

Effects of Hatha Yoga Training upon the Circumference of Neck, Chest and Waist among Overweight College Students

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Abstract

Health-related fitness is a blessing. It is the quality which enables a person to perform the daily routine tasks efficiently and effectively. Overweight is one of the factors that affect the health-related fitness. The main aim of the current study was to determine the effects of hatha yoga training on the circumference of neck, chest and waist among overweight college students. Twenty-five subjects were selected for the study through PAR-Q having the 20 to 24 years. The pre-test data on dependent variables was collected through

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the tape measurement. Ten weeks of treatment of Hatha yoga was given to the subjects for three days on alternate days per week. After the treatment, post test data was collected of dependent variables through the procedure as adopted for the pre test data. The collected data (pre and post) of the subjects was tabulated. Mean, standard deviation and paired sample t-test were used to analyze the data. The significance level was fixed at 0.05. It is concluded after the data analysis and findings that hatha yoga training has significant effects on circumference of neck, chest and waist among overweight college students. It is recommended that overweight students should take part in the hatha yoga exercises for the enhancement of their health-related fitness.

Key words: Hatha Yoga, neck, chest, waist, over weight

Introduction

In recent years, the incidence of obesity and overweight among college students has become a notable public health issue. This generation often faces sedentary lifestyles, heightened stress levels, and inadequate dietary practices, all of which augment the risk of obesity and its related health issues. To address these difficulties, it is essential to create treatments that are both effective and widely accessible, promoting healthy lifestyles and weight management measures (Islam, Manzoor, and Khattak 2020).

Hatha yoga is a classical style of yoga that emphasises physical postures (asanas) and breathing techniques (pranayama). It has garnered acclaim for its prospective health advantages. Unlike other types of physical training, hatha yoga prioritises a holistic methodology that combines physical, mental, and spiritual dimensions to improve overall well-being (Gothe et al., 2023). Hatha yoga may be especially advantageous for persons who are overweight or obese, since it improves physical fitness, diminishes stress levels, and cultivates enhanced body awareness (Sherman et al., 2024).

Research indicates that Hatha yoga improves physical characteristics. Neck circumference is a reliable indicator for assessing total body weight and fat distribution (Ullah, Gul, Muhammad & Usman, 2022). Despite little study, some evidence indicates that regular yoga practice may decrease neck circumference, potentially enhancing body composition and facilitating fat loss (Miller et al., 2024).

Various hatha yoga asanas improve muscle tone and posture, potentially affecting chest circumference. Although research on the impact of yoga on pectoral circumference is limited, the emphasis on flexibility and strength may explain the slight differences in this measurement (Lee & Kumar, 2023).

Waist circumference is a crucial measure of metabolic health and abdominal obesity (Khan, Gul, Ullah, and Ullah 2022). Recent research suggests that Hatha yoga may substantially affect waist circumference via processes including enhanced metabolic function, improved physical activity,

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and stress alleviation. Studies demonstrate that regular Hatha yoga practice can aid in diminishing abdominal fat, which is directly associated with waist circumference (Patel & Singh, 2023).

This study aims to investigate the impact of Hatha yoga on the circumferences of the waist, chest and neck in overweight college students. This work aims to elucidate the efficacy of Hatha yoga as an intervention for promoting healthy weight control and enhancing body measures in this specific demographic.

Objectives of the Study

- To find out the effects of Hatha yoga on circumference of neck, chest and waist among overweight college students.
- To prepare a list of recommendations for the enhancement of body weight among the overweight college students.

Hypothesis of the study

There are significant effects of Hatha yoga on circumference of neck, chest and waist among overweight college students (20-24 years).

Delimitations of the Study

Following were the delimitations of the study

- The study was delimited to male overweight students only.
- The number of students was twenty-five.
- The age range of subjects was between 20 to 24 years.
- The study was delimited to those students only who were residing in college hostel.
- The duration of the training was ten weeks with three sessions per week on alternate days (Monday, Wednesday and Friday).
- The independent variable was hatha yoga.
- The depended variables were circumference of neck, chest and waist.
- BMI formula ($\text{Weight in kg}/(\text{Height (cm)}/100)^2$) was applied to calculate the body status
- Tape measurement was used to measure the circumference of neck, chest and waist.

Limitations of the Study

Following were the limitations of the study.

The lack of time for the study was a drawback.

- Food habits were not controlled
- Weather conditions was not taken into consideration.
- The social and economic conditions were not given attention.

Materials and Methods

Participants of the Study

According to Ullah, Khan, Gul, and Ullah (2022), in order for researchers to collect data for an experiment, they need to recruit subjects, items, or people who are in some way connected to the problem that is being

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investigated. For the purpose of this study, all of the subjects were male college dorm dwellers who were between the ages of 20 and 24 and who were significantly overweight.

Exclusion and Exclusion Criteria

In order to determine whether or not an individual was qualified to take part in the activity, we used the Physical Activity Readiness Questionnaire (PAR-Q). There is a screening instrument known as the PAR-Q. Fitness instructors make use of it in order to evaluate potential participants and address any health concerns that may arise prior to the beginning of an exercise routine. During their investigation, Venkataraman and colleagues (2024) found that it typically consists of queries with predetermined responses. Out of the 280 students that participated in the study and completed the PAR-Q, sixty five students were found to meet the inclusion criteria for the research effort. Out of a total of sixty-five participants, twenty-five overweight subjects were chosen at random for the study.

