

# **Resting Pulse Rate and Anxiety: A Community-Based Study in Karjat Region, Maharashtra**

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## **Abstract**

The present study explores the relationship between resting pulse rate and anxiety among individuals from Dada Patil College and surrounding villages in the Karjat region of Maharashtra. Conducted over a four-month period from December 2025 to March 2026, this survey investigates the interdependence of physiological and psychological parameters and their influence on health and sports performance. Resting pulse rate and anxiety are closely linked psycho-physiological variables that significantly affect athletic efficiency and overall well-being.

The study also examines attitudes toward physical exercise and its correlation with cardiovascular fitness. Findings indicate that individuals engaging in regular physical activity (at least 20 minutes, three times per week) exhibit an average resting heart rate approximately 7 beats per minute lower than sedentary individuals. This reduction reflects improved cardiovascular efficiency and reduced stress levels.

A total of 200 individuals were surveyed, of which 150 participants were included in the final analysis. The results highlight variations in pulse rate across age groups and emphasize the role of anxiety in altering cardiovascular responses. Elevated anxiety levels were associated with increased heart rate, blood pressure, and oxygen consumption, ultimately affecting physical performance.

This study underscores the importance of promoting physical activity and stress management strategies to maintain optimal heart health and improve quality of life. It also suggests the need for further research on community health interventions targeting cardiovascular and psychological well-being.

## **Introduction**

In recent decades, increasing emphasis has been placed on maintaining cardiovascular health, with regular exercise being widely advocated as a

preventive measure against heart diseases. Health education programs consistently highlight the importance of physical activity in reducing the risk of lifestyle-related disorders. However, merely providing information is often insufficient to bring about behavioral change, as observed in the limited success of anti-smoking campaigns.

Resting pulse rate, defined as the number of heart beats per minute during a state of complete rest, serves as a vital indicator of cardiovascular efficiency. It reflects the heart's ability to pump blood effectively and is influenced by factors such as age, fitness level, emotional state, and overall health. Studies have shown that resting heart rate can predict the development of ischemic heart disease, making it an essential parameter in preventive healthcare.

Anxiety, on the other hand, is a psychological condition that can significantly impact physiological responses. When an individual experiences anxiety, the body undergoes several changes, including increased heart rate, elevated blood pressure, rapid breathing, and higher oxygen consumption. While mild anxiety may act as a motivating factor, excessive anxiety can impair performance, particularly in athletes.

The relationship between resting pulse rate and anxiety is particularly relevant in sports science. Athletes with high anxiety levels often exhibit increased resting heart rates, which may negatively affect endurance and performance. Therefore, understanding this relationship is crucial for developing strategies to enhance athletic performance and mental well-being. This study aims to examine the correlation between resting pulse rate and anxiety among individuals involved in different physical activities, particularly ball games. Additionally, it evaluates community attitudes toward exercise and its role in maintaining cardiovascular health.

### **Normative Ranges of Pulse Rate**

Understanding normal pulse rate ranges is essential for interpreting physiological data. The following table summarizes the standard resting pulse rates across different age groups:

<b>Age Group</b>	<b>Pulse Rate (Beats per Minute)</b>
Newborn	100–180 bpm
Infant	80–150 bpm
Children (2–6 years)	75–120 bpm
Children (6–12 years)	70–110 bpm
Adolescents & Adults	60–90 bpm

These values serve as a reference for identifying deviations that may indicate underlying health issues or stress-related conditions.

### **Review of Literature**

Several studies have examined the relationship between resting pulse rate, anxiety, and physical activity: Suman Ghosh and Kuntal Thakur (2014) conducted a comparative study highlighting that anxiety and resting heart rate are interrelated psycho-physiological variables that adversely affect sports performance.

