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The effect of exercise on activation in the bed nucleus of the stria terminalis using fos immunohistochemistry

Abstract:
Voluntary exercise has been shown to have anxiolytic effects in both animals and humans. The bed nucleus of the stria terminalis (BNST) is a forebrain area that has been implicated in mediating the behavioral changes associated with anxiety and anxiogenic drugs; hence, voluntary exercise may reduce BNST activity elicited by anxiogenic treatments. To examine whether exercise blunts the responsiveness of the BNST to anxiogenic drug challenge, we used fos immunohistochemistry to examine neuronal activation in the BNST following anxiogenic drug challenge in exercising and sedentary mice. Mice were given access to running wheels for a period of two weeks. Mice were then injected with meta-Chlorophenylpiperazine (mCPP), a serotonin agonist that we have shown enhances baseline startle amplitude in mice. Two hours later brains were collected and processed for cfos immunohistochemistry. Preliminary data suggests exercise reduces mCPP-induced activity in the BNST. These data suggest that exercise may offer a relief for the 40 million Americans with anxiety disorders.