Decent sleep vital to a healthy horse, research shows

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We all do better after a decent sleep, and horses are no exception.

While horses don't follow the same sleeping routines of their human counterparts, they still require the right quantity of good quality sleep in order to thrive.

However, sleep is rarely considered as part of a horse's management plan.

Its importance should not be underestimated. While there is still a lot to be learned about the complex function of sleep, it is performed by almost every species and is vital for performance and well-being.

Research has shown that poor management or physical problems can lead to horses becoming sleep-deprived and at risk of serious injury.

A study, reported to delegates at last year's International Society for Equitation Science conference in Rome, found that horses that don't lie down enough suffer from sleep deprivation that can lead to collapses.

Physiologically, during sleep, the individual enters a state of temporary unconsciousness and their muscles become inactive and relaxed. The animal will seek a sheltered environment, adopt a certain posture and stop responding to external stimuli.

The three stages of sleep

There are three stages of physiological sleep and horses can achieve stages one (light sleep) and two (slow-wave or deep sleep) while standing up.

However, the third stage – rapid eye movement (REM) sleep – occurs only while the horse is lying down due to the complete muscle relaxation required. Previous research has shown horses can achieve REM sleep in both sternal (with their head supported on the floor) and when lying down completely.

Horses in stables have been shown to have a regular total sleep time of three and a half hours a night.

The duration of the different sleep stages is relatively constant. REM sleep totals about 30 minutes a night (15% of the total sleep time) and slow-wave sleep takes up the most time, at 65%. The rest of the total sleep time is spent in light sleep.

If horses don't lie down for any reason, REM sleep deficiency (recumbent sleep deprivation) occurs. As a result, horses may fall into REM-sleep while standing, which consequently causes them to collapse due to the associated muscle relaxation. Such collapses can cause severe injuries.

Christine Fuchs and her team of scientists at the Ludwig-Maximilian-University in Munich, Germany set out to learn more about sleep deprivation in horses, with her findings presented at the conference.

To find subjects for the study, the researchers recruited owners from among readers of a German equestrian magazine whose horses had shown signs of collapsing. A detailed online questionnaire was completed by 177 respondents.

The research team visited 36 horses with collapses in their home environment and seven healthy, control-group horses.

Each horse underwent a clinical examination, was observed for 24 hours, and their management, stabling conditions and medical histories were documented.

Each horse was also fitted with a mobile sleep laboratory to take polysomnographic readings for the 24-hour period. Polysomnography is a diagnostic tool that measures physiological functions during sleep. It simultaneously measures several body functions such as brain activity, eye movements, and muscle tone, with which the depth and quality of sleep can be determined.

The results of the study provided important information.

The main causes of the lack of recumbent sleep were issues with the horse's management or pain from a physical problem.

The online questionnaire showed a significant correlation between a change in the horse's management or environment and their first collapses.

A third of the horses visited did not have enough space, according to the German guidelines for box stall dimensions.

In half of the horses visited, the onset of collapses was directly related to an event – a management change, for example, a change of stable or a physical condition, such as orthopaedic problems.

More than 90% of the horses studied showed injuries after collapsing. These were mostly seen in the knees (72.4%) and the fetlocks (68.4%). Furthermore, 31% of the horses had head injuries and 18.4% had injuries to the hocks.

The examined horses collapsed a minimum of four and a maximum of 199 times during the 24-hour observation period. The individual number of collapses depended significantly on how much that horse had laid down.

Horses who did lie down to sleep showed significantly fewer collapses.

The horses who collapsed had an altered and a very restless sleep profile – they spent notably less time in REM-sleep compared to those who did not collapse. Their REM sleep phases were shorter, they occurred while they were standing and in more than 86% of cases were during, or immediately before the collapse.

Stereotypic behaviours also present

Some of the horses in the study were not only suffering from physical issues but also from psychological problems. Stereotypic behaviours such as weaving, cribbing and box walking were present in a quarter of the horses covered in the questionnaire.

Of the examined horses, eight showed altered behaviour after their collapses had begun – some became listless and others extremely anxious.

Two years after the assessments were made, seven horses from the study had been euthanized due to injuries or behavioural problems supposedly caused by sleep deprivation.

Given the importance of sleep, it is clear that REM-sleep deprivation leads to behavioural changes and related collapses can cause severe injuries. Treatment for the condition should involve identifying the reason for the horse's reluctance to lie down, treating any underlying medical conditions and optimising their environment and management.

"We were amazed and shocked at how many horses seemed to suffer from these kind of collapses," Fuchs said.

"Initially, we thought we might find 10-20 horses. To date, approximately 300 horse owners have contacted us and sought our advice.

"It is amazing how easy it is to help some horses and how frustrating and difficult it can be to help others. The challenge is that every horse suffering from recumbent sleep deprivation is an individual and has its individual 'reasons' why it does not lie down.

"Horse owners need to be aware that the sleeping behaviour of horses is an important thing to consider. It is important to recognize the symptoms as soon as possible but prevention is essential.

"It was conspicuous that most horses seemed to have a problem after a change of stable. This is one thing we are looking at in a future study, especially moving from a stable to an open communal barn.

“Open barns are obviously the most appropriate housing type for horses, but unfortunately, many of them have bad management and horses that were living in a stable for many years might not be able to cope with it.”

In more recent work at Brunel University in England, researcher Juan de Benedetti explored the lying patterns of horses. De Benedetti found that 20 percent of horses were lying down only for less than one hour in a 24-hour period. Nine percent of horses lay for less than 30 minutes, significantly increasing the risk of collapse and injury.

Most of the 43 horses in the study were leisure horses, with a few performance horses. They spent most of their time in a stable and were turned out in a field or paddock at least for a few hours every day.

De Benedetti, whose findings were reported in Farmweek, found that the horses lay down the most between midnight and 3am, with an average of 35 minutes of recumbency during this time. Between 9pm and midnight, they lay down for an average of 25 minutes.