

Effects of Wheel Running on Incubation of Cocaine Seeking in Rats

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Background

Drug abuse relapse is a major issue in treating addictions.

Physical activity decreases cocaine self-administration in lab rats.¹

Access to a wheel has been shown to significantly reduce cocaine-seeking behaviors in female rats, but not in male rats.²

In humans, exercise has been shown to decrease drug craving³ and reduce the probability of relapse⁴.

Objective

To assess the effects of chronic wheel running on the incubation of cocaine-seeking behavior in female rats after extended forced abstinence from cocaine self-administration.

Methods

10 days self-administration in operant chamber

Moved to wheel cage and separated into groups

3 Days locked wheel

3 Days unlocked wheel

30 days locked wheel

30 days unlocked wheel

Returned to Operant Chamber to measure responses

Results

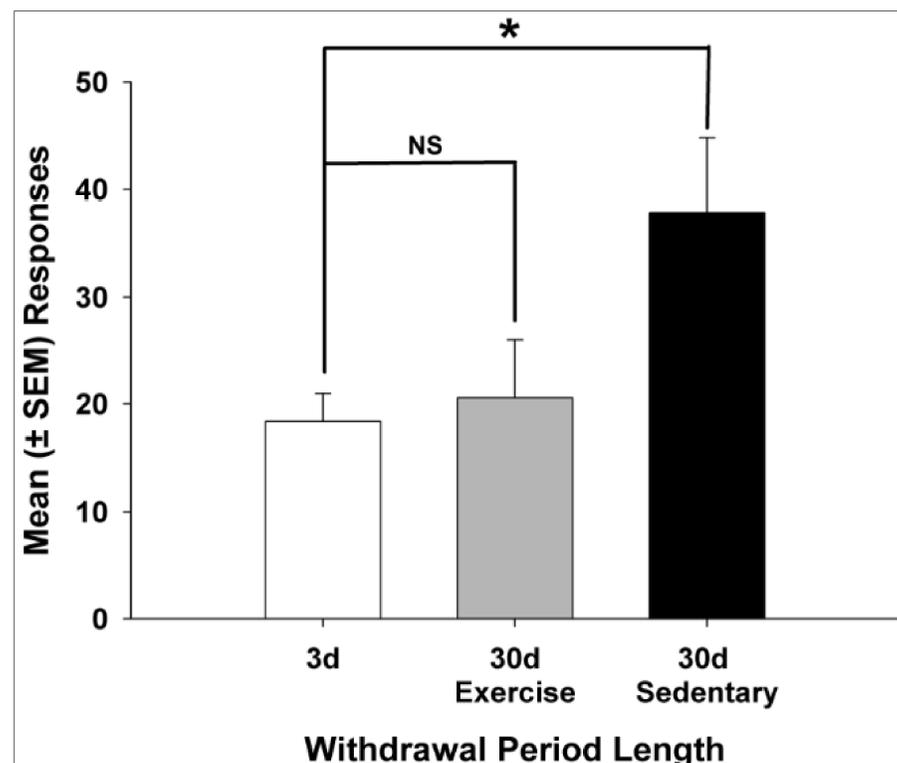


Figure 1. Rats with access to a locked running wheel showed an increase in cocaine seeking behavior after 30 days while rats with access to a running wheel for 30 days showed no incubation of cocaine seeking.



Figure 2. A rat fitted with an infusion apparatus inside the operant chamber



Figure 3. A rat in a cage with an attached running wheel.

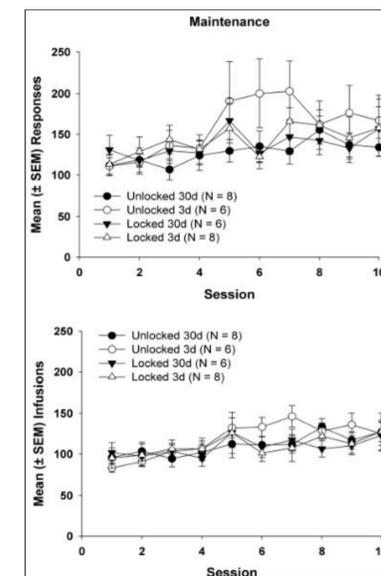


Figure 4. The mean number of responses (top) and the mean number of infusions (bottom) of the rats during self-administration in the operant chamber. No group differences were seen during self-administration.

Conclusions

Daily aerobic exercise diminished the incubation of cocaine-seeking after a period of withdrawal.

Thus, exercise can be a useful intervention during a period of drug abstinence to reduce relapse-related behaviors.

References

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