Research Design

According to Strong, Tulu, Agu, and Pedersen (2020), researchers employ a method known as a study design in order to find a solution to an issue. In the current inquiry, an experimental approach was taken by employing a pre-test and a post-test procedure. A pre-test was administered to each and every participant before the treatment was started. During this test, the participants' waist, chest, and neck circumferences were precisely measured with a measuring tape. The subsequent step consisted of recording the results for each individual subject. After the pretest, the experimental group participated in hatha yoga training on Mondays, Wednesdays, and Fridays for a period of 10 weeks. Following the completion of the 10-week treatment course, the pre-test method was utilized for the post-treatment post-test for each dependent variable issue for the 25 participants who were from the overweight population. Through the utilization of the dependent variable as a standard, it was possible to monitor the performance of each individual participant following the treatment.

Orientation of Subjects

In order to accomplish the basic goal of the orientation, which is to acquire trustworthy information. Students were motivated and engaged in the training and evaluations that were chosen through the course of an orientation session that was organized. In addition to elaborating on the significance and goals of the study, the researcher also discussed the roles that the volunteers were expected to play. Every single participant was provided with detailed directions on how to effectively adhere to the measurement protocol, as well as explanations of the methodologies that were utilized by the researcher in order to evaluate the dependent variable.

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Subsequent to the initial meeting, the researcher convened with the subjects three further times to discuss the particulars of performing the training-related exercises. Because of this, they were able to finish the workouts without making any mistakes or experiencing any injuries. The activities were carried out by the researcher in the presence of the subjects during the entire process.

Instrument for Collection of Data

Instruments are the equipment that are used for measuring. According to Lasmana, Festiyed, Razak, and Fadilah (2024), a research study instrument is the instrument that a researcher often uses for the purpose of data gathering. The parameters of a particular study determine which methods, such as questionnaires, interviews, or examinations, are the best appropriate for that study. The purpose of this study was to conduct an investigation of the effects of Hatha yoga on the circumferences of the waist, chest, and neck. In accordance with what has been reported in the prior research, tape measures were utilized in order to measure the dependent variables in this investigation.

Test Administration

Immediately following the administration of the PAR-Q and subsequent retrieval from the subjects, the height (in centimetres) and weight (in kilogrammes) of every participant were captured and recorded. A digital scale was used to determine the individual's weight, and a stadiometer was used to determine the individual's height (for example, without shoes on). A limited amount of clothing was worn by the subjects as they entered the weight machine. Following the calculation of the average of the three weight readings, the results were determined to be accurate. With the use of the Body Mass Index (BMI) calculation ($\text{Weight in kilograms}/\text{Height in centimeters}/100^{**2}$), which took into account the subsequent data, the overweight status was determined.

BMI	Classification
<18.5	Under weight
18.5-24.9	Normal weight
25.0- 29.9	Over weight
30.0-34.9	Class I obesity
35.0- to 34.9	Class II obesity
> 40	Class III obesity

A measuring tape was used to determine the circumferences of the neck, chest, and waist before the treatment procedure was performed. These measures were obtained on the right side of the body, specifically the waist, the chest, and the neck. A circumference of neck measured in inches was determined by using the Adam's apple as a measuring. It was determined that

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the chest circumference was measured in inches at the spot where the chest was the broadest. For the purpose of measuring the circumference of the waist, a lightweight clothing was employed. During either the inhalation or the exhale phase of the test, the measurement was obtained in inches from the navel.

Ethical Consideration of the Study

The researcher is responsible for ensuring that the participants in the study are not put in any situations that could potentially cause them to suffer bodily or psychological harm as a result of their involvement in the study. As a consequence of this, each and every participant was informed of the objectives and methods of the study. Through the utilization of PAR-Q for the selection process, it was ensured that the participants were no longer suffering from any of the many disorders. The participants were all required to provide their written consent. One further thing that was obtained was a letter of consent from the head of the institution.

Protocol of Hatha Yoga

There were ten weeks of self-administered hatha yoga instruction included in the program. Each session lasted for fifty minutes and included both warm-up and cool-down stages. Ten minutes were allotted for each of the warm-up and cool-down portions of the workout. In contrast to the warm-up, which consisted of active stretching exercises and a promenade, the cool-down session consisted of static stretching activities. The intensity of the exercise ranged from 55 percent to 65 percent of the absolute maximal heart rate. The majority of the yoga training sessions were comprised of asana exercises, often known as static exercises. A number of asana positions, including the cow face stance, the adept's pose, the spinal twist pose, the auspicious pose, the tortoise pose, the cockerel pose, the stretching tortoise pose, the bow pose, the back stretching pose, and the spinal twist pose were performed for sets of time.

The tasks were done by each volunteer under the direction of the researcher who administered intervention every other day for a length of 10 weeks. With the exception of the warm-up and cool-down periods, each and every training session was scheduled to last for a duration of thirty minutes.

