

# Coping Strategies Increases Morning Cortisol Levels, Why is it Good?



**Filipy Borghi, Priscila Cristina da Silva and Dora Maria Grassi Kassisse\***

*Department of Structural and Functional Biology, University of Campinas, Brazil*

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**\*Corresponding author:** Dora Maria Grassi Kassisse, Department of Structural and Functional Biology, Institute of Biology, University of Campinas -UNICAMP, CEP: 13083-862, Campinas, SP, Brazil, Email: doramgk@unicamp.br

## Abstract

The cortisol levels and the misunderstood about stress studies is very common, mainly the studies aiming avoid stress reaction as coping strategies. Perform assays considering that we present natural cortisol rhythmicity, describing cortisol values before and after the strategies are missing in the literature. Besides, the high and low values and the interpretation about it must be carefully investigated. In this opinion article we would like to point out the main details about cortisol studies and its relationships with coping strategies. This article is based on conference presented by Dora Maria Grassi Kassisse at Harvard Medicine School in October 2017 organized by Pure Action.

**Keywords:** Stress; Eustress; Distress; Coping strategies; yoga

## Introduction

The stressful stimulus, once identified by the individual as a threat to their integrity, triggers the activation of the sympathetic nervous system, as well as hypothalamus, hypophysis and adrenal gland axis. In acute stress condition, adrenaline is the main responsible to preserve the integrity of the internal medium by promoting anticipatory and compensatory adjustments, thus increasing the likelihood of survival. However, under chronic stress, cortisol is the main hormone involved, inducing changes in the organism response and preparing it to fight with the stressful agent or adapt to the chronic stress. In healthy individuals, the daily production of cortisol complies a circadian rhythm, with high concentrations in the morning, which decrease throughout the day, with the lowest values at the night period. Changes in cortisol concentration or in its rhythmicity production suggest changes in individual allostasis, which may predispose individuals to diseases, like very common nowadays depressive symptoms or anxiety [1].

What we know nowadays is that everybody has its own cortisol concentration that fits better, turning this into a personal relationship between the cortisol concentration values and the better productivity. This relationship can be compared as an inverted U shape curve, where the plateau exhibits the best performance, called eustress, and the two other sides are lower or higher values considered distress condition. Low cortisol concentration induces low production; it is due to

distress which causes impaired attention, apathy, boredom and confusion. However, in high cortisol concentration, we present distress also due to disorganized behavior, burnout, panic, and impaired focus. But, in an ideal concentration we have the eustress, a positive stress zone which conduces to focused attention, rational thinking, emotional balance and wise mind, all this behavior let us to our better productivity [2].

But the question is: how to keep eustress? Some studies are evaluating complementary and alternatives techniques as coping strategies, but over the last decades, a sharp increase was observed in the number of publications that evaluated the Yoga practices [3]. The tools used to evaluate the efficiency of practicing Yoga are coherent with the progress in the knowledge about the psychological and physiological organism reactions, as a response to stressors, whether acute or chronic. But the studies are not conducted evaluating different points of cortisol in different days, even related it with psychological instruments.

Recently we performed a pilot study published at Journal of Complementary and Alternative Medicine [3] where we evaluated the acute and chronic effects of Tantric Yoga practice, analyzing the psychological and physiological organism reaction before and after 6 weeks of tantric Yoga sections. The practice of Tantric yoga, although it is a physical exercise, triggers a significant reduction of 24% in the salivary cortisol concentration, both after a single session and after the last

practice of the tantric Yoga. In the begging of the study, our volunteers showed an altered daily cortisol production rhythm, i.e. even with the decrease in salivary cortisol concentration during the day concerning the concentration in the morning, the nighttime sample presented significantly higher values than those obtained at noon. After the end of tantric yoga program, we have higher salivary concentration in the morning and a significantly decreased during the day, reaching lower values before sleep.

## Conclusion

These results indicate that tantric yoga practice produces chronic effects with alteration in standard cortisol daily rhythm. This program induced a reduction in the total and in different domains of the psychological stress questionnaire. Domains related to the irritability, tension and fatigue, as well as the-fear and anxiety were significantly reduced. As yoga was effective in induced eustress condition, we strongly suggest that yoga practice could be an important activity as coping strategy. However, our study was conducted with a small number of volunteers, we suggest performing this experimental design with a higher number of volunteers and evaluating different Yoga practices.

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## Conflict of Interest

We declare no competing financial interests in this work.

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