

## Habituation training protocol improves exercise performance in a forced running wheel system in rats

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Increasing evidence supports that physical activity promotes mental health. Several studies have also proposed that regular exercise may confer positive effects in neurological disorders such as Parkinson and Alzheimer diseases, among others. The evaluation of the impact of physical activity in animal models is growing up in the current research. Exercise models in rodents can be performed under voluntary or forced conditions. The voluntary condition presents the disadvantage that all the subjects never run the same volume and intensity; however, one of the main difficulties for forced training, is the low exercise performance obtained compared with voluntary running. Moreover, a forced training program with treadmills requires permanent aversive stimuli to encourage rodents to the exercise, with consequent stress. Some forced protocols includes an initial habituation period; that could be relevant in the final exercise performance from rodents.

The aim of this study was to evaluate the effectiveness of a training habituation protocol to improve the exercise performance in a forced running-wheel system in rats. Adolescent rats were randomly assigned to either a group that received an exercise training habituation protocol, or a control group. The forced exercise performance between non-habituated and habituated rats was evaluated using an incremental exercise test. Sprague Dawley rats at early (P34) and late adolescence (P57) were tested. At both ages, the total running time obtained in habituated rats during the incremental test was significantly higher (means of time: P34 = 50, 1 min and P57 = 39,57 min) than in non-habituated ones (means of time: P34=14,03 min and P57=5 min).

We conclude that the exercise habituation protocol improves the forced exercise performance in running wheels.

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