

BONES

We often refer to horses as having ‘good bone’, making reference to the structure of the horse and the size of the bone, but how much do we actually know about bones the nutritional requirements and the effects of training on bone health?

The role of Bones

Bones provide rigidity and support, encasing and protecting vulnerable organs such as the lungs and brain. Where two bones meet is called a joint, which provides an axis for movement and flexibility. Bones also act as a mineral store for calcium, phosphorus and magnesium, to be utilised in the production of new bone or to be sent to other areas of the body if needed. This mineral store is of particular importance for the mare in foal, as it provides nutrients for both her skeleton and the skeletal development of the foal.

Bone growth

Bone growth and development is most prominent during the early years, from development in the womb to between the ages of four and eight depending on breed. The age at which horses stop growing varies by breed and sex and, even when growth plates have closed, bone still continues to change and alter, a process called remodelling.

Bone remodelling

Remodelling is the process of old bone being broken down and new bone forming. This is a continuous process throughout life and one that is effected by demands such as training and exercise. The bone will respond to external pressures, which leads to the building of stronger bone where loading is greatest. When devising a training programme for a horse, time should be taken for walk work, with the workload increasing over a period of time. This slow build up allows for tendons to ‘harden’, bones to remodel and muscles to build up, which will reduce the chance of injury. Careful training encourages the remodelling process to create stronger bone, but if the nutrition is deficient this process can be greatly impaired.

Continuous grazing of pasture over many years can often lead to mineral deficiency, which must also be considered if you also produce hay from the same field. Fertilising can also have an impact in the trace minerals available to the horse for growth and performance. Feeding every horse a good quality broad spectrum vitamin and mineral supplement such as V-Biotic will help to ensure these minerals are met at a maintenance level, but what about competition horses or breeding stock? Mary Bromiley, leading equine physiotherapist, recently highlighted the issue of bone health in the performance horse by stating “we are producing muscle bound horses on weak skeletons. Horses are fracturing bones whilst competing and training, with alarming frequency”.

Nutrient requirement

Bone requires minerals for growth and strength, of which calcium the most commonly talked about. Calcium levels within the bones are continually replaced, with the entire content of an adult horse’s skeleton being replaced every 200 days. Calcium works together with phosphorous in bone remodelling in an ideal ratio of around 2:1 (C:P). If the ratio between these two nutrients is unbalanced, growth related problems or orthopaedic diseases can occur.

Many people feed limestone flour (calcium carbonate) in a bid to ensure healthy bones, but far greater benefit is achieved when the two nutrients are given as a combination – dicalcium phosphate. Magnesium and Vitamin D are also important in the absorption and metabolism of Calcium and Phosphorus.

Additionally, recent researcher has focused on the benefit of silicon and its importance in bone remodelling and strength.

Silicon

Silicon is one of the most common elements on earth and is essential for normal body function. Most of the silicon found in nature is in the form of sand, and is unable to be absorbed when ingested. Plants absorb Silicon from the soil and, consequently, the forage that horses graze contains small amounts of silicon, although agriculture can reduce these levels.

Silicon is a relatively new ingredient in equine supplements and must be bio-available to be effectively absorbed. It is believed that supplemental silicon may have a positive effect on the rate of bone remodelling. Brian Nielsen, Ph.D. at Michigan State University supplemented the diets of two-year-old horses in race training with a biologically available source of silicon and compared them with horse's fed a conventional controlled diet. The trial found that the horses with silicon supplementation had a reduction in the frequency of bone injuries and were able to extend the duration of their training before bone injuries occurred.

Better Bones

Better Bones by Equine America has been specially formulated using a combination of silicic acid precipitated (silicon), dicalcium phosphate, magnesium and vitamin D. **Better Bones** will provide correct nutrients for healthy strong bones helping to reduce the chance of bone related injuries and abnormal growth. **Better Bones** is ideal for performance horses, young stock, breeding animals and those in recovery from bone injury. **Better Bones** can also be fed in combination with Cortaflex for complete joint and bone health - a must for fast growing youngsters.