



# Journal for Current Sign

Online ISSN (3006-1504)

Print ISSN (3006-1490)



## EFFECTS OF AEROBIC TRAINING UPON CIRCUMFERENCE OF NECK, CHEST AND WAIST AMONG OVERWEIGHT COLLEGE STUDENTS

**AROOSA NAWAZ**

**MOMNA SUMBAL**

**SHAMIMUR REHMAN**

**AZMAT IQBAL**



**HJRS** HEC Journal  
Recognition System



## Title

---

### **Aroosa Nawaz**

MS Scholar Department of Sports Sciences & Physical Education Sarhad University of Science & Information Technology (SUIT) Peshawar.

Email: [arosanawaz342@gmail.com](mailto:arosanawaz342@gmail.com)

m

### **Momna Sumbal**

MS Scholar Department of Sports Sciences & Physical Education Sarhad University of Science & Information Technology (SUIT) Peshawar. Email:

[momikust999@gmail.com](mailto:momikust999@gmail.com)

### **Shamimur Rehman**

Assistant Professor of Health & physical education, Higher Education Department (Colleges), Kp Peshawar

Email:

[shamimurrehman976@gmail.com](mailto:shamimurrehman976@gmail.com)

### **Azmat Iqbal**

Tehsil sports officer Bhalwal district Sargodha, Directorate General sports and youth affairs Punjab. corresponding author:

[ahadmalik969@gmail.com](mailto:ahadmalik969@gmail.com)

## *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 Aerobic exercises on circumference of neck, chest and waist among overweight college students. Twenty-five subjects were selected for the study through PAR-Q having age 20 to 24 years. The pretest data on dependent variables was collected through tape measurement. Ten weeks treatment of Aerobic training was given to the subjects for three days on alternate days per week. After the treatment, posttest data was collected of dependent variables through the procedure as adopted for the pretest data. The collected data (pre and post) of the subjects was tabulated mean, standard deviation and

paired sample t test were used to analyse the data. The significance level was fixed at 0.05. It is concluded after the data analysis and findings that Aerobic 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 Aerobic yoga exercises for the enhancement of their health-related fitness.

**Key words:** Aerobic training, neck, chest, waist, overweight college students

## Introduction

The rising prevalence of obesity significantly adversely affects the health and well-being of college students. This generation often engages in sedentary lifestyles exacerbated by poor nutrition, resulting in heightened health risks and increased obesity. The World Health Organization (2021) has established a correlation between obesity and overweight and numerous health complications, including cardiovascular disease, type 2 diabetes, and psychological problems such as anxiety and depression. Body composition constitutes a facet of health-related fitness (Ullah, Muhammad, Bibi, Khan, & Khan, 2023).

Aerobic training, a sustained kind of physical exercise that increases heart rate and oxygen uptake, has shown efficacy as a weight control and overall fitness strategy (Ullah, Khan, Gul & Ullah, 2022). Aerobic workouts, such as running, cycling, and swimming, have repeatedly been linked to enhanced body composition and weight reduction (Roberts et al., 2022; Smith & Jones, 2023). The effect of aerobic exercise on waist, torso, and neck circumference elucidates fat distribution and alterations in body composition.

Circumference measurements are essential for tracking variations in body fat percentage and muscle composition. Reducing waist circumference is essential, since it serves as a reliable predictor of abdominal obesity and its related metabolic hazards (López-Jiménez et al., 2022). Neck and chest circumferences are associated with several health hazards, such as cardiovascular diseases and obstructive sleep apnea, and they provide significant insights into body fat distribution (Choi et al., 2023).

Current research indicates that planned aerobic exercise regimens can significantly decrease these circumferences in overweight persons. García et al. (2023) conducted a 12-week study demonstrating that people engaged in a regular aerobic training program showed significant decreases in waist and pectoral circumferences. The findings suggest that aerobic exercise is advantageous for weight control and the improvement of body composition metrics, which are essential for long-term health (Khattak, Islam, & Manzoor, 2020).

