



# Horse Breather

Equine Breathing ezine January 2010 issue 47



[www.equinebreathing.com](http://www.equinebreathing.com)

## The benefits of better breathing – for you Part 1

As we saw in issues 42 and 43 it's easy to start improving your own breathing. But what benefits can you expect if you do so? Here are some of the health and performance benefits that you stand to gain.

Poor breathing, ie over breathing has direct physiological consequences producing a wide range of physical and mental symptoms and loss of performance. These are largely due to the loss of carbon dioxide that results from over breathing. Contrary to the popular myth that it is a harmful waste product, carbon dioxide is one of the body's main regulators and is required in numerous fundamental physiological functions.

### **Stress reduction**

Reducing your breathing makes you calmer. This is because over breathing is tied to adrenaline production. The more you over breath the more adrenaline you produce and the more adrenaline you produce the more it works to increase the amount of air breathed.

Adrenaline's role in evolutionary terms is to prepare the body for flight or fight so it also increases heart rate and produces feelings of anxiety and restlessness and diverts resources to the muscles and away from the organs. Adrenaline production evolved to be only a short burst – because either way, escape (or not) from a predator is likely to be a short activity.

The problem is that today many people, like horses tend to be in a continual 'adrenalised' state in which they are stressed, irritable, anxious and tense. Reducing the breathing reduces adrenaline production which allows you feel calmer.

Being a horse person you will know that being calm is fundamental in gaining an animal's trust so the calmer you are the better relationship you have with your horse.

### **Reduced muscle tension**

When you ride and handle horses the less tense your muscles are the better. We would like to ride with fluidity and grace, using balance (fine micro alterations in muscles) rather than gripping like grim death with stiff neck, shoulders and hands.

Over breathing, by lowering carbon dioxide levels, results in changes in calcium ion concentrations which make muscles contract (tense) and fatigue, even resulting in

#### Contents

Stress Reduction

Reduced muscle tension

Better brain functioning

More energy, less fatigue

Improved sleep



Do you feel like this sometimes?

pain. Feeling stiff and tense does not help the rider. This situation is exacerbated if you get nervous and produce adrenaline !

Fortunately, increasing carbon dioxide by reducing breathing to normal levels allows muscles to relax and function effectively.

## Better brain functioning

Pilots are trained in high altitude chambers to understand the damaging effect of lack of oxygen in the brain on cognitive (thinking/reasoning), perceptual and motor skill (purposeful movements) capability. Focus, decision-making, perceptual motor skills, information processing, problem solving, task completion, memory, thinking, and communication effectiveness are compromised and worse yet, the subject does not even realise that their performance is defective!

Reduced carbon dioxide levels resulting from over breathing cause the smooth muscles around blood vessels to contract thereby reducing circulation and therefore oxygen and glucose availability to the brain. Thus over breathing causes the same deficits as high altitude lack of oxygen. These cognitive and motor skill functions are required when riding and to a high degree in competition riding so there are significant benefits to be had by eliminating over breathing.

It's thought that lack of oxygen and glucose also trigger emotions such as apprehension, anxiety, anger, frustration, fear, panic, stress, vulnerability, and feelings of low self-esteem, which are not welcome to the rider / horse handler!

## More Energy, less fatigue

Carbon dioxide is required to enable cells to utilise oxygen. At low levels of carbon dioxide caused by over breathing, cells are unable to use oxygen to 'respire' (burn fuel) to produce energy and must use anaerobic respiratory reactions instead.

Anaerobic respiration only produces 5% of the energy that is produced from aerobic (using oxygen) respiration. That means that there is a significant shortfall in the available energy and also a tendency for weight gain and or increased blood sugar levels because the un-burnt fuel has to be stored instead.

Anaerobic respiration produces lactic acid rather than the beneficial water and carbon dioxide produced by aerobic respiration. Lactic acid makes the insides of the cells too acidic and must be neutralised. Alkaline bicarbonate acts as a buffer to do this and restore the acid alkaline balance.

However in the absence of sufficient carbon dioxide, the fluids outside the cells become too alkaline and this could quickly become fatal as the body is intolerant of even quite small changes in pH. So to compensate, the kidneys get rid of alkaline bicarbonates to restore balance. This



Horse and rider reducing breathing and relaxing their muscles



Performance riding is a complex task requiring good cognitive, perceptual and motor skills

depletes the body's store of bicarbonates. When stores run out the lactic acid can no longer be neutralised and any further production of lactic acid would be fatal to the cells. The body is then totally exhausted and unable to do physical activity. The more a person over breathes, the more quickly they reach this point.

Nose breathing during activity helps reduce over breathing and enables the body to stay in aerobic respiration for longer (with higher energy production) which means that the buffer reserves last longer (more stamina).

## Improved sleep

Another problem arising when carbon dioxide levels fall in the fluid outside the cells making it too alkaline, is that nerve cells become hypersensitive and fire erratically. This makes it difficult for the brain to 'relax' and tune out. This, in addition to the feelings of apprehension, anxiety, anger, frustration, fear, panic, stress, vulnerability, and feelings of low self-esteem triggered by low oxygen; high adrenaline and tense muscles, means that over breathing makes it difficult to sleep well.

In cases of bad over breathing, carbon dioxide falls to such a low level that there is insufficient carbon dioxide leaving the blood in the lungs to trigger oxygen to enter the blood and gas exchange stops. This stopping of the breathing is called sleep apnoea and experienced as a disruptive and unpleasant jolt and gasp of air by the sleeper.

Again these defects can be reversed by reducing the breathing and allowing carbon dioxide levels to build up such that a good night of refreshing sleep is possible.

If you have experienced any of these benefits it would be great to hear from you.



Keeping the mouth shut all night helps reduce over breathing

For more on the physiology of breathing see Peter Litchfield's article [A brief overview of the Chemistry of Respiration](#) available on the **'How does it work?'** page

[clare@equinebreathing.com](mailto:clare@equinebreathing.com)