

INFLUENCE OF DIFFERENCED PHYSICAL EXERCISES IN ISCHIATIC NERVE REGENERATION IN RATS: FUNCTIONAL AND MORPHOLOGICAL STUDY (ABSTRACT)*. DISSERTATION. ARACAJU, 2009.

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Background: Several experimental studies demonstrate a relationship between physical exercise practice and functional recovery after a peripheral nerve lesion. However, studies that relate the metabolic way predominantly used during exercise practice with gains on nerve functional recuperation and the evolution of inflammatory process in lesion macroenvironment are scarce.

Objective: To investigate the influence of physical exercises, predominantly aerobic and anaerobic, initiated on immediate phase after nervous lesion, on functional and mor-

phological recovery of sciatic nerve on rats submitted to axonotmesis.

Méthod: The experimental study was effectuated through a left sciatic nerve crush in Wistar rats, using a temporary surgical clip, by the period of three minutes. At first day after lesion, remained for four weeks, anaerobic group swam with crescent overload and aerobic swam in crescent periods, while sedentary group was exempt of any physical exercise practice. Blood lactate concentration was measured at first day of every training week. Functional recovery was

evaluated through “Sciatic Static Index” obtained at first, seventh, fourteenth, twentieth-first and twentieth-eighth days post-lesion, with morphological study conducted at twentieth-eighth days post-lesion. Morphological study was applied at 28th day after axotomy and comprised qualitative analysis of inflammatory findings like hemorrhagic exudate, edema, vascular dilatation, leucocyte infiltrate and vascular neofromation.

Results: It was observed a significant difference on blood lactate concentration between aerobic and anaerobic groups to every evaluated moment. “Sciatic Static Index” data showed that at the end of the experiment all three groups presented a significant functional recovery: aerobic group (-59.0 ± 10.6 to -9.7 ± 3.1 ; $p=0.002$), anaerobic group (-56.5 ± 10.1 to -8.3 ± 3.5 ; $p=0.001$) and control group (-62.6 ± 14.9 to

-21.3 ± 8.6 ; $p=0.002$). It also demonstrated that at 28 days post-lesion, aerobic and anaerobic groups developed a better functional recovery than the control group ($p=0.04$ and $p=0.02$, respectively). However, no significant difference on functional recovery presented by the aerobic and anaerobic groups was noticed.

Conclusion: Proposed physical exercise protocols resulted in benefits to sciatic functional recovery after 28 days of axotomy. Significant differences between lactate concentration to aerobic and anaerobic groups did not influenced a different functional recovery in all evaluated periods. Physical exercise protocols did not interfered on inflammatory findings on periaxonal tissues observed at 28th day post-lesion.

Key words: physical exercise, sciatic nerve, functional recovery, morphological evaluation.

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