Notwithstanding the growing volume of information, there remains a dearth of research that specifically focuses on college students. This age is particularly significant as early interventions can mitigate rising obesity rates and instill lifelong healthy



behaviors. The aim of this study is to investigate the effect of aerobic training on the circumferences of the waist, thorax, and neck in overweight college students. Our aim is to examine these connections to clarify the practical advantages of aerobic exercise in enhancing health and reducing obesity-related problems in this at-risk population.

### **Objective of the Study**

- To identify the effects of Aerobic training on circumference of neck, chest and waist among overweight college students
- To prepare a list of recommendations for the enhancement of body weight

### **Hypothesis**

There are significant effects of aerobic training of ten week on the circumference of neck, chest and waist among overweight college students 20-24 years age.

### **Delimitations**

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 Aerobic training.
- 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**

The following were the limitations of the study.

- The lack of time for the study was a drawback.
- Food habits were not controlled
- Weather condition was not taken into consideration.
- The social and economic conditions were not giving attention.



## **Materials and Methods**

### **Participants of the Study**

In experimental research, "study participants" denotes the collective of all subjects, items, or individuals closely linked to the research topic for data acquisition (Ullah, Khan, Gul & Ullah, 2022). The investigation encompassed all male, overweight students aged 20 to 24 residing in the college dormitories.

### **Exclusion and Exclusion Criteria**

The Physical Activity Readiness Questionnaire (PAR-Q) constituted the foundation for the inclusion and exclusion criteria. The PAR-Q is a singular screening tool. Fitness instructors utilize it before initiating an exercise program to ascertain suitable participants and minimize any health concerns. It often includes closed-ended questions (Venkataraman et al., 2024). Two hundred eighty students were assigned to complete the PAR-Q, of whom sixty-five were deemed acceptable for the study. Twenty-five of the sixty-five overweight students were randomly chosen to participate as subjects.

### **Research Design**

A research design is a methodology for addressing a problem (McKenney & Reeves, 2021). This study was experimental and utilized a pre-test and post-test design. A pre-test was performed on each subject to assess the dependent variables (waist, thorax, and neck circumferences) utilizing a measuring tape before the initiation of treatment. This was succeeded by the documentation of the scores for each topic. The experimental group engaged in aerobic activity on Mondays, Wednesdays, and Fridays during week for a duration of ten weeks subsequent to the pre-test. The pre-test protocol was followed for the post-test of each dependent variable topic after the 10-week treatment period involving 25 overweight participants. The dependent variable served as a benchmark to record the post-test outcomes of each participant.

### **Orientation of Subjects**

The fundamental purpose of the orientation is to obtain reliable data. An orientation session was organized to motivate and completely engage the students in the chosen training and examinations. The researcher delineated the individuals' roles, along with the importance and aim of the present study. The researcher elucidated the testing methodology for the dependent variable and offered instructions on the required measurement protocol to all people. Alongside the orientation session, the researcher convened with the participants on three occasions to familiarize them with the methodologies and protocols pertinent to the exercises associated with their training. This enabled them to execute the workouts accurately and mitigate potential health concerns. The researcher performed each exercise in the participants' presence.

### **Instrument for Collection of Data**





An instrument is a device utilized for measurement. In a research study, an instrument refers to a device utilized by the researcher for data collection (Kola, 2022). The effective use of various instruments, such as questionnaires, assessments, and interviews, will depend on the nature of the study. The aim of this study was to assess the effect of aerobic exercise on the measurements of the neck, thorax, and waist circumferences. Tape measurement was utilized as a criterion measure to gather relevant data concerning the dependent variables in this study, as per the current literature.

### Test Administration

The height (in centimeters) and weight (Kilogram) of each subject were determined during distribution and collection of PAR-Q among the participants of the study. The height (without shoes) was determined through stadiometer while the A digital weight scale was used to determine weight. The participants stepped onto the weight machine in bare feet and minimum clothes. The average results of the three weight measurements were considered accurate. The BMI formula  $\text{kg}/(\text{Height (cm)}/100)^2$  was applied to determine the overweight status in the light of the following values.

