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Effect of meditation and pranayama practice on selected physiological variables among university level kho-kho players

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Abstract

An attempt has been made to investigate the Effect of Meditation and Pranayama Practice on Physiological Variables among University level Kho-Kho Players. Fifteen male players of University level Kho-Kho players who were selected in Vidyasagar University Kho-Kho team, were practiced meditation and pranayama namely Shitali Pranayama, Ujjayi Pranayama, Bhastrika Pranayama, Bhramari Pranayama, Kapalbhati Pranayama, Anuloma & Viloma Pranayama for six weeks by maintaining a schedule. The physiological variables are resting heart rate and blood pressure and respiratory rate. The resting heart rate was measured by Pulse Oximeter and blood pressure was measured by Omron Blood Pressure Monitor. In results, it was found that there was significant difference between pre-test and post-test. So, it was evident that Meditation and Pranayama Practice impact significantly on physiological variables namely resting heart rate and blood pressure and respiratory rate among university level kho-kho players.

Keywords: Physiology, Player, Meditation, Pranayama, University, Anuloma-Viloma etc.

Introduction

Meditation is universal. It transcends all divides like religion, country and culture. It is a gift for the mankind. In modern life, it is the high exposure to stress, anxiety, fear and other negative emotions. Meditation helps the individuals to overcome the emotions and facilitate peaceful mind and healthy life, promotes relaxations and develops positive attitude. Meditation may significantly reduce stress, anxiety, depression and pain. (Holzel *et al*, 2011) [7].

In modern society, practice of pranayama develops psycho-somatic, spiritual discipline for achieving union and harmony between our mind, body and soul and the ultimate union of our individual consciousness with universal consciousness (Madanmohan, 2008) [9].

Physiology is the study of normal function in human body (Morehouse, Lawrence and Augustus, 1986). It is a sub-section of biology, covering a range of topics that include organs, anatomy, cells, biological compounds, and how they all interact to make life possible. Among them, resting heart rate and blood pressure are very important functional variable.

Heart rate is the number of heartbeats per unit of time, usually per minute. It is based on the number of contractions of the ventricles (the lower chambers of the heart). Blood pressure is the pressure that exerted by the blood upon the walls of the blood vessels and especially arteries and that varies with the muscular efficiency of the heart, the blood volume and viscosity, the age and health of the individual, and the state of the vascular wall. Respiratory rate is also known as breathing rate. This is the number of breaths, taken per minute.

Statement of the problem

The problem of the study was to investigate the effect of Meditation and Pranayama Practice on physiological variables namely resting heart rate, blood pressure and respiratory rate among university level kho-kho players.

Hypothesis

It was hypothesized that meditation and pranayama practices have the positive effect on resting heart rate, respiratory rate and blood pressure among university level kho-kho players.

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Delimitations

Only fifteen male university level kho-kho players who were in Vidyasagar University Kho-Kho team, were selected for the study.

Limitations

Subjects are not from the same cultural group, economical status, educational and family background, food habits, nutrition, mental growth and mental set up. Thus any influence of those factors on personality, will be beyond the control of the investigator.

Procedure

Selection of Subjects

Fifteen male students of Vidyasagar University Kho-Kho Players were practiced Meditation and different types of Pranayama like Shitali Pranayama, Ujjayi Pranayama, Bhastrika Pranayama, Bhramari Pranayama, Kapalbhati Pranayama, Anuloma & Viloma Pranayama for six weeks by maintaining a schedule.

Programme Schedule

Frequency	03 days in a week
Duration	30 minutes
Time	2:00 pm – 2:30 pm

Statistical Analysis

Pre-test and Post-test results were taken and compared by employing 't' test at 0.05 level of confidence.

Presentation and analysis of data

Table 1: Mean and standard deviation of pre-test and post-test results of physiological variables among university level Kho-Kho players

Variables	Pre-test		Post-test	
	Mean	S.D.	Mean	S.D.
Resting Heart Rate	73.95	4.334	66.15	3.133
Systolic Blood Pressure	122.55	4.6176	116.35	3.528
Diastolic Blood Pressure	78.45	3.605	73.15	2.943
Respiratory Rate	16.25	1.118	14.05	0.887

From table -1 it was observed that pre-test result was greater than post-test result in case of resting heart rate, respiratory rate, systolic blood pressure and diastolic blood pressure. It indicated that resting heart rate, blood pressure (systolic and diastolic) and respiratory rate became superior due to Meditation and Pranayama Practice.

