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SOCIETIES**

“PHYSIOLOGY WITHOUT FRONTIERS”

May 15-18, 2016

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The effect of supraphysiological dose of testosterone-enanthate (TE) and exercise on exploratory activity in elevated plus maze (EPM) test - the advantage of using total exploratory activity (TEA) as a new parameter for exploratory activity estimation in EPM

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The purpose of this study was the estimation of effects induced by chronic TE administration (to mimic heavy human abuse), and prolonged exercise in male rats, on anxiety levels by means of alterations in exploratory activity patterns in EPM. Two sedentary (control - C and testosterone-enanthate - T) and two exercise (exercise - E and testosterone-enanthate plus exercise - T+E) groups (n=32) underwent adequate protocols - swimming protocol (1 h/day) and TE (20 mg/kg/w, s.c.) for six weeks. Results of our study confirmed anxiolytic effects of exercise manifested as increased exploratory activity in EPM - increase in cumulative duration in open arms, number of rearing and head-dipping, and TEA (45%, 49%, 72% and 58%, $p<0.05$, respectively) comparing to control group. Supraphysiological dose of TE induced decrease in number of rearing and head-dipping, cumulative duration in open arms and TEA (35%, 52% - $p<0.05$, 85% and 41%, $p<0.001$, respectively) comparing to control group, while this effect of TE was even more pronounced comparing to exercise group ($p<0.001$ for all parameters). Also, applied dose of TE was sufficient to attenuate beneficial effects of exercise in rats by means of all estimated parameters. The values obtained in combined group were similar to control group, except for cumulative duration in open arms (decrease by 33%, $p<0.05$). In conclusion, our results confirmed beneficial effect of exercise on anxiety level observed in EPM by means of parameters that are connected to alteration in exploratory activity. Supraphysiological dose of TE resulted in anxiogenic-like behavior in EPM. The effect of TE was so pronounced that beneficial effect of exercise was reversed to control values (or even below). Also, based on the results obtained in this trial, we propose the TEA as a new parameter for overall exploratory activity that can be helpful in evaluation of EPM test results.