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

The circumference of neck, chest and waist were measured through tape before the treatment. Measurement was made by measuring tape from the right side of the body (neck, chest and waist). Neck circumference was measured across Adam's apple in inches while Chest circumference was measured at the broadest point of the chest measurement in inches. A light shirt was used to measure waist circumference. With inhale or exhale, it was measured in inches from the bellybutton.

### Ethical Consideration of the Study

The individual conducting the research 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. Consequently, the objectives and procedures of the study were communicated to each and every participant. By using PAR-Q as a selection tool, we made certain that the individuals who participated in the study were free of a variety of 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 institution.



## Protocol of Aerobic training

An autonomous aerobic training regimen was established over ten weeks, with each session comprising 50 minutes of exercise, inclusive of warm-up and cool-down phases. The warm-up and cool-down segments each lasted ten minutes. The cool-down session included static stretching activities, whereas the warm-up comprised active stretching exercises and a stroll. The exercise intensity ranged from 55% to 70% of the maximum heart rate. The aerobic exercise session included brisk walking, jogging, high knees, jumping jacks, and running. Each participant engaged in exercises under the supervision of an individual who implemented interventions on three separate days each week for a duration of ten weeks. It was established that each workout session would endure for 30 minutes, excluding the warm-up and cool-down phases.

## 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 Aerobic group before treatment

Variable	Age (years) mean	N	Weight	Std
Pre test weight		25	73.21	13.01
Pre test Body Mass index	22.09	25	27.44	4.56

The above table indicates the average age, weight and Body Mass Index of the twenty-five subjects of Aerobic group. The mean age, weight and BMI are 22.09 years, 73.21 and 27.44 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	13.43	.8916	0.68	23	.000
	Post	25	12.75	.6613			

The table illustrates the neck circumference of the subjects. The data plainly indicates that the participant's hip circumference underwent a significant change after ten weeks of aerobic activity. Additionally, the pre- and post-test results in inches



demonstrated a significant difference ( $.000 < \alpha = 0.05$ ). The decrease in neck inches was a direct result of the aerobic exercise regimen that the subjects implemented during the trial. The pre-test mean value was 13.43 inches, and it decreased to 12.75 inches after ten weeks of aerobic activity, resulting in a mean difference of 0.68 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	39.39	3.84	2.25	23	.000
	Post test	25	37.14	3.69			

The table illustrates the neck circumference of the subjects. The data plainly indicates that the participant's hip circumference underwent a significant change after ten weeks of aerobic activity. Additionally, the pre- and post-test results in inches demonstrated a significant difference ( $.000 < \alpha = 0.05$ ). The decrease in neck inches was a direct result of the aerobic exercise regimen that the subjects implemented during the trial. The pre-test mean value was 13.43 inches, and it decreased to 12.75 inches after ten weeks of aerobic activity, resulting in a mean difference of 0.68 inches.

### Pretest and Posttest Comparison of Waist Circumference of the Subjects

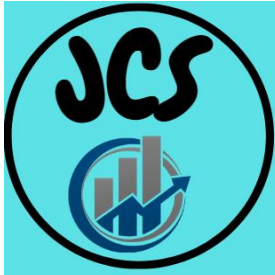
Variable.	Test	N	Mean	Std. Dev	Mean Diff	Df	Sig.
Waist Circumference	Pre test	25	37.49	3.95	2.66	23	.000
	Post test	25	34.83	3.39			

The table displays the pectoral circumference of each participant both before and after the test. Significant differences ( $.000 < \alpha = 0.05$ ) were observed in the chest circumference of 25 subjects between the pre- and post-test (37.49 inch > 34.83 inch, Improvement = 2.66 inch). The pectoral measurements of the participants exhibit significant fluctuations over time. The reduction in waist circumference was the result of the participants in this study adhering to a specific aerobic exercise regimen for a period of 10 weeks.

