

## **Summary of Stress in Horses – Summer 2025**

Stress in horses is a complex physiological and behavioural response to stimuli perceived as threatening or disruptive, whether they come from the natural environment, interactions with humans, or conditions related to the use of horses, such as riding or driving. The study of equine stress is of paramount importance, both for understanding the underlying biological mechanisms and for improving living conditions, working conditions and animal welfare.

In the wild, horses live in a natural environment where they are subject to various stressors, including the presence of predators, climatic fluctuations, the search for food, and social interactions within the herd. These situations trigger a neuroendocrine cascade, notably through the release of adrenaline and corticosterone, which facilitate a "fight or flight" alert response. Free horses thus develop behavioural adaptation mechanisms, such as increased vigilance, rapid flight, or appeasement signals to maintain social cohesion and avoid aggressive escalation. This dynamic promotes a sustainable balance between the acute stress necessary for survival and the state of rest that allows recovery.

Stress that arises in the context of riding or driving is different in nature. It results from physical and mental demands, often repetitive, and can be amplified by inappropriate practices. The constraint of carrying a rider imposes a load on the spine, the distribution and intensity of which directly influence the horse's perception of comfort and responsiveness. When working in harness, the horse must not only bear the weight of the harness and the pull of the carriage or cart, but also respond to more coordinated motor demands, involving complex postural and neurological adaptation.

The influence of the rider is a determining factor in triggering and modulating stress in horses. The rider's muscle tone, posture, aids (legs, hands, body weight) and emotional state interact with the horse's sensitivity and receptivity. An experienced, calm and skilled rider will be able to minimise contradictory signals and tensions, thereby helping to reduce equine anxiety. Conversely, a stressed or clumsy rider will induce defensive reactions, such as flight, muscle stiffness or resistance to aids, leading to a significant increase in stress. The socio-emotional interactions between horse and rider, particularly psychological mirroring effects, further amplify this dynamic.

Objective assessment of stress levels in horses requires the use of rigorous methodological tools. Among these, ethograms are a tool of choice. These are detailed, standardised observation grids that list typical behaviours of the species in different situations. Stress behaviours can include manifestations such as excessive yawning, averted gaze, laid-back ears, repetitive stereotypical movements (such as cribbing), tremors, sweating, or rapid breathing. Quantifying

these behavioural variables allows correlations to be established with physiological markers (heart rate, cortisol levels), providing a multidimensional understanding of equine stress.

In addition, complementary approaches combining video analysis, heart rate monitoring, and saliva cortisol level measurement greatly enhance the reliability of diagnoses. These hybrid data facilitate the design of stress management protocols tailored to each horse, taking into account its temperament, experience, and context of use. For example, a horse that is regularly subjected to travel for competition or to new environments will benefit from a programme of gradual desensitisation combined with relaxation techniques.

The ethological framework also encourages consideration of the importance of social behaviour and intra-species interactions for stress regulation. Ridden or harnessed horses confined to stalls or isolated can develop pathological behaviours linked to chronic stress due to the absence of regular social contact and lack of environmental stimulation. These deficits can result in colic, gastric ulcers or behavioural disorders, highlighting the close interrelationship between emotional well-being and physical health.

In short, stress in horses is a multifactorial phenomenon influenced by their natural state, their conditions of use and the quality of human interactions. Mastering its analysis, using tools such as ethograms and the measurement of physiological parameters, is essential for designing strategies to improve equine well-being. Adapting working methods, promoting in-depth knowledge of channelled behaviour, and fostering enriched environments are essential levers for reducing stress and optimising the performance and health of horses, regardless of their lifestyle.

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