

A TELESTIMULATION SYSTEM FOR CHRONIC STIMULATION OF THE SCIATIC NERVE IN CAGED MICE.

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A system of contactless stimulation has been developed for caged mice. It consists in a magnetic field generator supplied with an adequate current pulse. The current is fed into a coil made up of 40 turns of copper wire, with a coil external diameter of 160 mm. A secondary coil is inserted under the skin of the animal, comprising 50 turns of thin copper wire, with an outer diameter of 15 mm, embedded in silicone rubber. The output of the secondary coil is connected to a teflon coated steel wire, leading to a spiral cuff wrapped around the sciatic nerve in the thigh. Spiral cuffs were designed according to the method described in Veraart *et al.* IEEE Trans. BME, 1993, 40: 640-653. Total electrical resistance of the secondary circuit, including the nerve, is around 1000 ohms. When a half-sine wave 10 A current pulse of 0.25 ms duration is supplied to the primary coil, a 0.6 mA pulse is produced in the secondary coil and applied to the stimulating electrodes. This is sufficient to produce a contraction in the leg muscle. Such stimulation at a frequency of 10 Hz for 9 hours per day during 21 days induced changes in leg muscles comparable to those described earlier for larger animals (see Pette & Vrbova, Rev. Physiol. Pharmacol., 1992, 120:115-202).

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