



Histology and the Equine Connection

What does histology mean for hoof care and holistic health?

Important:

Collagen fibers are a very tough material. They are flexible, resist tension, stretch only very little and are capable of bearing great loads (600kg per square centimeter). Under great force they will undergo irreversible stretching and tear. Collagen fibers are oriented in the direction of tension, which requires any healing process to take place under light load bearing. Ligaments connect bone to bone and can only heal properly under load bearing. Tendons connect bone to muscle and can only heal under load bearing. Cartilage contains no nerves, and only the lateral cartilage contains blood vessels. Cartilage can heal optimally only under load bearing.

Bone can heal and strengthen only under load bearing.

Muscles can only contract. They do not support. The functioning of nerves depends on circulation.

Nerve Function and the Hoof

Nerves transmit messages to the brain. These messages are transported along nerves as an electrical impulse. In order for a message to be transported along the nerves there must be an ion potential around the nerve ending. Once an ion potential has passed into a nerve as a response to a stimulus, the ion potential must be rebuilt before another message can be sent. ATP (adenosine triphosphate) is necessary to rebuild the ion. Cells need oxygen and glycogen to produce ATP. Oxygen and glycogen are delivered to the cells in the blood stream. Conclusion: Without circulation oxygen and glycogen cannot be delivered to the cells, therefore no ATP can be produced. The resting potential of the nerve cannot be restored. No circulation - no nerve function.

Inhibited Neural Function:

If you understand how nerves work it is easy to understand how a nerve can be inhibited in a horse that has shoes. Shoes cause contraction in the foot. Contraction causes circulation to be reduced because the hoof mechanism cannot function properly if at all. As a result, the horse's limbs will not receive adequate blood supply therefore not getting oxygen and glycogen necessary to produce ATP. Vibrations from shoes damages living tissue. Horseshoes vibrate at 800 Hz. Vibrations at this frequency damage capillaries reducing circulation. We've seen what happens when circulation is reduced. Often, horses shod or trimmed by conventional methods will have heels that are too high. High heels also reduce circulation. As a result of the steep angles, arteries are pinched shut not allowing sufficient blood flow to the foot. In conventional methods bars are not trimmed properly. Sometimes when the bars get long they will push up into the hoof and bruise the corium. Long bars also keep the sole from drawing flat on weight bearing reducing circulation.

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