



Tips From A Trainer

Stamina

THE SECRET INGREDIENT

By Betsy McHugh

The athletic development of the horse is a complex and daunting task. To create an athlete that is physically, mentally and emotionally strong enough to compete at levels of excellence takes a lot of time and expertise. So let us begin this discussion with the facts.

Cardio-vascular fitness is at the root of all excellent performance. Ventilation, or the movement of air into and out of the lungs, consists of inhalation (inspiration) and exhalation (expiration) and is regulated by three factors. First, the amounts of oxygen and carbon dioxide dissolved in the blood at any one time are constantly being monitored by sensors in the body. If the level of carbon dioxide in particular gets too high, the message will be passed via the respiratory center in the brain to increase the ventilation of the lungs. This is done by breathing more deeply if the

horse is not already using all of its lung capacity, and by breathing more frequently. There is also a nervous control of ventilation. A nervous horse will respond to the slightest disturbance by an increase in heart and respiratory rate. The third form of control is a mechanical one by which the respiratory rate is linked to the way in which the horse is moving.

The muscles that expand the rib-cage also tend to rotate the front legs forward. At the walk and Paso gaits, this does not matter very much, because the legs on opposite sides of the horse's body are moving alternately. At the canter and gallop, however, the two front legs are basically moving forward together. This synchronization, coupled with the need for maximum chest expansion at these gaits leads to the leg and chest movements becoming inextricable linked. At the canter and gallop, the stride rate equals the respiratory rate. This is referred to as locomotor-respiratory coupling and is considered to be mechanically advantageous,

as muscles do not have to work against each other. This process may explain why the horse is able to match ventilation with metabolic demand. Inhalation occurs when the forelimbs are not weight-bearing and exhalation occurs during the support phase of the fore-limbs, when the loading of the rib-cage as well as the forward movement of the abdominal organs helps to drive air from the lungs. Therefore, as a horse gallops faster, it breathes faster. As a horse becomes fatigued and stride frequency is reduced, the horse lifts its center of gravity further off the ground. This may occur to allow a lengthening of the inhalation phase in order to meet the oxygen demands.

It takes a horse about twenty strides to establish the correct synchronization between its gait and its breathing. The fact that breathing is not merely a passive flow of air into the lungs means that there is a price to be paid for getting the oxygen deep down into the lungs for an effective gaseous exchange to take place. The work carried out in doing this by the respiratory muscles while the horse is at rest, is only a small fraction of the resting energy turnover. When the horse is working hard, however, the energy cost of breathing is more 'expensive.' The volume of the air that a horse takes in at rest is about 100-150 liters per minute, requiring about 12-15 breaths. With exercise, there is an increase in both respiratory rate and ventilation per minute so that a working ventilation may reach 1,600 liters per minute involving 140 breaths.

The physical art of breathing can be said to have three stages: 1. Expansion of the thorax by the diaphragm, the intercostal muscles and other thoracic muscles. 2. The inspiration of atmospheric air

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ABOVE: Nice example of a true walk.

and its mixing with the gases which have remained in the lungs after the horse has breathed out. 3. The diffusion of oxygen into the blood and of carbon dioxide in the reverse direction. Anything that limits one or more of these processes affects respiratory efficiency adversely. Expansion of the thorax may be affected by injury or disease, by pain or by muscle weakness. The last point is probably rarely considered by horse owners and trainers, but it is self-evident that the powerful and rapid thoracic expansions necessary for hard work require strong and fit respiratory muscles. It is due to this fact that attention to the proper cardio-vascular conditioning is essential in the training of an equine competitor.

The mechanics involved in the respiratory function during the canter or gallop make these two gaits a valuable training tool. Even though we may not use these gaits while showing most of our show horses, the conditioning that can be achieved by utilizing the effects of said gaits is unmatched. As an added benefit, cantering on proper leads will also strengthen the horses' inside hind carrying leg and allow for learned coordination of the locomotion areas of the brain.

It takes twenty eight days to achieve BASE-LINE cardio-vascular fitness. This means that the body can identify and satisfy the energy (oxygen) requirements needed for low to mid-level athletic performance and sustain said activity for a period of twenty minutes. To achieve higher levels of performance, demand phases and recovery phases are integrated and made more intense. This is the foundation of making a willing equine athlete. The horse that has the foundation of cardio-vascular fitness will be better able to meet the requests and demands of the trainer. It is very

beneficial to the training process to develop fitness before vigorous training. Following is a helpful training schedule for ensuring that your horse is prepared for the demands that training for a show will bring.

WEEK ONE: Free Lunge
 5 min walking warm-up
 30 min combining canter/trot depending on horse's current abilities
 10 min walking warm-down

Keep in mind that your horse should begin every work session walking. If you cannot begin at a walk due to an over zealous athlete, simply hand walk. If you release the animal only to find they run excitedly, don't worry, this type of energy dissipates quickly. As soon as you can, begin directing the horse using a lunge whip pointed at the inside hip. Change direction approximately every five minutes. As your horse becomes more fit and you increase the length of work sessions along with intensity, you will want to change directions every 10 minutes. Your horse should always be on the correct lead when cantering. Some Pasos are very tight and uncoordinated and do not perform a normal canter. With time, fitness and a relaxation to the aides, your horse will learn to use himself properly.

Your job as the coach is to learn to read the signs of true fatigue and push the animal a little bit past that point. When the respiratory rate is elevated significantly, allow the horse to recover at an easy trot with the head and neck lowered. These alternating bursts and rests will strength the musculature involved

in ventilation and enable the horse to use this strength in Paso gaits. These alternating bursts, directed by you, will also allow blood to flow to the taxed systems to aide in recovery. As an added benefit, your horse is learning to obey your requests for a more intense athletic output.

WEEK TWO: Free Lunge
 30-40 min not including walking warm-up and cool down
 Begin changing direction every 10 minutes

WEEK THREE + : Free Lunge
 Minimum 40 min sessions not including walking warm-up and cool down

After a solid four weeks on this program, your horse is ready to pursue a very high level of conditioning. Do not let your horse change directions without being asked. Do not let your horse canter on the wrong lead. Do allow your horse to relax in all gaits. Tension will interfere with proper blood flow and cause unnecessary muscular discomfort.

Use these guidelines to manage your under-saddle work and always end in a relaxed walking session. If you have any questions, you may contact Betsy McHugh at betsymchgh@gmail.com or give her a call or drop a note in the mail.



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 Betsy McHugh is a Senior Certified PFHA, International Confepaso, "R" USEF, FOSH IJA Judge as well as a 30 year professional Paso Fino trainer. Betsy was the Professional Paso Fino Horse Association's Trainer of the Year in 2010.

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ABOVE: Correct lead in the canter (clockwise)



ABOVE: Correct lead in the canter (counter-clockwise)



ABOVE: Nice, relaxed trot