



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: First of A Two Part Series on Conditioning

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Every horseperson has probably witnessed this scenario at the end of a show, event or trail ride. Glancing over, you notice a fellow participant's horse. It is lathered, huffing and looks exhausted. You hear the horse's owner tell her friend, "I've hardly ridden him all winter but I really wanted to come today." Is the horse exercise-intolerant? No, most likely it just has not been conditioned.

Conditioning is defined as "getting one's muscles into better shape through graded exercise."¹ Age, genetics, and nutrition play a major role in conditioning.

Age of the horse is an important factor when considering a conditioning regimen. Younger horses have less blood volume resulting in fewer red blood cells and thus less oxygen carrying capacity than mature horses. Additionally, new bone must be laid down in response to not only exercise but also growth in the young horse which often causes a higher degree of stress placed on a young performance horse's (age 4 or younger) skeletal system. Therefore, injuries to the bones of immature horses can and do occur. There is good news for older, trained horses. Horses retain basic fitness even after 6 to 8 weeks of rest although the skeletal system does not stay in form after several weeks of rest.

Genetics also play a role in conditioning. Some horses are naturally more athletic (capable of quicker, more coordinated maneuvers) than others. Feeding and conditioning can be adapted to achieve the maximum genetic potential of any horse.

Body condition scoring can be useful when preparing a horse for conditioning. These scores range from 1 (very emaciated) to 9 (very fat). Recent research indicates that a body condition score of 5 is the most desirable in helping a horse realize its maximum performance. At this score, a horse's topline or backbone is level (has the normal dip of the back but does not lack definition or muscling and is not sunken in), the ribs cannot be seen but can be easily felt, the withers appear slightly rounded, and the shoulder starts to blend smoothly into the body. Horses with this body condition score can store more energy than thinner horses. Thinner horses (body condition 1- 4) must rely on energy drawn from the daily diet rather than on body stores. A horse with a BCS below 3.5 or 4 should not be put into a conditioning program until their BCS is increased. A horse needs to have sufficient muscle and fat over its topline to make it easier and more comfortable to carry a rider, also it is possible that a low body condition score could result in lack of stability in the joints resulting in dysfunction and some joint damage. On the other end of the spectrum, a fatter horse will need more energy to remove heat and provide a cooling effect (9). Therefore, moderately (a moderate amount of muscle/fat) conditioned horses (body condition score = 5) will have improved thermal regulation and delayed onset of fatigue. Thin horses or horses that will compete at a moderate to intense level can be gradually introduced to a fat-supplemented diet. It takes about one week for the horse to adapt to digestion of fat supplements and three weeks to one month before they can be utilized for energy. Grain mixes can contain up to 10% added fat or up to 3 cups of canola oil can be gradually added to the diet. Fat spares the use of glycogen (stored carbohydrates) and provides twice the amount of energy as carbohydrates. It can also aid in thermal regulation.

A horse's weight should be monitored on a regular basis using the condition scoring system to determine if weight is being gained or lost during the conditioning process. Use this equation to calculate body weight:

$$[(\text{Heart girth in inches})^2 \times \text{Body length in inches}] / 330 = \text{weight (lbs). (11,12)}$$
 This will be ± 25 lbs of the actual weight (13). Feed intake should vary from 1.5% - 3% of body weight daily, with horses doing intense work on the upper end of feed intake.

One should start early on a conditioning program with a specific goal in mind. In general, initial conditioning should consist of long distance at a lower speed – long, slow distance work. This does not mean that a horse travels a long distance, but that the horse is exposed to aerobic exercise resulting in a low working heart rate, usually for 30 days. This consists of walking, slow trotting, introduction of extended trot, loping or cantering and some galloping. These activities are aerobic because the horse's heart rate is always less than 150 beats per minute (bpm) (see chart below). During this time, fat horses will mobilize stored fat and burn it as a fuel source.

Table 1. Heart rate for horses participating in common activities.

Activity	Beats Per Minute
Standing ^a	40
Walking ^b	80
Slow trotting ^b	80-90
Slow loping ^b	100-120

^aFrom Snow and Vogel (16)

^bFrom Scott et. al. (17)

Age, genetics, and nutrition all play important roles in conditioning. If you have not been exercising your horse, now is a good time to begin working your horse aerobically. In the next fact sheet we will discuss the pre-ride check that can be used when conditioning your horse, the benefit of heart rate monitors, anaerobic conditioning (your next step), the importance of the warm up and cool down periods and how to recognize fatigue. Try to implement some of the changes that we discussed if you have not already and hopefully you will see a positive change in your horse. If you would like further information on this topic, please consult the sources listed below.

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