

Sprint Ups for Fitness

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R3

Racing
Fact Sheet 3

Although a horse may be 'fit' with an adequate red blood cell count (RBC) and haemoglobin (Hb) level, in some cases, the Mean Cell Volume (MCV) can become elevated above 47fl in gallopers and harness horses in training in the lead up to a race or race campaign.

The ability of a horse in training to take up oxygen and deliver it to the contracting muscles increases as a horse adapts to training and regular fast work. The VO₂ max, as it is referred to, is a measure of the relative oxygen uptake as a horse becomes more efficient in oxygen uptake. A 'fit' horse can have a VO₂ max of 165mL oxygen/kg bodyweight per minute, or can take in up to 80-90 litres of oxygen per minute for aerobic energy production during high speed exercise.

Generally, it takes 2 weeks of training to achieve 50% VO₂ max, and another 10-12 weeks to reach 70% VO₂ max, and in most horses, VO₂ max is not reached until 14-16 weeks of training. The majority of horses in Australia conditioned in an 8-10 week race preparation are around 70% 'fit' (70% VO₂ max) when fast raced, and with regular racing, VO₂ max can be increased by all-out flat work and racing over 3-4 races.

The MCV reading can range from 38-55fl in horses in general, but in a racing horse, the range is much narrower between 42-47fl, indicating a mid range of cell volume. An MCV of less than 42fl is considered to be a result of early training or blood loss ('bleeding' in the lungs or from stomach ulcers) or where the bone marrow produces smaller, less mature red cells into the blood stream as a result of a low iron intake.

An MCV of above 47fl in an otherwise healthy, well conditioned horse is considered to be a result of inadequate stimulation to red cell production by an excessive amount of long, steady exercise in training ('training off') and inadequate 'all-out' fast work.

Did You Know that...

The MCV is a measurement of the relative size (volume) of each red blood cell. The red cells contain haemoglobin to carry oxygen from the lungs to the working muscles in racing horses, and along with other red cell parameters, can directly influence the VO₂ max at 'peak' fitness. The oxygen is carried within the cells and the same number (blood count) of red cells containing smaller cells in the same volume of blood has a higher capacity to carry oxygen for fast exercise.

Handy Hint

A low MCV below 42fl is also often considered to be a practical indication of low iron intake, although iron deficiency anaemia is a relatively uncommon condition in racehorses in full training. If the MCV is below 42fl in an otherwise well conditioned horse, an iron supplement, such as **Kohnke's Own Cell-Iron®** given at 1 scoopful daily for 10-14 days, then on alternate days, is recommended.

Handy Hint

The short, sharp sprint program can be used at regular 10-14 day intervals to break the monotony and reduce the physical stress of training. The program can also be included in the week prior to racing, starting 6 days before racing and giving only 2 alternate day sprint-ups (day 6 and day 4 before racing) to help stimulate oxygen uptake and 'freshen up' a horse before racing.

Short, Sharp Sprint Ups

Every 10-14 days in a horse in full training and racing replace the normal 'fast work' or 'hobble-up' program on 2-3 alternate days with a sprint-up program.

1. Warm-up for 5 minutes at the trot/light canter
2. 300-400 metres 'all-out' gallop (or pacing) up the straight. This stimulates maximum oxygen demand in the working muscles.
3. 600-800 metres of working canter or pace at $\frac{3}{4}$ speed. This helps reduce the stress of full speed work over a race distance.
4. Repeat 300-400 metres 'all out' work up the straight.
5. Cool down at the $\frac{1}{2}$ pace or canter to finish the work for the day.
6. On return to the stable after cool down, give a 10mL injection of Folic/B12 (folic acid and vitamin B12). Both folic acid and Vitamin B12 are involved in the maturation of red blood cells in the bone marrow and help reduce MCV readings when combined with 'all-out' sprint exercise to stimulate maximum oxygen uptake. Do not give more than 10mL of this combination on alternate days for 2-3 times. Vitamin B12 may be excreted in large amounts and reduce its benefit if excess is given by injection.

Additional Management prior to Racing

1. Give 1 scoopful **Kohnke's Own Cell-Iron Supplets™** on each of the 2 nights before racing to help ensure an adequate supply of iron to assist in muscle myoglobin synthesis and oxygen transfer.
2. Give 2-3 cups of cracked corn on each of the last 2-3 evening feeds before racing to 'top-up' muscle energy levels.
3. If travelling for more than 1-1½ hours to the race, give 60g (5 measures) of **Kohnke's Own Gastro-Coat™** to help provide a natural protective coating to the upper stomach lining, giving **Kohnke's Own Gastro-Coat™** in the main feed after exercise for 2-3 days before racing. A small 500g (4 litres) feed of lucerne chaff 30 mins before travelling may also help to protect against gastric acid burn in horses with a history of 'picky eating' after a race or travelling.
4. A supplement of 15-30g (1-2 scoopsful) of **Kohnke's Own Cell-E PREMIUM®**, containing important anti-oxidants including vitamin E, vitamin C, vitamin A and organic selenium in a natural whey powder base, for 2 nights before racing (it can be mixed into the same feed in a separate area to **Kohnke's Own Cell-Iron Supplet™** pellets) to help provide optimum muscle membrane protection and improve oxygen use efficiency when racing.

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