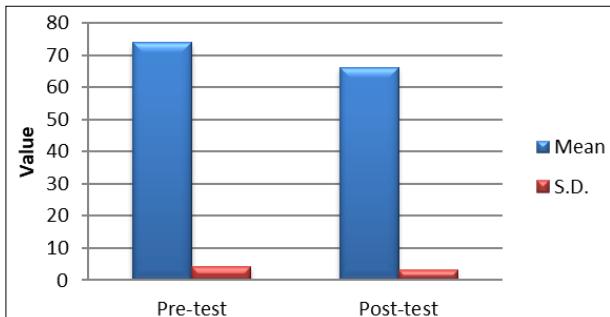


Fig 1: Mean and Standard Deviation of pre-test and post-test results resting heart rate among university level kho-kho players

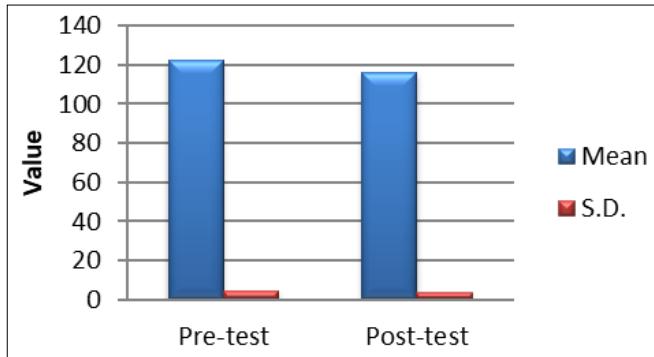


Fig 2: Mean and Standard deviation of pre-test and post-test results of systolic blood pressure among university level kho-kho players.

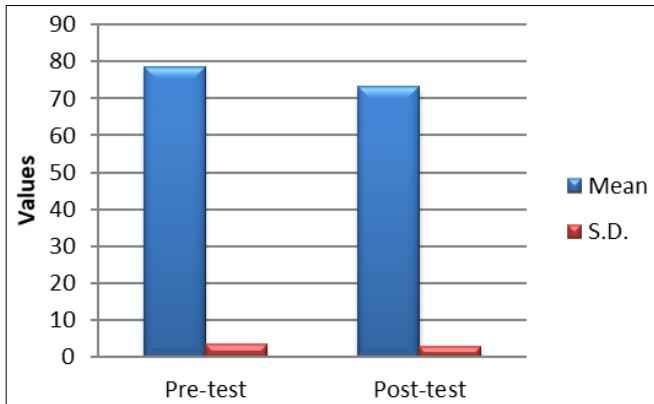


Fig 3: Mean and Standard deviation of pre-test and post-test results of diastolic blood pressure among university level kho-kho players.

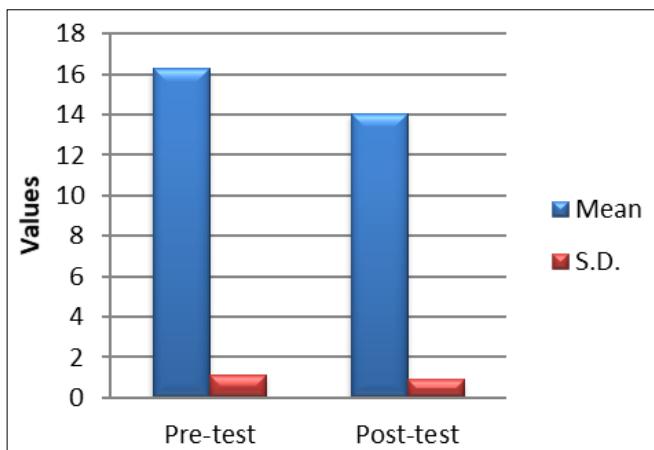


Fig 4: Mean and Standard deviation of pre-test and post-test results of respiratory rate among university level kho-kho players.

Table 2: Mean difference of pre-test and post-test results of physiological variables among university level Kho-Kho players

Variable	Tests	Mean	S. D.	't' value
Resting Heart Rate	Pre-test	73.95	4.334	10.313 *
	Post-test	66.15	3.133	
Systolic Blood	Pre-test	122.55	4.6176	7.544 *
	Post-test	116.35	3.528	
Diastolic Blood	Pre-test	78.45	3.605	8.052 *
	Post-test	73.15	2.943	
Respiratory Rate	Pre-test	16.25	1.118	10.900 *
	Post-test	14.05	0.887	

* Significant at 0.05 level of Confidence
 $t_{0.05} (14) = 2.145$

From Table – 2 it was observed that there was significant difference between pre-test and post-test result in relation to resting heart rate and respiratory rate. In case of blood pressure (Systolic and Diastolic), there was also significant difference between pre-test and post-test results.

Discussion of the findings

Bhattacharya *et al.* (2002) [4] have confirmed that yoga practice improved oxidative status. According to Sinha *et al.* (2004) after three months of yoga training dynamic Surya Namaskar as aerobic exercise seemed stretching and slow dynamic component of exercise with optimal stress on the cardio-respiratory system. Rohila *et al.* (2021) confirmed that yogic practices control such physiological variables as blood pressure and pulse rate.

It evident significantly greater improvements in resting pulse rate; increasing maximum breath holding time, systolic blood pressure and diastolic blood pressure. Practice of Meditation and Pranayama helps the subjects to improve cardio-respiratory endurance and physiology of breathing process. Thus, practice of Meditation and Pranayama help the subjects to develop their physiological characters which help them for developing better resting heart rate and blood pressure and respiratory rate in a successful manner.

Conclusion

From the above findings, it can be concluded that practice of meditation and pranayama helps to minimize the resting heart rate, respiratory rate and blood pressure (systolic and diastolic). During teaching as well as coaching, teacher and coaches should keep in mind about such physiological facts which help the students and athletes for better educational achievement as well as sports performances.

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