all motor skills and cognitive function. • Incapable of good decision making

https://www.artofmanliness.com/character/behavior/managing-stress-arousal-for-optimal-performance-a-guide-to-the-warrior-color-code/

Arousal – how awake you are – is important. Controlling your own arousal levels is learned and it takes practice. It is an important skill if you are going to be safer around horses.

ORANGE Goal is not to take action but to determine if anomaly is a threat to you or others and prepare to enact action plan

RED: Note fine motor skills like untying complex knots or undoing clips on blankets will be impaired.

GRAY: . Need time to recover – adrenalin fully running to point of OVERAROUSAL - you can still run but your thinking will be impaired. Your amygdala has hijacked your brain.

BLACK: (white with fear) you are either frozen or completely panicking. You need to get to safety so you can reduce your arousal level if possible.

Overaroused? If you have time and it is safe to do so you can use this simple breathing exercise to drop back to where you can think.

Breathe:

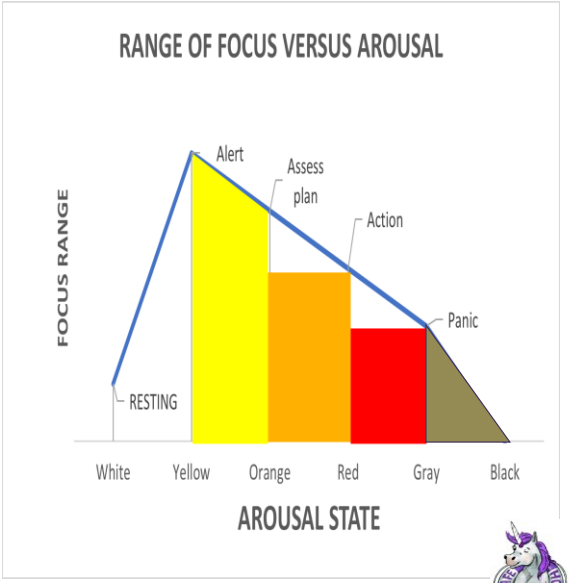
In for 4 seconds
Hold for 4 seconds
Breathe out for 4 seconds

Repeat until you are back into a more functional zone of arousal.

Arousal and focus

- Is your arousal matching the stage of the process?
- **Horses own PANIC**
- **So you DON'T.**

- **IT IS NEVER YOUR TURN TO PANIC**



Focus is another important aspect of safety awareness. Horses are natural panickers– there is a neurological reason for this. They get to go code black – not you.

You have the responsibility to stay in the right state of arousal and focus throughout the interaction with the horse because horses just don't have the capacity to do so. If you are relying on the horse to control its emotions and stay task focussed then you need to walk away.

As your arousal goes up, you become more focussed on the immediate perceived threat. This means you must consciously be aware that you need to make a thorough assessment of the situation before you plan and then implement an action. Remember once you have executed your action then you need to drop back into alert in order to reassess the situation.

Experience can lead to excessive goal orientation that makes the focus too targeted for example, jockeys over 35 years of age increased rates of falling off horses if ridden earlier in meeting (Hitches et al) fatigue or attentional issues

The awareness or focus of an individual can drift and, when this happens, more

automatic responses
can emerge with less awareness for recalibrating risk

Summary

Humans

- Stay at the appropriate level of arousal for the activity (**Don't panic – only horses get to panic)**
- Practice situational awareness
- Watch the ears and body language for unicorns
- When in doubt, abort mission.
- Wear head protection (even on the ground) and solid shoes

Horses

- Remember what safe is for a horse
  - Friends
  - Room to move far and fast
  - Nothing unpredictable going on
  - No predator like movement present
- Horses react, *they have to learn how to respond*
- Higher arousal = less learned behaviour
- They are stronger, faster and have more efficient reflexes then we do
- They have no brakes on their amygd

Remember: if you are relying on the horse to behave "safely" you are NOT safe.

Take home message

- Look up from your smartphone, don't zone out, open your eyes, ears, and nose, and calmly scan your horse environment to take in what's going on.
- ENGAGE all your senses – go to YOUR inner horse. What is happening in horse world?
- You don't have eyeballs in the back of your head, so you can't see what's going on behind you but the horse does. "Check your six".
- Continually re-establish your baseline and spot the **UNICORNS**
- **You are not paranoid, not fearful, just mindful**
- **Horsy Jason Bourne mindful.**

drlesleyhawson@saferhorses.com.au