Analyses of data

Data was obtained from the selected subjects through tests before and after the intervention of 10 weeks. In this context, the Paired sample-test was employed for empirical results once the recorded data was evaluated. The tables and figures on the following pages display the full test findings in their complete.

Demographic/anthropometric Measurement of Hatha Yoga Group Before Treatment

Variable	Age (years)	N	Weight	Std
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mean			
Pre test weight		25	70.33
Pre test Body Mass index	22.81	25	27.79

The above table shows the mean age, weight and Body Mass Index of the twenty-five subjects of Hatha yoga group. The mean age, weight and BMI are 22.81 years, 70.33 and 27.79 respectively.

Pretest and Posttest Comparison of Neck Circumference of the Subjects

Variable	Test	N	Mean	Std Dev	Mean Diff	df	Sig.
Neck Circumference	Pre	25	13.02	.9457	0.95	23	.000
	Post	25	12.07	.9064			

The Table shows the hip circumference of the subjects. Data shows prominent changes in the neck circumference of the participant, and indicates a significant difference ($.000 < \alpha = 0.05$) in neck circumference between the pre-test and post-test effect of ten weeks of Yoga Asana on neck in inches. The decrease in the hip inches was due to a special exercise protocol that was applied to participants during the course of study. In the pre-test mean value was 13.02 inches and after ten weeks of Yoga Asana mean value decreased to 12.07 which paved the way to mean difference 0.95 inches.

Pretest and posttest Comparison of Chest Circumference of the Subjects

Variable.	Test	N	Mean	Std. Dev	Mean Diff	Df	Sig.
Chest Circumference	Pre test	25	36.60	6.60	1.25	23	.000
	Post test	25	35.35	6.31			

The table shows the pretest and posttest thigh circumference of all participants. Data shows prominent changes in the chest inches of the participant, and indicates there is significant difference ($.000 < \alpha = 0.05$) in chest circumference between the pre-test and post-test of twenty-five subjects (36.60 inch > 35.35-inch, Improvement = 1.25inch). The reduction in thigh inches was due to a special exercise protocol of hatha yoga that was adopted by the participants for ten weeks involved in this study.

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Pretest and Posttest Comparison of Waist Circumference of the Subjects

Variable.	Test	N	Mean	Std. Dev	Mean Diff	Df	Sig.
Waist Circumference	Pre test	25	36.43	5.56	1.43	23	.000
	Post test	25	34.50	5.32			

The table shows the pretest and posttest waist circumference of all participants. Data shows prominent changes in the waist inches of the participant, and indicates there is significant difference ($.000 < \alpha = 0.05$) in waist circumference between the pre-test and post-test of twenty-five subjects (36.43 inch > 34.50-inch, Improvement = 1.43inch). The reduction in waist inches was due to a special exercise protocol of hatha yoga that was adopted by the participants for ten weeks involved in this study.

Finding of the Study

According to the existing body of research, it was anticipated that Hatha yoga would have a significant impact on the dimensions of the waist, chest, and neck in adults between the ages of 20 and 24. Furthermore, the analysis of the data provides support for the acceptance of hypothesis H1, which indicates that Hatha yoga has significant impacts on the circumference of the waist, chest, and neck ($P < 0.05$).

Conclusion

With the participants being college students between the ages of 20 and 24, the primary objective of the study was to establish the impact that Hatha yoga had on the circumferences of the waist, chest, and neck. According to the findings and analysis, the circumference of the neck, chest, and waist of college students who were overweight and between the ages of twenty and twenty-four experienced a significant reduction after practicing hatha yoga for a period of 10 weeks.

Recommendations

- 1 As the study showed that hatha yoga exercises enhance the health-related fitness and reduce the circumference of neck, chest and waist among overweight students. Thus, the overweight students should take Hatha yoga exercises regularly.
- 2 Citizens are the asset of a nation. They may perform the assigned tasks efficiently and effectively when they are healthy. In order to create awareness among citizen about the role of hatha yoga exercises, seminars, workshop and conferences should be held.
- 3 The students are future generation of a nation. For the enhancement of health-related fitness of the students, hatha yoga exercises should be the part of curriculum in all educational institutions.

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4 The physical trainers should also recommend and include the hatha yoga exercises in the protocols for the enhancement of trainee's health related fitness.

The Implications for Future Researchers

1 The current study was conducted in college. The future researchers should extend their studies to schools and universities.

2 The subjects' age range was 20 to 24 years in the in-hand study. The future researchers may extend their studies to other age groups.

3 In the current study only, male students were selected as subjects. The future researchers may conduct studies on female students.

4 Besides hatha yoga training, the future researchers may conduct the studies with other trainings as independent variables

5 The dependent variables of the current study were the circumference of neck, chest and waist while in future the researchers may take psychological, physiological and sociological aspects as dependent variables.

6 In the in-hand study, the duration of the training was 10 weeks with 60 to 70% intensity of maximum heart rate of 60 minutes each session for three days per week. In future the researchers may conduct the studies with different duration of training, intensity of exercises and session per week.

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