

## News and Views

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## NEWS

### Exercise-induced Neuronal Nitric Oxide Synthase Modulating Autonomic Control in Rats

Nitric oxide (NO) is an intercellular signaling molecule that has association with cardiac autonomic function.<sup>[1]</sup> The neuronal NO within the ventromedial and posterior periventricular (PVN) nuclei modulates the autonomic control of the circulation.<sup>[2]</sup>

A study conducted by Raquel HA, *et al.*<sup>[3]</sup> found the association of increased expression of nNOS gene and its protein within PVN nuclei and cardiovascular responses induced by swimming training which was confirmed by the effects of chronically supplemented selective neuronal nitric oxide synthase (nNOS) precursor (L-arginine) on autonomic control causing decreased peripheral sympathetic activity, increased parasympathetic activity and heart rate variability variability and improved baroreflex control of the heart. This strongly suggests that exercise augments autonomic control by augmenting PVN nNOS expression and the local generation of NO.

The probable mechanism could be that NO alleviates peripheral sympathetic activity by improving local inhibitory gabaergic activity.<sup>[4,5]</sup> Endogenous NO acting within the nucleus of the solitary tract (NTS) also facilitated baroreflex control by increasing the HR interval in which baroreceptors are able to correct pressure change in spontaneously hypertensive rats (SHR).<sup>[6]</sup>

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## VIEWS

### Nitric Oxide Supplements Boost Exercise Performance

Nitric oxide causing vasodilation helps in the delivery of nutrients and oxygen to the muscle during exercise, thus enhancing the exercise performance. The nitric oxide supplements contain several ingredients that are said to increase nitric oxide, nitrate or the amino acids such as L-arginine and L-citrulline.

Supplementation of L-arginine improving blood flow or exercise performance in healthy individuals remains unclear. But L-citrulline increases blood flow improves the exercise performance and lowers blood pressure.

In many analyses, nitrate has been shown to improve exercise performance in cyclists, runners, swimmers and even kayakers and this made nitric oxide supplements popular among athletes and recreational gym-goers.