Exercise and brain functions - potential mechanisms.

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Physical activity is a potent paradigm that affects not only metabolism but also brain functions. In a recent study, we have studied the beneficial effects of exercise on adult neurogenesis and learning and memory in a transgenic mouse, the synRas mouse that showed some memory impairments. Indeed, the generation of new hippocampal neurons has been suggested as a novel form of plasticity that could underlie some types of memory. Hippocampal adult neurogenesis is moreover very sensitive to intrinsic and environmental factors and is highly stimulated with exercise, suggesting better capacities to adapt to environmental changes. Many molecular actors have been suggested to mediate the effects of exercise in the central nervous system. The potential mechanisms that emerged from our own experiments and from the growing literature will be presented in order to explain how physical activity can affect brain functions.