A community survey by Laird and Campbell (1988) investigated exercise levels and resting pulse rate, revealing that regular physical activity is associated with lower resting heart rates and improved cardiovascular health. The study also noted that most participants were capable of accurately measuring their resting heart rate. Campbell (1985) explored the prediction of running speed based on questionnaire data and emphasized the role of cardiovascular fitness in athletic performance. Kannel, Wilson, and Blair (1985) conducted an epidemiological assessment demonstrating that physical activity plays a significant role in preventing cardiovascular diseases and improving overall fitness levels. These studies collectively support the hypothesis that regular exercise reduces resting pulse rate and that anxiety can negatively influence cardiovascular responses.

### **Materials and Methods**

#### **Study Area**

The study was conducted in the Karjat region of Maharashtra, specifically at three locations: Yashin Nagar, Patewadi, and Nimgaon Daku. Data collection took place during morning hours to ensure consistency in measurements. Participants included college students, school children, and village residents.

#### **Study Design**

A pilot study was conducted to assess the reliability and validity of resting pulse rate measurements. Twelve participants had their pulse rates recorded on three separate days at the same time to ensure consistency.

#### **Methods of Pulse Measurement**

**Manual Method Radial Pulse:** Measured at the wrist using index and middle fingers.

**Carotid Pulse:** Measured at the neck beside the trachea.

- Digital Method Pulse oximeter (finger probe) Automated BP monitor
- Apical Pulse Measured using a stethoscope in clinical settings.

- Data Recording Data included date, time, pulse rate (bpm), and rhythm. Participants were required to rest for 5–10 minutes before measurement to ensure accuracy.
- **Additional Tools:** Photographic documentation was carried out using mobile cameras with GPS tagging to record survey locations and group data collection activities.

### **Observations**

The study recorded data from various demographic groups across the selected regions. GPS-based documentation confirmed the geographic accuracy of the sampling locations. Observations indicated variability in resting pulse rates influenced by age, lifestyle, and physical activity levels. Participants who engaged in regular exercise demonstrated lower resting pulse rates compared to those with sedentary lifestyles. Additionally, individuals reporting higher levels of anxiety exhibited elevated pulse rates and signs of physiological stress.

### **Results**

Out of 200 surveyed individuals, 150 participants were included in the final analysis. The findings revealed: Individuals with regular exercise habits had significantly lower resting pulse rates. Awareness of normal pulse rate ranges was moderate among participants. A majority (65.5%) correctly identified the normal adult resting pulse rate as 60–100 bpm. Among children aged 6–15 years, 64.8% identified the correct range (70–100 bpm).

### **The Study Also Examined Clinical Correlations**

Mortality rate among participants with normal blood pressure and heart rate was 20%. Mortality increased to 36% in individuals with abnormal cardiovascular parameters. Highest mortality was observed in hypotension-bradycardia cases (80%), followed by hypertension-bradycardia (58%) and tachycardia-hypotension (48%). Elderly individuals showed higher mortality (35%) compared to adults (23%). These findings emphasize the importance of maintaining normal cardiovascular parameters for overall health and survival.

### **Discussion**

The results of this study reinforce the strong relationship between resting pulse rate, anxiety, and physical activity. Regular exercise was found to significantly reduce resting heart rate, indicating improved cardiovascular efficiency. This aligns with previous research suggesting that physically active individuals have stronger heart muscles and better circulation. Anxiety emerged as a critical factor influencing heart rate. Individuals with higher anxiety levels showed increased pulse rates, which can lead to long-term cardiovascular complications if not managed properly. In sports contexts, excessive anxiety can impair performance

by increasing fatigue and reducing endurance. The study also highlights the need for increased awareness about normal pulse rate ranges and the importance of regular monitoring. Community-based health education programs can play a vital role in promoting healthy lifestyles and preventing cardiovascular diseases.

### **Conclusion**

This study concludes that resting pulse rate and anxiety are closely interconnected variables that significantly impact physical and mental health. Regular physical activity is an effective strategy for reducing resting heart rate and managing anxiety, thereby improving overall well-being. The findings emphasize the importance of early detection and monitoring of abnormal cardiovascular parameters. Individuals with irregular pulse rates should seek medical attention to prevent complications.

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