

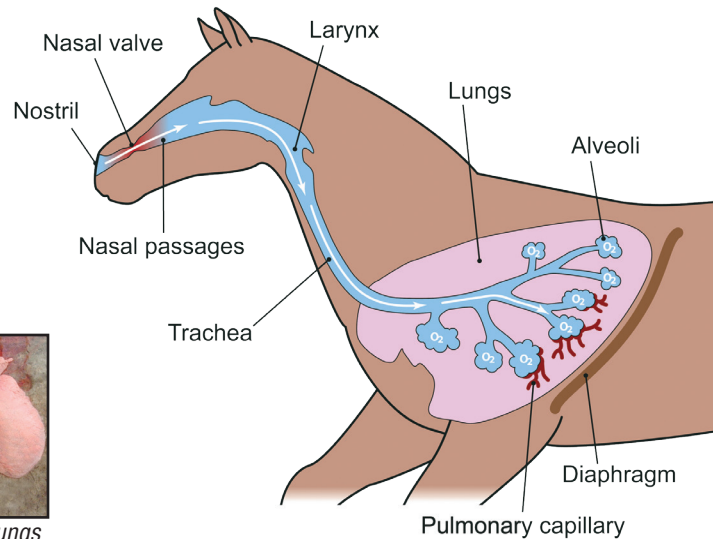
Breathing Easy: A Key to Equine Performance and Health.

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The respiratory system and its limitations can be a major cause of poor performance or premature retirement from competition. In beginning to understand this, it is important to recall that horses can only breathe through their nose. This is the only avenue through which oxygen can reach the lungs in order to be transferred into the circulating blood for use by working muscles. In addition, the portion of the horse's nasal passage located approximately 1.5" above the top of the nostril is unsupported by bone or cartilage. This tissue collapses when the horse breathes in during exercise, reducing the diameter of the airway and consequently causing increased resistance to airflow. Over 50% of the resistance to breathing comes from the nasal passages during rest, and this percentage increases to 80% during exercise. In addition to this phenomenon that occurs in all horses, upper airway obstructions (i.e. roarers, gurglers, etc.) result in incremental increases in the resistance to breathing and the work of breathing, and decreased airflow to the lungs.

In the lungs, the tissue separating the airways from the circulating blood, called the Blood-Gas Barrier is extremely thin, being 1/100th the thickness of a human hair. While oxygen and carbon dioxide transfer across this structure is highly efficient, it has the disadvantage of being fragile and vulnerable to rupture when exposed to the high blood pressures and enormous suction-like airway pressures generated by the horse during exercise. When the blood vessels deep within the lung rupture, the airways fill with blood, preventing effective oxygen transfer. Consequently, the horse's performance is compromised as a result of reduced oxygen availability to the locomotory muscles. Scientific studies show that all exercising horses experience some degree of exercise induced pulmonary hemorrhage (EIPH). However, less than 1 % of horses bleed from the nostrils. Signs related to EIPH include poor performance, coughing, extended recovery period, and frequent swallowing. The damage from repeated occurrences of EIPH is cumulative, and potentially shorten a horse's competitive career.

At the gallop, breathing and stride are coupled in a 1:1 ratio with the horse taking a single breath per stride. The number of strides taken per minute ranges from 120-140 with increases in speed coming from an increase in stride length and not stride frequency. Furthermore, as the horse lengthens its stride it also takes deeper and longer breaths. Thus, easier breathing helps maintain the longest stride. A horse struggling to move air in and out of the lungs may have to shorten its stride and divert oxygen away from the locomotory muscles and direct it to the muscles of breathing in order to bring an adequate



Healthy Lungs



EIPH Lungs

The nasal passages are the narrowest part of the equine upper respiratory system.

amount of air into the lungs, resulting in exercise intolerance or diminished performance. Anything that increases the difficulty of breathing will be detrimental to performance, and cause anxiousness and a loss concentration from the horse.

FLAIR Nasal Strips are proven to make breathing easier. The strips are drug-free and adhere to a horse's nose to provide a spring-like force that gently supports the nasal passages and reduces soft tissue collapse during exercise. There are no negative side effects to horses wearing the Strips. The Strips are scientifically proven to maintain nasal passage diameter, thus reducing airway resistance, EIPH, and fatigue. FLAIR Strips have also been proven to reduce the energy required for breathing which optimizes performance by shunting this saved energy to the locomotory muscles. Post-exercise recovery is shortened by allowing horses to ventilate and cool themselves more efficiently. The benefits of easier breathing are important for horses competing at all levels of fitness and skill, as exercise is often a greater challenge for individuals when they are less fit. Many riders report that horses wearing FLAIR Strips are more relaxed and focused. The FLAIR® Strip ultimately serves to improve the overall health of the horse.

For more information on FLAIR Nasal Strips or for where to purchase go to www.flairstrips.com or call 1-888-68-FLAIR.

