



EFFECT OF WEIGHT TRAINING AND YOGA ON SELECTED PHYSIOLOGICAL VARIABLES OF SCHOOL GOING STUDENTS

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ABSTRACT

INTRODUCTION: - Weight training is organized exercise in which muscles of the body are made to contract in response to external weights, body exercise or resistance, or other devices in order to stimulate growth and strength. The word 'yoga' is derived from the roots of Sanskrit 'Yuj' which means to join, to attach, to bind, yoke and a concentrate or one attention. **PURPOSE:** - Purpose of the study is to find out the "Effect of weight training and yoga on selected physiological variables of school going students". **MATERIALS & METHODS:** -To achieve the purpose, total sixty (60) school going students of Harimara konarpur S.S.C High school, Konarpur, in Paschim Medinipur district, West Bengal age ranging between 15-18 years were randomly selected for the study. The physiological variables were heart rate which was measured by palpation at the radial artery per minute, systolic blood pressure and diastolic blood pressure which were measured by sphygmomanometer Flexibility which was measured by sit and reach test and body fat % which was measured by skin fold calliper. The subjects were given the eight (8) weeks yoga and weight training in Paschim Medinipur district. The training schedule was fixed in the morning session as well as in the afternoon session minimum time duration 60-90 minutes per session with various types of weight training and yogasanas including slow warming up, warm down and resting time between and set of the exercises. A pre-test mean score was taken on all the selected school going students and the scores were recorded. Similarly, after eight (8) weeks of yoga and weight training a post-test data was taken and scores were recorded. The Independent Paired- 't' test was conducted for evaluate the data and the level of significance is fixed at 0.05 level of confidence. **RESULTS & DISCUSSION:** -The data was analyzed statistically by computing mean, standard deviation and 't' test. It was observed that the Post-test mean score of the school going students were better than the Pre-test mean scores. It is also evident that the calculated value of the variable is more than the table value at 0.05 level of significant. So, the result is significant. The hypothesis is accepted since there was a significant improvement in physiological variables due to 8 weeks of yoga and weight training programmes. **CONCLUSION:** - On the basis of the obtained result, the following conclusion may be drawn....

- Post-test mean score of the Physiological variables was better than the Pre-test mean scores. So, the level of physiological variables came down to normal due to eight (8) weeks of yoga and weight training programmes.

KEYWORDS : Weight training, Yogasana, Physiological variables, school going students.

INTRODUCTION:

"Yoga is a life of self-discipline. Yoga balances, harmonizes, purifies and strengthens the body, mind and soul. It shows the way to perfect health, perfect mind control and perfect peace with one's own self, the world, nature and God."

-Swami Vishnu-devananda

Weight training is organized exercise in which muscles of the body are made to contract in response to external weights, body exercise or resistance, or other devices in order to stimulate growth and strength. Weight training is also called 'resistance training' and 'strength training'. It is a common type of strength training for developing the strength and size of skeletal muscles. It utilizes the force of gravity in the form of weighted bars, dumbbells or weight stacks in order to oppose the force generated by muscle through concentric or eccentric contraction.

Weight training can have positive benefits for adolescents as well as for adults. Weight training can enhance sports performance and reduce the risk of injury by way of improved strength, enhanced muscular development, refined coordination and motor skills, and better overall fitness. Resistance training in the preadolescent child, however, has been a controversial subject. It is not clear whether the strength gains are significant enough to outweigh the risk of injury.

The word **"YOGA"** at once reminds us the knowledge of the self. It emphasizes on "Know the Self". It is nothing but the improvement of the body and mind. It is the means of attaining healthy body, mental strength, tranquilleness of the mind. It is the methodical effort to attain perfection through the controlling of body and mind. "A healthy mind resides in a health body". Human beings always want sound body either taking medicine or practicing yoga. **The question arises which of the two is most important. Medicine is no doubt for**

human being as it cures any diseases in no time and relieves human beings from painful situation for the time being but it has its side effects. Medicine affects the organs like heart, lungs, brain and blood vessels and thereby creates another problem. In nutshell, medicine is the mother of other diseases in human body. Man is a rational being. 'Yoga' concentrates our mind in every aspect of life and thereby human beings can gain healthy body. It helps the man to gain resistance power and normalize blood circulation. It also helps cleaning of blood veins and pumping of purified blood. The practice of Yoga in the Indian subcontinent has been documented as early as B.C. Regular practice of variety of Yoga techniques have been shown to lower heart rate and blood pressure in various population **Ckuvalayananda 1968; Lakshmiathan et al. 1979 and mahajan et al. 1999.** All over the world scientists have extensively studied Yoga and claimed that it increases longevity **C Marugeson et al. 2000; Mc Calfrey et al. 2005; Nagarathan and Nagendra 2003 and patel 1975.** It has therapeutic and rehabilitative effects **(Raubetal 2003. Schindf et al. 1998 and Selvam urthyetal 1999.**

In Bhagvad Gita, the main stress is on karma yoga (yoga by action). Work alone is your privilege, never the fruits thereof. Never let the fruits of action be your motive; and never cease to work. Work in the name of Lord, abandoning selfish desires. Be not affected by success or failure. This equipoise is called Yoga. A man who cannot control his mind will find it difficult to attain this Devine communion; but the self-controlled man can attain it if he tries hard and directs his energy by the right means. "Yoga is an art, a science and a philosophy. It touches the life of man at every level, physical, mental, and spiritual. It is a practical method for making one's life purposeful, useful and noble.

