

**Functional Electrical Stimulation (FES) for equine muscle hypertonicity: histological changes in mitochondrial density and distribution**

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**New research has shown that the use of Functional Electrical Stimulation (FES) in horses resulted in a significant improvement in the density and distribution of mitochondria.**

**Dr. Sheila Schils, PhD, one of the lead researchers in this study states. 'When the muscle has a higher number of mitochondria, and these mitochondria are placed in the most advantageous area of the muscle cells, the muscle can utilize oxygen much more effectively. Therefore, the muscle can do it's job better'.**

**An interdisciplinary team of human and equine researchers, all who specialize in muscle cell function and the clinical use of FES, were able to collaborate on this exciting project. Dr. Ugo Carraro, MD, from the IRRCS Fondazione Ospedale San Camillo in Venice, Italy who is one of the premier researchers in human muscle histology said, 'This is a landmark project which continues to advance our understanding of muscle function, specifically with the use of FES'. Dr. Helmut Kern, MD who utilizes FES for spinal cord injuries in his medical clinic in Vienna, Austria stated, 'We know the clinical benefits of FES for use to retard muscle atrophy and spasms, this research helps us to better understand the multiple benefits of the FES technology'.**

**'We not only saw the improvements in muscle function under the microscope, but we also saw clinical improvements in the reduction of muscle spasms in the backs of the horses studied. It has taken some time to develop the appropriate protocols for the use of FES in horses and these results show that we are on the right track', states Dr. Schils.**

**Many equine practitioners in the United States and Europe are currently using FES in equine rehabilitation and for performance enhancement, and this research adds to the understanding of what is happening at the cellular level. 'We are presently looking at future research projects to continue our focus on the benefits of FES in equine and human practice', states Dr. Carraro.**