

The Effect of Meditation on Cortisol: A Comparison of Meditation



Techniques to a Control Group

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Introduction

There are inherently different types of meditation used to manage stress.

Focused attention meditation (FAM) techniques involve sustaining attention on a specific object.

Open monitoring techniques (OMM) involve moment-to-moment, nonreactive, monitoring of the present experience.

There are relatively few studies that compare the effects of different types of meditation on cortisol levels.

Examining how different techniques affect the mind and body will lead to more effective interventions and a better understanding of the mechanisms linking meditation to an increased sense of well-being.

In the current study, two different meditation techniques were compared to an active control group to determine if there were differences in cortisol levels within training sessions and across 4 weeks of meditation training.

Methods

Participants

- N = 75 females between 18-25 years of age
- Interested in meditation
- Little to no meditation experience
- Non-smoker
- No medications that interfere with cortisol
- In good physical health

Physiological Measure

- Salivary Cortisol collected before and after group task using drool method.

Psychological Measure

- Positive and Negative Affect Scale (PANAS)

Group Assignment

Participants were randomly assigned to one of three conditions:

(1) Integrative Restoration Yoga Nidra (OMM): Non-judging, detached observation of physical and mental events.

(2) Relaxation Response Meditation (FAM): Focused attention on breath, body parts, and mantra.

(3) Audio book: Sherlock Holmes, A Study in Scarlet.

Procedure (see Figure 1)

Each group met once per week for four weeks in a dimly-lit, large multi-purpose room.

Participants provided saliva samples and filled out questionnaires immediately before and after their respective task.

Groups listened to instructions/story for 30 minutes. The only difference between the groups was the information conveyed by the speaker.

Figure 1 Weekly Procedure



Results

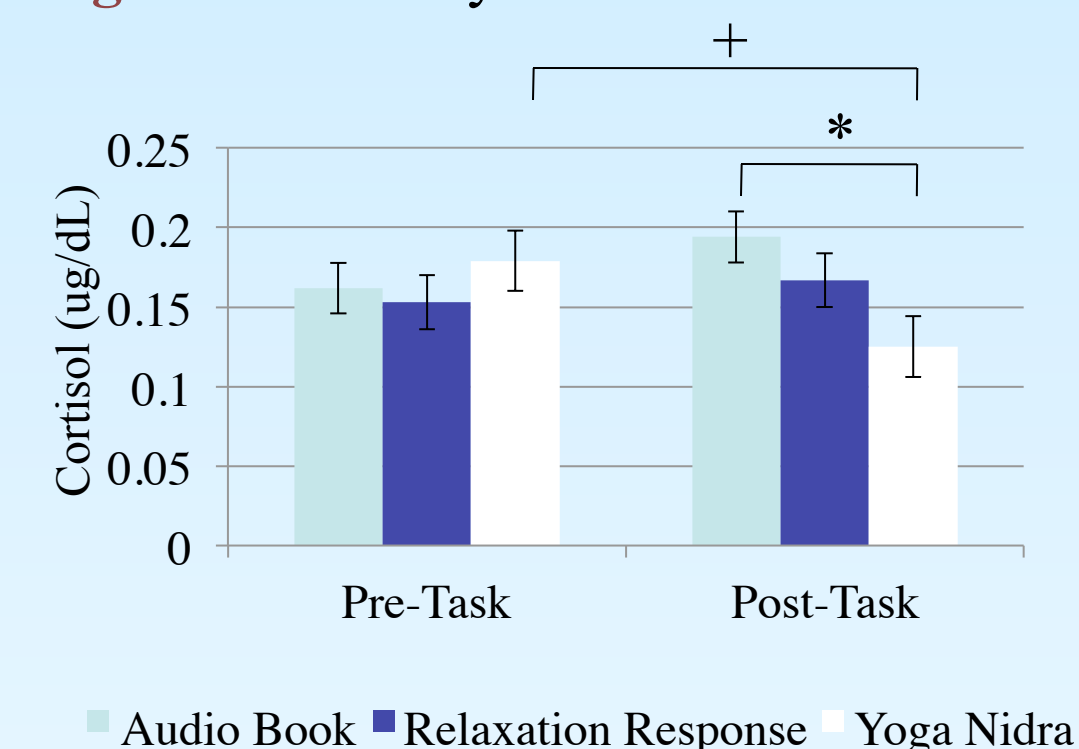
In order to test for differences in cortisol and PANAS scores between the 3 groups, a 2 (Time: pre task vs. post task) x 2 (Session: Session 1 vs. Session 4) x 3 (Group: YN, RR, AB) repeated measures ANOVA was performed.

Results of the cortisol analysis revealed a marginally significant 2-way interaction between Time and Group ($p = .053$) and a significant interaction between Time and Session ($p = .038$).

Post hoc analyses to explore the Time x Group interaction revealed that while there were no differences between groups at Pre-Task, the Audio Book group had significantly higher cortisol levels than the Yoga Nidra group at Post-Task ($p = .02$). In addition, there was a marginally significant decrease in cortisol from Pre-Task to Post-Task for the Yoga Nidra group ($p = .053$).

Post hoc analyses to explore the Time x Session interaction revealed that there was a significant decrease in cortisol from Pre-Task at Session 1 to Pre-Task at Session 4.

Figure 2 Salivary Cortisol Results



NOTE: Data in Figure 2 depict the Time X Group interaction and are therefore collapsed across Sessions 1 and 4.

* $p < .05$, + $p < .06$.

Results of the PANAS analyses revealed a significant main effect of Session for negative affect ($p < .001$); negative affect was significantly higher at the first session compared to the fourth session.

There was a significant 3-way interaction for positive affect ($p = .04$). Post hoc analyses revealed that at the fourth session positive affect was significantly higher for the Integrative Restoration Yoga Nidra group compared to the Audio book group ($p = .002$) and the Relaxation Response group ($p = .03$) following the task.

Discussion

The results of the study suggest that meditation leads to greater physiological relaxation and better mood as compared to listening to an audio book. In addition, these results suggest that meditation, specifically open-monitoring meditation techniques such as Integrative Restoration Yoga Nidra, lead to significant decreases in cortisol and increases in mood during practice.

Because there were no cortisol differences when comparing Session 1 to Session 4, it appears that it is possible to achieve physiological benefits the first time meditation is practiced.

Future studies employing a wider age range and men are necessary to corroborate the findings of the current study.

Acknowledgements & Funding

We thank Herbert Benson, M.D., from the Benson-Henry Institute for Mind/Body Medicine for allowing us to use his Relaxation Response script, and Richard Miller, Ph.D., from the Integrative Restoration Institute for allowing us to use his Integrative Restoration Yoga Nidra script. We also thank Stephanie Lopez, L.I.S.W.-S, for leading the Integrative Restoration group. Funding for this study was provided by an Ohio University Graduate Student Enhancement Award.