



## Physical exercise prevents memory impairment through modulation of CD39 and CD73 activities and A2A receptor expression in hypertension

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### Abstract:

Central nervous system function has been emerging as an approach to understand hypertension-mediated memory dysfunction, and chronic exercise is able to modulate the purinergic system. Herein, we investigated the effect of chronic swimming training on the purinergic system in cortex and hippocampus of L-NAME-induced hypertensive rats. Method: Male Wistar rats were divided into four groups: Control, Exercise, L-NAME and Exercise L-NAME. Inhibitory avoidance test was used to assess memory status. NTPDase, CD73 and adenosine deaminase activities and expression, and P2 receptors expression were analyzed. Data were analyzed using two-way ANOVA and Kruskal-Wallis tests, considering P less than 0.05. Results: Physical exercise reduced the blood pressure and prevented memory impairment induced by L-NAME model of hypertension. L-NAME treatment promoted an increase in NTPDase1, NTPDase3 and CD73 expression and activity in the cortex. A2A expression is increased in hippocampus and cortex in the hypertension group and exercise prevented this overexpression. Conclusion: These changes suggest that hypertension increases adenosine generation, which acts through A2A receptors, and exercise prevents these effects. These data may indicate a possible mechanism by which exercise may prevent memory impairment induced by L-NAME.

### Biography:

Dr. Cardoso is Professor of Biochemistry and Immunology of the Medicine Course at Federal University of Fronteira Sul (Brazil). For over 10 years, her research group has a long-standing interest in the mechanisms related to the involvement of purinergic signaling and oxidative injury in various diseases, especially on many types of cancer, sepsis, as well as others non communicable diseases such as hypertension. She also investigates the role of physical exercise in treat/prevent diseases.



### Publication of speakers:

- Exercise with blood flow restriction as a new tool for health improvement in hypertensive elderly women: the role of purinergic enzymes
- The anti-inflammatory effect of resistance training in hypertensive women: the role of purinergic signaling
- COVID-19 and purinergic signaling: the need for investigation
- Purinergic System and Cervical Cancer: Perspectives
- Purinergic signaling and tumor microenvironment in cervical Cancer

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