### Finding of the Study

According to the evidence that was available, it was anticipated that aerobic activity would have a significant impact on the size of the waist, chest, and neck in individuals between the ages of 20 and 24. The analysis of the data revealed that aerobic exercises had a significant impact on body mass index (BMI), waist circumference, thorax circumference, and neck circumference ( $P < 0.05$ ). In light of this, the H1 theory is therefore formally supported.





## Conclusion

The primary aim of this study was to determine the effect of aerobic exercise on the measurements of the neck, waist, and torso in overweight college students aged 20 to 24. Aerobic exercise throughout a 10-week period significantly affected the dimensions of the neck, chest, and waist in overweight college students aged 20 to 24. This conclusion was derived from the analysis and findings.

## Recommendations

- 1 As the study showed that aerobic exercises enhance the health-related fitness and reduce the weight among overweight students. Thus, the overweight students should take aerobic 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 aerobic 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, aerobic exercises should be the part of curriculum in all educational institutions.
- 4 The physical trainers should also recommend and include the aerobic exercises in the protocols for the enhancement of trainees' 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 aerobic 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

## References



- Choi, H. J., Lee, J. H., & Kim, S. Y. (2023). The relationship between neck circumference and metabolic syndrome in Korean adults. *Journal of Clinical Medicine*, 12(1), 112-120.
- García, R., López, A., & Martin, J. (2023). Effects of aerobic exercise on body composition and circumferences in overweight individuals: A randomized controlled trial. *International Journal of Obesity*, 47(4), 345-353.
- Khattak, I. U., Islam, S. Z. U., & Manzoor, M. (2020). Effects of Circuit Training on Cardio Respiratory Endurance Among College Students. *Global Regional Review*, 3, 40-47.
- Kola, I. M. (2022). Using analytical rubrics to assess technological solutions in the technology classroom. *International Journal of Technology and Design Education*, 32(2), 883-904.
- López-Jiménez, F., Alhenc-Gelas, M., & Kuehnel, E. (2022). Waist circumference as a critical measure of abdominal fat: Implications for clinical practice. *Cardiovascular Medicine*, 15(2), 78-84.
- McKenney, S., & Reeves, T. C. (2021). Educational design research: Portraying, conducting, and enhancing productive scholarship. *Medical education*, 55(1), 82-92.
- Roberts, S. K., Thompson, R., & Harris, J. (2022). Aerobic exercise and body composition: A systematic review and meta-analysis. *Journal of Sports Sciences*, 40(8), 1101-1115.
- Smith, L. M., & Jones, A. (2023). Impact of aerobic training on weight loss and body composition: Evidence from recent studies. *Obesity Reviews*, 24(3), e13389.
- Ullah, I., Gul, R., Muhammad, A., & Usman, K. (2022). Effect of Circuit Training upon Flexibility among Non-Athletes of College Students. *Al-Qanṭara*, 8(2), 227-241.
- Ullah, I., Khan, S. S. B., Gul, R., & Ullah, A. (2022). EFFECTS OF AEROBIC TRAINING ON TARGETED HEART RATE ZONE. *THE SPARK" A HEC Recognized Journal"*, 7(1), 16-25.
- Ullah, I., Muhammad, A., Bibi, F., Khan, M. U., & Khan, M. A. (2023). Effect of Circuit Training Upon Body Composition of College Students. *OEconomia*, 6(2), 17-43.
- Venkataraman, A., Hong, I. Z., Ho, L. C., Teo, T. L., & Ang, S. H. C. (2024, August). Public Perceptions on the Use of the Physical Activity Readiness Questionnaire. In *Healthcare* (Vol. 12, No. 17, p. 1686). MDPI.
- World Health Organization. (2021). Obesity and overweight. Retrieved from [WHO website](https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight).