The Effects of Meditation on Certain Physiological Functions

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Abstract

This study will test whether traditional meditation exercises will reduce the heart rate of an individual. The individual will first have their heart rate taken before engaging in a breathing exercise. The value of the heart rate before any breathing exercise will act as the control. The individual will then retreat to a quiet location and engage in a deep breathing exercise for ten minutes. Upon return, the heart rate of the individual will be taken again and recorded. Assuming the post-breathing exercise heart rate is lower than the pre-breathing exercise heart rate, we can conclude that traditional breathing exercises can lower one’s heart rate.
The Effects of Meditation on Certain Physiological Functions

Practitioners of deep breathing exercises (meditation) argue that the frequent practice of focusing your mind and reducing your breath rate can have positive implications on an individual’s physiological functions. Reducing blood pressure, stress, heart rate and recovering from illness are all claims. Considering the positive potential of these claims, further examination on the physiological effects of meditation is necessary.

First, a working definition of meditation in a laboratory setting is required in order to proceed properly. A study done by Bond et al. (2009) defines the criteria essential to meditation as a defined technique, logical relaxation, and/or a self-induced state. Furthermore, meditation practice may include relaxation, use of a self-focus skill or anchor, creating an altered state of consciousness, producing mental silence and somehow being rooted in spiritual, philosophical or religious context. With a working definition provided by Bond et al. (2009), specific research into the physiological effects of meditation can begin.

Parker, Gilbert, and Thoreson (1978) reported alcoholics that engaged in meditation training for three weeks reduced blood pressure rates. Moreover, a group that engaged in progressive relaxation training showed no signs of a decrease in blood pressure. One can conclude that although both techniques are similar in function, the act of meditation has specific benefits to offer in regards to blood pressure.

Stress is another physiological variable that can cause negative physiological issues. Oman, Hedberg, and Thoreson (2006) reported that mental health professionals significantly reduced stress levels through passage meditation over a two month span. Moreover, a similar study (Anderson, Levinson, Barker & Kiewra, 1999) focusing on grade school teachers yielded similar results. When faced with a direct stress variable in their environment, Goleman and
Schwartz (1976) concluded that both beginning and experienced meditation practitioners were able to curb stress related symptoms that appeared because of the variable. A different study (Bellarosa & Chen, 1997) focusing on occupational stress management concluded that when given several options on how to handle occupational stress, (relaxation, physical fitness, cognitive restructuring, meditation, assertiveness training, and stress inoculation) meditation was ranked by the participants as one of the least effective methods. Given the contrasting examples of the relationship between stress and meditation, research has yielded varying degrees of success between the two.

Heart rate is another physiological function that some claim can be regulated by meditation. Several studies (Cauthen & Pyrmak, 1977; Cuthbert, Kristeller, Simons, Hodes, & Lang, 1981) concluded that heart rates decreased during meditation. Conversely, a study done by English and Baker (1983) concluded that transcendental meditation reduced blood pressure but did not reduce heart rate. Similarly as in the examination of stress, the relationship between meditation and heart rate is met with varying degrees of success.

The alleviation of general physical illness is yet another claim that meditation can have a positive impact on. A study done by Fredrickson, Cohn, Coffey, Pek, and Finkel (2008) concluded that along with mental benefits, (increased mindfulness, purpose in life, social support) loving-kindness meditation also decreased illness symptoms. Once again, positive implications regarding an alleviation of physical illness can be attributed to meditation.

The research provided can support the following hypothesis: Meditation can specifically reduce potentially dangerous heart rate levels in an individual.
Method

Participant

An individual will be chosen from a Broome Community College General Psychology class and studied according to the experiment.

Materials and Apparatus

One chair will be provided for the test subject while their heart rate is monitored. The Biopac MP40 will be used to monitor the test subject’s heart rate. A standard pencil and paper will be used to record heart rate data. A quiet environment such as the hallway, an empty classroom or study area will be utilized by the test subject in order to complete their deep breathing exercise.

Procedure

Before beginning the experiment, the test subject will be completely informed as to what and how the experiment will be done. Moreover, consent will be required from the subject in order for the experiment to commence. The subject will also be informed that at any time he or she no longer wants to continue, the experiment will be aborted immediately. First, the subject will be seated in a standard chair and his or her heart rate will be taken and recorded by the Biopac MP40. After recording, the subject will retreat to a pre-designated area that will provide comfort and silence. After ten minutes of deep breathing and focusing the mind on the breath, the subject will be informed that the session has expired. Immediately after the deep breathing exercise, the subject will once again have his or her heart rate taken by the Biopac MP40.

Method of Analysis

The two recorded sets of data will be compared (pre-deep breathing, post-deep breathing) to determine whether a connection can be made. Assuming that the post-deep breathing exercise
has a lower heart rate value than the pre-deep breathing exercise, we can determine that
meditation exercises can lower an individual’s heart rate.
References


