



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

Physical Education

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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. On the other hand, 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 was to find out the effect of weight training and Yoga on selected physiological variables of college going students age ranging between 18 to 22 years. **MATERIALS & METHODS:-** To achieve the purpose, total sixty (60) college going male students age ranging between 18-22 years were randomly selected for the study from Fakir Chand College (University of Calcutta), Diamond Harbour, South 24 Parganas, West Bengal. 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 and body fat % was measured by skin fold calliper. The subjects were given various types of weight training programmes and yogasana for the six (6) weeks in the college campus. The training schedule were fixed in the morning session as well as in the afternoon session minimum time duration 60-90 minutes per session with various types of training and yogasanas including slow warming up, warm down and resting time between the set of the exercises. The Pre-test and post-test mean scores have been taken and their scores have been recorded. The Independent Paired-'t' test is 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 from the table that in the pre-test mean scores of physiological variables were 78.60, 125.30, 87.80 and 22.26 respectively which are improved better in post-test, they were 72.50, 120.60, 80.50 and 17.86 respectively. It is also evident from the above table that the calculated value of the each variable is more than the table value at 0.05 level of significant. So the result is significant. The hypothesis was tested at 0.05 level of confidence. **CONCLUSION:-** On the basis of the obtained result, it has been observed that the physiological variables have been better improved in the post-test scores due to six (6) weeks yoga and weight training programmes.

KEYWORDS

Weight training and Yogasana, Physiological variables, College 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

Yoga is an ancient Indian philosophy. It is derived from the roots of Sanskrit 'Yuj' which means to join, to attach, to bind, yoke, and a concentrate or one attention. It also means Union. Yoga is true union of our will with the will have had. The literal meaning of the word 'Yoga' is 'yoke'. It means for uniting the individual spirit with the Universal spirit or God. It is a science by which the individual approaches the truth. Yoga is not religion it is a method by which one obtain Control of one's latent powers. It is the means to reach complete Self-Realization. Yoga is a reduction of one's mental process, along with the physical. Practice of Yoga would directly contribute to human resource development and improvement in the quality of life by developing their fitness (Physical, mental, emotional as well as spiritual). Yoga is an instrument of self-evolution and enlightenment through the physical and mental well-being. It enhances the quality of life by improving motor ability. 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 **Ckavalayananda 1968; Lakshmikanthan 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**.

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.

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. As a sub-discipline of biology, physiology focuses on how organisms, organ systems, individual organs, cells, and biomolecular carry out the chemical and physical functions in a living system.

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.



Blood pressure Measurement

Heart rate:- Heart rate is the number of heart beats per minute. The resting heart rate for an average adult is between 60 and 80 beats per minute.

Body Composition is the relative percentage of muscle, fat, bone and other tissues of which the body is composed. Various research studies revealed that Participation in physical activities and various games and sports helps in improving the Physical fitness by lowering Percentage of Body Fat and increasing the Lean Body Mass. Physical fitness is the product of physical exercises and exercise is very much related to health and wellbeing. Thus, **the present study examines the effect of 6 weeks yoga and weight training programmes on physiological variables of college going male students.**

PURPOSE OF THE STUDY:-

The purpose of the study was to analyze the effect of six (6) weeks yoga and weight training on physiological variables of college going male students.

HYPOTHESES:-

It was hypothesized that there was a significant difference of six weeks (6) weight training and Yoga on selected physiological variables of college going students' age ranging between 18 to 22 years.

METHODOLOGY:-

SUBJECTS:- Total sixty (60) college going male students were randomly selected for the study from Fakir Chand College (University of Calcutta), Diamond Harbour, South 24 Parganas, West Bengal. 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, vital capacity which was measured by spirometer and body fat % was measured by skin fold calliper.

PROCEDURE:- Total sixty (60) college 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, vital capacity which was measured by spirometer and body fat % was measured by skin fold calliper. Yoga and weight training programmes were given for six (6) weeks in the college campus. The training schedule were fixed in the morning session as well as in the afternoon session minimum time duration 60-90 minutes per session with various types of yogasanas and weight training programmes including slow warming up, warm down and resting time between and set of exercises. The Pre-test and post-test mean scores of the variables were taken and their 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. Ardha-Shalabhasana 10. Ardha-Matsyendrasana
3. Ardha-Halasana 11. Shalabhasana,
4. Vakrasana 12. Viparitarani
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.	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 college 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 college going male students:-

Sl. No.	Physiological Variables	Test	Mean	MD	t- ratio	Sig.
1.	Heart Rate	Pre - test	78.60	6.10	4.27	0.05*
		Post - test	72.50			
	Systolic Blood Pressure (SBP)	Pre - test	125.30	4.70	3.45	
		Post - test	120.60			
	Diastolic Blood Pressure (DBP)	Pre- test	87.80	7.30	5.61	
		Post – test	80.50			
	Body fat %	Pre-test	22.26	4.40	3.05	
		Post-test	17.86			

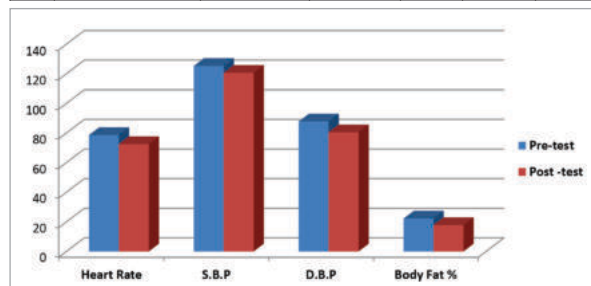


Fig.1:-Graph Showing the Significant Difference between Pre-test and Post-test mean scores on physiological variables of college going male students.

DISCUSSIONS:-

It was observed from the above table that the pre-test mean scores of physiological variables like heart rate, systolic blood pressure and diastolic blood pressure and body fat % were 78.60, 125.30, 87.80 and 22.26 respectively which are improved better in post-test, they were 72.50, 120.60, 80.50 and 17.86 respectively. It is also evident from the above table that the calculated value of the each variable i.e 4.27, 3.45, 5.61 and 3.05 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 and body fat % due to 6 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.

Solih (1984) identified the effects of a conditioning programme on selected physiological variables of college women gymnasts. Ten women gymnasts at Oklahoma State University were tested prior to and following a three month conditioning programme. After the conditioning programme the study concluded that significant improvement were found in anaerobic threshold heart rate, resting blood pressure in the standing position, percent body fat from both skin fold and under water weighing and all strength measures except for right leg strength. No significant differences were found in the means of VO₂ max (ml/kg./min), percentage of CO₂ max at anaerobic threshold, supine resting blood pressure, resting heart rate and right leg strength.

Testerman (1985) examined training and detraining effects on selected physiological measures of fitness in adult black women. Pre-, Post- and detraining post measurements were made on body weight, heart rate, blood pressure, sum of skinfold and predicted VO₂ max. The study concluded that after 12 weeks of training the predicted max. VO₂ and sum of skinfold measurement were improved and reduced respectively. This betterment was reduced back to pre-training levels through de-training. Body weight, heart-rate, and systolic and diastolic blood pressure underwent almost no changes from training through de-training period.

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. Excessive stress and anxiety hamper the students' performance. Better Motor Ability means high level of physical fitness which helps in the positive self perception and improves the total fitness. 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 six weeks (6) yoga and weight training programmes have a significant role on the physiological variables of the college 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 six weeks (6) yoga and weight training programmes and the result was significant.
2. Body fat % was also decreased after the given period of six weeks (6) yoga and weight training programmes and the result was significant.

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