



FACT SHEET

Department of Animal Science, University of Connecticut

Effective Horse Management - Horse Health Series

Conditioning to Prevent Fatigue, Injury and/or Lameness in the Horse: Second of A Two Part Series on Conditioning

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If you're like any horseperson, warmer weather probably has you thinking more about your goals for riding, driving, showing, or trail riding this year. You've probably already set some goals to attain by fall and have begun to work toward them. In a previous fact sheet, we discussed aerobic conditioning and the effects of age, genetics and nutrition on conditioning. Hopefully you have already begun aerobic conditioning of your horse and adjusted your horse's diet if needed to help your horse enter the peak performance season fit and in the ideal body condition.

A helpful way to monitor your horse's level of fitness is a pre-ride check before each work period which includes resting heart and respiratory rates and a visual assessment. You can check the horse's resting heart rate (normally 30-40 bpm) by placing a finger on the transverse facial artery, located directly below and slightly behind the front corner of the horse's eye. You will feel it move around under the skin in the area of the horse's lower jaw. Count the pulses for 15 seconds and multiply by 4. Elevated heart rate can signify that the horse is experiencing some level of discomfort due to illness, pain or undue stress. Also count the respirations per minute (normally 8-16 breaths per minute) by watching the rise and fall of the flanks. Visual observation of the horse at a walk and trot in a pasture or paddock or while being led can be useful to determine if there is any stiffness or lameness. When grooming one can determine if

there are any specific areas of soreness in the loin or back or unusual swellings or heat in the limbs.

One should begin exercise with a brief warm up period as a study has shown that exercise recovery occurred more quickly and lactate levels were lower in horses that were warmed up. A warm up should start with walking for about 5 minutes Then bending and other lateral movements and trotting should be introduced to limber the horse up, loosening muscles and tendons for harder work.

Once the horse is responding well to aerobic exercise, anaerobic exercise can be introduced – high intensity, short duration work. It is called anaerobic because the muscle cannot rely only on oxygen to burn fuel. This usually occurs when the horse’s heart rate is above 150 bpm, but can range from 120-180 bpm. This exercise must be targeted to the horse’s job and will push the horse above the anaerobic threshold. Above this threshold, horses are more subject to fatigue and energy depletion. The benefit of anaerobic work is that it provides a rapid supply of energy without the need for oxygen. Therefore, maximal exercise is limited by a buildup of lactic acid rather than depletion of glycogen stores. You will be able to tell that a horse is responding well to aerobic exercise when it is exercised to the aerobic threshold benchmark of 150 bpm, drops to about 100 bpm after 2 minutes and drops to about 60 bpm after 10 minutes.

After the initial period of aerobic conditioning, the following program may be used for most horses: 3 days of long, slow distance work, 2 days of higher intensity, shorter duration work, 2 days of active (free) exercise in a given week (see table below). You might want to alternate with each of the three types of exercise experienced in a three-day period. Interval training such as this helps the horse delay the onset of fatigue by gradually overloading the animal.

Table 1: Sample weekly exercise schedule.¹

Day	Activity
1	Long, slow distance
2	Higher intensity, short duration
3	Free exercise
4	Long, slow distance
5	Higher intensity, short duration
6	Free exercise
7	Long, slow distance

A heart monitor can also be used to monitor fitness during the work period. A heart rate monitor consists of a small transmitting device that attaches with wires to two small, flat sensing. The rider wears a digital “wristwatch” that receives the signals. The basic model detects and displays real-time heart rate, so the rider can monitor the horse’s work effort during a ride. An upgraded model doubles as a regular watch/stopwatch and records details of the workout and recovery for review after the ride. Heart rate monitors may be easily incorporated into the horse’s tack. One sensing electrode is positioned on the left side under the girth strap at the point of the elbow (the level of the heart) and the other on the left just below the withers where it can be seated under the arch of the saddle pommel. Velcro patches come with the monitor to help anchor the wires in the correct

positions. The lead wires, which are available in different lengths, are plugged into the transmitter unit contained within a pouch that can be attached to the saddle or a breast collar or plate. The electrodes must be firmly attached to the skin so that they do not slip during exercise. Application of a special conducting gel (or even a solution of water and table salt) improves the quality of the signal. Horse sweat is an excellent conductor, so the heart rate signal often will improve once the horse starts to sweat under the saddle/girth area. A long hair coat will decrease the quality of the signal. In winter, some clipping of the hair coat might be required to ensure proper function of the monitor. If heart rate values are very erratic while the horse is exercising at a fairly constant speed, suspect movement of the sensors and/or lack of conducting substance resulting in poor electrode contact. The benefit of a heart rate monitor is that you will be able to track the horse's heart rate during training sessions, do interval training like that listed above, see how well your horse traveled when you took it in a trailer, determine how a horse responded to new training methods or locations like swimming or exposure to altitude, and use a scientific approach to training.

A horseperson must be able to recognize fatigue in the horse. Use of recovery heart rate can be important. One should look at speed of recovery and how long the heart rate decreases in a specific time period as a measure of fatigue. If the horse's heart rate returns to normal at completion of exercise or 15 minutes after completion of exercise, the horse will maintain its fitness but will not increase its overall fitness. If recovery is achieved within 30 minutes after exercise, the horse has been challenged within an acceptable limit to increase fitness. If recovery to the normal heart rate takes longer than 30 minutes to achieve, the current exercise may be too demanding for the horse based on its current fitness level. Consider reducing the activity/intensity level of exercise and completing conditioning work until the horse can increase its fitness level. Other signs of fatigue include:

- Slowing of pace
- Less responsive to the aids
- Unwilling or unable to change gait or increase speed
- Loss of motivation
- Stumbling/losing balance/wandering (decreased coordination)
- Increased frequency of gait interference such as brushing or over-reaching
- Decrease in stride length
- Increased vertical motion
- Increased frequency of changes in lead at the canter or lope and gallop
- Increased neck and head movement
- Increased respiratory effort
- Hitting obstacles
- Inability to perform a specific movement (like taking a jump)

After you have worked the horse, don't forget to cool the horse down! To minimize soreness, stiffness and remove lactic acid from the muscle, a sufficient cool-down period should be used. Slow trotting for several minutes followed by an additional several minutes of walking will help remove the lactic acid and decrease heart rate.

When devising a conditioning program, remember to begin with aerobic conditioning and then go on to anaerobic conditioning. Consider changing your horse's

diet as his exercise demand increases if needed to maintain a target BCS of 5. Also, be sure to perform a pre-ride check and allow sufficient time for the horse to warm up and cool down. Be able to recognize the signs of fatigue but try to prepare your horse so that he/she does not fatigue too soon.

So, if you have a particular (or several) competitive or non-competitive events in mind for your horse this year, remember that you must first prepare your horse through proper conditioning. You don't want your goal to be the hardest workout your horse achieves this year, either. You want your horse to be able to accomplish your goals and still be "rearing to go" at the end of the day. Well, maybe not rearing, but at least not completely exhausted and sore. Don't be the person everyone else frowns upon. Properly condition your horse and your horse will respond by giving you his/her best efforts!

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