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Changes on the Catalase Antioxidant System in Response to Pranayama Practices

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Abstract

The present research has been under taken to serve a link in the chain of the ongoing research in this newly developed inter disciplinary sports science-physio psychic sports. Pranayama is the control of the prana and vital forces of the body. It is the regulation of breath. Catalase is a heme protein, catalysing the removal of H_2O_2 . This enzyme occurs in almost all animal tissues, highest activity being found in liver and red blood cells. Catalase is an enzymatic antioxidant, which forms first line of defence against reactive oxygen species (ROS). The purpose of study was to examine the effect of pranayamic training on catalase affiliated to exercise induced oxidative stress. It also envisages the effects of training i.e., whether any kind of adaptation occurs due to regular training on the selected variable. The experimental design used for this study was random group design. In this study, 20 subjects were randomly divided into two groups, one experimental group and one control group were also allotted randomly. Catalase activity increased significantly after acute exercise in after training situation. Pranayamic Training resulted in elevating the resting state catalase activity of experimental group.

Keywords: Catalase, Pranayamic Training, Induced Oxidative Stress.

1. Introduction

- As part of the ongoing global sports research, sports scientists have turned their attention now to India's age-old yogic exercises for their usefulness in modern sports science. Proof has been obtained to the effect that yoga has been wonderful physical and psychological exercise down the ages.
- The present research has been under taken to serve a link in the chain of the ongoing research in this newly developed inter disciplinary sports science-physio psychic sports. Pranayama is the control of the prana and vital forces of the body. It is the regulation of breath.
- Catalase is a heme protein, catalysing the removal of H_2O_2 . This enzyme occurs in almost all animal tissues, highest activity being found in liver and red blood cells. Catalase is an enzymatic antioxidant, which forms first line of defence against reactive oxygen species (ROS).

Objective of the Problem

The purpose of study was to examine the effect of pranayamic training on catalase affiliated to exercise induced oxidative stress. It also envisages the effects of training i.e., whether any kind of adaptation occurs due to regular training on the selected variable.

Methodology

- Total Subjects (n =20)
- Groups = Two
 - A. Control (n=10)
 - B. Pranayamic (n=10)
- Selection of Variable (Catalase)
- Experimental Design (RANDOM GROUP DESIGN)
- Statistical Techniques
- 2 X 2 X 2 FACTORIAL DESIGN
 - Each Group was tested under four conditions.
- 1. Before commencement of Training

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- i) Rested Condition
- Ii) Exercised Condition
- 2. After twelve weeks of Training
 - i) Rested Condition
 - Ii) Exercised Condition

The experimental design used for this study was random group design. In this study, 20 subjects were randomly divided into two groups, one experimental group and one control group were also allotted randomly.

Results

Paired mean differences of Catalase for Control and Pranayamic Training Groups before and after training under comparison of rested and exercised conditions, Result shows that for the control group, the rested mean difference value before and after training is 1.215, which is not statistically significant at 0.05 level. Similarly the exercised mean difference value before and after training period is 1.654, which is not statistically significant since it is less than the calculated Scheffe value.

In the pranayamic training scheme the rested mean difference value before and after training is 3.166, which is found to be statistically significant at 0.05 level. While for the exercised conditions mean difference value before and after training programs is 5.604, which is also significant at 0.05 level. Thus the pranayamic training shows its influence in producing an increased level in catalase.

Conclusion

- Catalase activity increased significantly after acute exercise in after training situation.
- Pranayamic Training resulted in elevating the resting state catalase activity of experimental group.

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