Physiology: The study and function of the human body and its part is called physiology. It is the scientific study of the

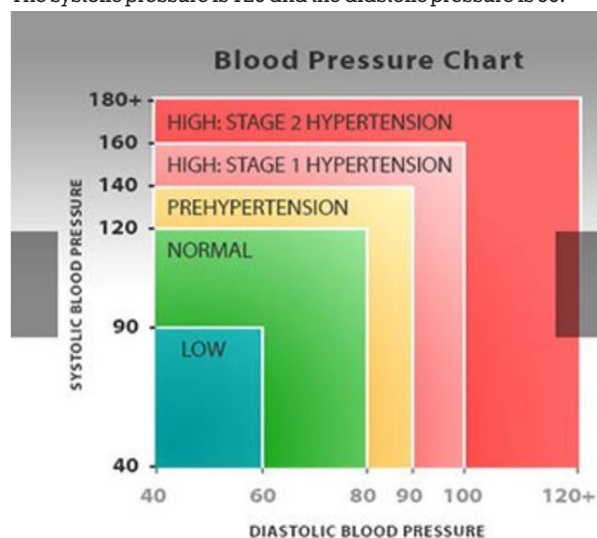
functions and mechanisms which work within a living system. It is the science of life. It is the branch of biology that aims to understand the mechanisms of living things, from the basis of cell function at the ionic and molecular level to the integrated behaviour of the whole body and the influence of the external environment.

Blood Pressure:- Blood Pressure is the pressure of circulating blood against the walls of blood vessels. It is the pressure of the blood within the arteries. It is produced primarily by the contraction of the heart muscle. Most of this pressure results from the heart pumping blood through the circulatory system. The term "blood pressure" refers to the pressure in the large arteries. It can be classified into two types.

They are-

1. Systolic Blood Pressure.
2. Diastolic Blood Pressure.

Systolic and Diastolic Blood Pressure:- The blood pressure reading is measured in millimetres of mercury (mmHg) and is written as systolic pressure, the force of the blood against the artery walls as your heart beats, over diastolic pressure, the blood pressure between heartbeats. For example, a blood pressure reading is written as 120/80 mmHg, or "120 over 80". The systolic pressure is 120 and the diastolic pressure is 80.



programmes on selected physiological variables of school going male students.

HYPOTHESES:-

It was hypothesized that there was a significant difference of eight weeks (8) weight training and Yoga on selected physiological variables of school going students' age ranging between 15 to 18 years.

METHODOLOGY:-

SUBJECTS:- Total sixty (60) school going male students were randomly selected for the study from Harimara konarpur S.S.C High school, Konarpur, in Paschim Medinipur district, West Bengal age ranging between 15-18 years. The physiological variables were heart rate which was measured by palpation at the radial artery per minute, systolic blood pressure and diastolic blood pressure which were measured by sphygmomanometer, Flexibility which was measured by sit and reach test and body fat % which was measured by skin fold calliper.

PROCEDURE:- Total sixty (60) school going male students were randomly selected for the study. The physiological

variables were heart rate which was measured by palpation at the radial artery per minute, systolic blood pressure and diastolic blood pressure which were measured by sphygmomanometer, Flexibility which was measured by sit and reach test and body fat % which was measured by skin fold calliper. The subjects were given the eight (8) weeks yoga and weight training in Paschim Medinipur district. The training schedule was fixed in the morning session as well as in the afternoon session minimum time duration 60-90 minutes per session with various types of weight training and yogasanas including slow warming up, warm down and resting time between and set of the exercises. A pre-test mean score was taken on all the selected school going students and the scores were recorded. Similarly, after eight (8) weeks of yoga and weight training a post-test data was taken and scores were recorded.

STATISTICAL ANALYSIS:-

The Independent Paired-'t' test was conducted for evaluate the data and the level of significance was fixed at 0.05 level of confidence. To get the final result Mean, SD, Mean Difference and 't'-test were calculated.

SCHEDULE OF YOGA PRACTICES:-

1. Bhujangasana 9. Halasana, 2. Ardh-Shalabhasana 10. Ardh-Matsyendrasana
3. Ardh-Halasanana 11. Shalabhasana, 4. Vakrasana 12. Viparitkarani
5. Chakrasana 13. Naukasana, 6. Paschimottan 14. Parvatasana
7. Dhanurasana 15. Makrasana, 8. Shavasana 16. Kapalbhati
17. Anulom-Vilom, 18. Meditation.

