The effect of the Öllöv shoe on vibrations and loads in the horse's leg

An experiment in which the impact of Öllöv shoe on the propagation of vibrations from the impact between the hoof and the ground is investigated.

Background

Injuries to the musculoskeletal system is serious from an animal welfare point of view and also very costly for horse owners all over the world. The injuries basically always occur due to dynamic loads, ie forces that the horse is exposed to when it moves. If we can reduce or change these so that risk of injury is reduced, it can be very important both from an animal welfare and economic perspective.

The Öllöv shoe, which is made of rubber, differs from a traditional shoe that is made entirely of steel. The use of rubber shoes is expected to have a particularly large effect on the rate of loading between the hoof and the surface. Preliminary studies done with a mechanical horse limb/ hoof support this hypothesis.

Implementation

We now want to carry out the next step in these investigations and test the Öllöv shoe against a traditional horseshoe. Using existing system where a carcass horse bone is exposed to known vibrations from below the shoe, through the hoof and upwards. By then using accelerometers to measure how these vibrations propagate and is attenuated up along the leg, you can compare the effect of the two shoes. A further feature and benefit of this method is that based on data, a model can be created for how the forces (vibrations) are damped, which can then be used to simulate a number of different surfaces. This is important as horses in real life naturally move on many different types of surfaces that give rise to different loads.

Expected benefit

We expect the experiment to provide information on how the Öllöv shoe, compared to a traditional shoe, is able to dampen vibrations and in particularly reduce the loading rate in the leg when a horse moves on different types of surfaces. This would be particularly beneficial to the reduction of joint and musculoskeletal diseases that may be caused by the high frequency loading of the tissue.

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