

# **The effect of eight weeks continuous training with zinc sulfate consumption and detraining on pain threshold in morphine dependent rats following withdrawal syndrome**

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**Background and objectives:** Opioids such as morphine are being used widely for treatment of chronic and acute pains. Much of what is known about how morphine inhibits nociception has been released through laboratory experiments on animal. Besides, morphine is a derivative of opium which may connect to the opioids receptors, and leads to decrease the irritability of nervous pain pathway neurons. Then it plays an important role in the pain adjustment. In this study, we are going to investigate the influence of aerobic continuous training with zinc sulfate supplement on decreasing pain in morphine related rats in the withdrawal syndrome. **Material and methods:** Wistar healthy male rats weighting ( $250 \pm 20$  gr,  $N=42$ ) were addicted by 0.4 g/lit morphine sulfate in 21 days. They practiced continuous training by running five days a week on a treadmill. From first week of practical protocol running speed was initially set at 12 m/min and reached until 18 m/min after 8th weeks, as we have used zinc sulfate supplementation (9 mg/ 40 cc) orally four hours after exercise in the training day. By the end of 21st day of addiction process, at the end of training protocols and after three weeks detraining, we have used these animals for measuring the influence of exercise and zinc sulfate on pain decrement by pain threshold measurement tests, including Tail-Flick, Immersion, Formalin and writhing. **Results:** Data showed that continuous training with zinc sulfate supplement significantly decreased pain response in addicted rats in withdrawal syndrome ( $p \leq 0.05$ ). Also following detraining process, data showed decrement on pain threshold in comparison with the end of training protocol ( $P \leq 0.05$ ). P-values were as follows: in immersion test ( $P < 0.04$ ), in chronic formalin ( $p < 0.001$ ), and writhing test ( $p < 0.03$ ) while it was not significant in tail-flick and acute formalin tests by  $p > 0.05$ . **Conclusion:** Our results indicate that eight

weeks continuous training and also zinc sulfate supplementation have anti-pain effects in morphine dependent rats in withdrawal syndrome. After three weeks detraining we have decrement on pain threshold, so exercise and zinc sulfate may be useful for treatment and pain decrement conditions.

**References:**

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