Selected Variables & Their Measurement And Units:-

SL. NO.	PHYSIOLOGICAL VARIABLES	MEASURED BY	UNITS
1.	Heart Rate	Palpation at the Radial Artery	Beats/Min.
2.	Systolic Blood Pressure (SBP)	Sphygmomanometer	Mm of Hg.
3.	Diastolic Blood Pressure (DBP)	Sphygmomanometer	Mm of Hg.
4.	Flexibility	Sit and reach test	Inch/ft
5.	Body Fat %	Skin Fold Calliper.	Mm.

RESULTS & DISCUSSION:-

The result of the study is discussed under the following table with the graphical presentation. Table-1 shows the significant difference between pre-test and post-test scores on physiological variables of school going male students.

TABLE - 1 Significant Difference between Pre-test and Post-test Mean Scores on physiological variables after calculating the Mean, SD, MD and t-ratio of school going male students:-

Sl. No.	Physiological Variables	Test	Mean	MD	t-ratio	Sig.
1.	Heart Rate	Pre - test	77.82	5.02	3.45	0.05*
		Post - test	72.80			
	Systolic Blood Pressure (SBP)	Pre - test	124.45	4.10	3.32	
		Post - test	120.35			
	Diastolic Blood Pressure (DBP)	Pre - test	85.80	5.05	4.25	
		Post - test	80.75			
	Flexibility	Pre - test	12.08	3.08	3.05	
		Post-test	15.16			
	Body fat %	Pre - test	21.55	4.20	3.22	
		Post - test	17.35			

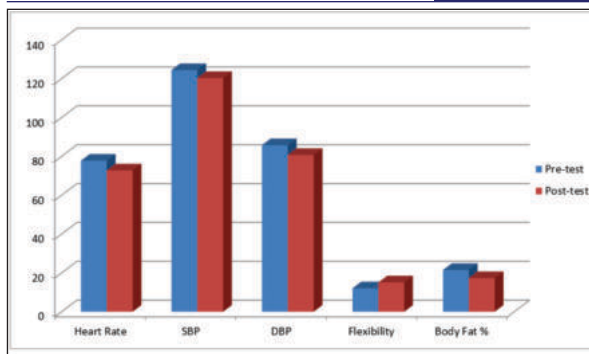


Fig.1:-Graph Showing the Significant Difference between Pre-test and Post-test mean scores on physiological variables of School going male students.

DISCUSSIONS:-

It was observed from the above table that the pre-test mean score of physiological variables like heart rate, systolic blood pressure and diastolic blood pressure, Flexibility and body fat % were 77.82, 124.45, 85.80, 12.08 and 21.55 respectively which are improved better in post-test, they were 72.80, 120.35, 80.75, 15.16 and 17.35 respectively. It is also evident from the above table that the calculated value of the each variable i.e 3.45, 3.32, 4.25, 3.05 and 3.22 are more than the table value at 0.05 level of significant. So, the result is significant. The hypothesis is accepted since there was a significant improvement in heart rate, systolic blood pressure and diastolic blood pressure, Flexibility and body fat % due to 8 weeks of yoga and weight training programmes.

Bhole and Karambelkar (1971) investigated the possibility of the activity of the heart being influenced through some Yoga practices, which has been supported by several workers (**Rele 1929; Brose; 1946; Wenger and Bagchi, 1957; Wenger et al. 1961, 1963; Anand and Chhina, 1961**). **Wenger and Bagchi** could get a heart-stop period of 3.0 sec. in a subject studied at Kaivalyadhama, although other workers have found no evidence to substantiate the claim that Yogi could stop the heart at will. In most of the cases not even any slowing of the heart rate was noted. The present work records the suspension of heart activity up to 5-6 seconds and throws light on mechanism involved in such attempts of heart control through Yoga practices.

Besides, the **astanga yoga** is based on the idealistic approach, a real road to attain good consciousness, self-confidence and self-concept. Meditation helps the individual to overcome these emotions to facilitate a calm, peaceful mind and healthy and stress-free body. It promotes relaxation, develops self-concept, self-confidence, positive attitude and social ability and reduces stress as well as anxiety. Yoga will help them to cope and emerge stronger and more physically, mentally and emotionally fit. Hence, the researcher was motivated to take up the present study.

CONCLUSION:-

Many research studies have been done on the various types of training programmes. It is proved that Eight weeks (8) yoga and weight training programmes have a significant role on the physiological variables of the school going male students. On the basis of the results obtained from the present empirical investigation and within the limitation, the following conclusions may be drawn.

1. Heart rate, Systolic blood pressure and Diastolic blood pressure were better improved i.e coming down normal after the given period of eight weeks (8) yoga and weight training programmes and the result was significant.
2. Flexibility was increased after the given period of eight weeks (8) yoga and weight training programmes and the result was significant.

3. Body fat % was also decreased after the given period of eight weeks (8) yoga and weight training programmes and the result was significant.

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