



## Effect of a Six-Week Physical Fitness Programme on Resting Pulse Rate among Non-Sportsmen Aged 25–30 Years

Dr. Biju Sukumar<sup>1</sup>

<sup>1</sup>Head of the department, Department of physical Education, S.N Training college, Nedunganda, Varkala, Trivandrum, Kerala, India.

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### Abstract

The purpose of the study was to investigate the effect of a six-week physical fitness programme on the resting pulse rate of non-sportsmen. A total of 50 male non-sportsmen aged between 25 and 30 years were selected as subjects. The subjects were divided into two groups: an experimental group (n=25) and a control group (n=25). The experimental group participated in a structured physical fitness programme consisting of endurance, agility, flexibility, strength, and speed exercises for six weeks, five days per week. The control group did not participate in any organized fitness programme. Resting pulse rate was measured before and after the training period. The collected data were analyzed using the paired t-test. The results revealed a significant reduction in resting pulse rate in the experimental group, whereas no significant change was observed in the control group. It was concluded that a systematic physical fitness programme improves cardiovascular efficiency and reduces resting pulse rate among non-sportsmen.

**Key Words:** Physical Fitness, Pulse Rate, Cardiovascular Efficiency, Exercise Training, Non-Sportsmen.

### 1. Introduction:

Physical fitness is one of the most important components of a healthy lifestyle. It enables an individual to perform daily activities efficiently without excessive fatigue and contributes to overall well-being. Regular participation in physical activity enhances cardiovascular health, muscular strength, endurance, flexibility, and body composition.

Pulse rate is an important physiological indicator of cardiovascular efficiency. Resting pulse rate reflects the number of heartbeats per minute while the body is at rest. Individuals who engage in regular physical activity often have lower resting pulse rates because their hearts become more efficient at pumping blood throughout the body.

Modern lifestyles have increased sedentary behavior among adults, leading to reduced physical fitness levels and increased health risks. Therefore, structured exercise programmes are essential for improving physiological functions and maintaining health. The present study was undertaken to examine the influence of a six-week physical fitness programme on the resting pulse rate of non-sportsmen..

#### 1.1 Objective of the Study:

To determine the effect of a six-week physical fitness programme on the resting pulse rate of non-sportsmen aged 25–30 years.

#### 1.2 Hypothesis:

It was hypothesized that there would be a significant improvement in resting pulse rate among non-sportsmen after participation in a six-week physical fitness programme.

## 2. Materials and Method:

### 2.1 Selection of Subjects:

For the purpose of the study, 50 male non-sportsmen were selected from local fitness centers and communities. The age of the subjects ranged between 25 and 30 years.

The subjects were divided into:

- Experimental Group (n = 25)
- Control Group (n = 25)

### 2.2 Selection of Variables:

For the purpose of the present study, variables were selected after reviewing relevant literature, research journals, books, and previous studies related to physical fitness and cardiovascular health. The **independent variable** of the study was the **six-week physical fitness programme**, which consisted of exercises aimed at developing endurance, agility, flexibility, strength, and speed. The **dependent variable** was the **resting pulse rate**, measured in beats per minute (bpm), which was used to assess the effect of the training programme on the cardiovascular efficiency of the subjects. The resting pulse rate was recorded before and after the completion of the training programme to determine any significant changes resulting from the exercise intervention.

### 2.3 Criterion Measures:

The pulse rate of the subjects was assessed at a standardized gymnasium in Varanasi under the supervision of a qualified examiner. The experimental group participated in a structured physical fitness programme that included endurance training on the first day, agility training on the second day, flexibility exercises on the third day, strength training on the fourth day, and speed exercises on the fifth day. Each session included warm-up and cool-down activities, with the main workout lasting 25–35 minutes. The participants attended training sessions in the morning, five days per week for six weeks, with a total session duration of 50–60 minutes. The control group did not take part in any organized physical fitness programme during the study period.

### 2.4 Statistical analysis of data:

The data collected from both groups were statistically analyzed to determine the effect of the six-week physical fitness programme on resting pulse rate. Descriptive statistics such as mean and standard deviation were calculated. Further, Analysis of Covariance (ANCOVA) was employed to compare the post-test scores of the experimental and control groups while controlling for the differences in pre-test scores. The level of significance was set at 0.05.

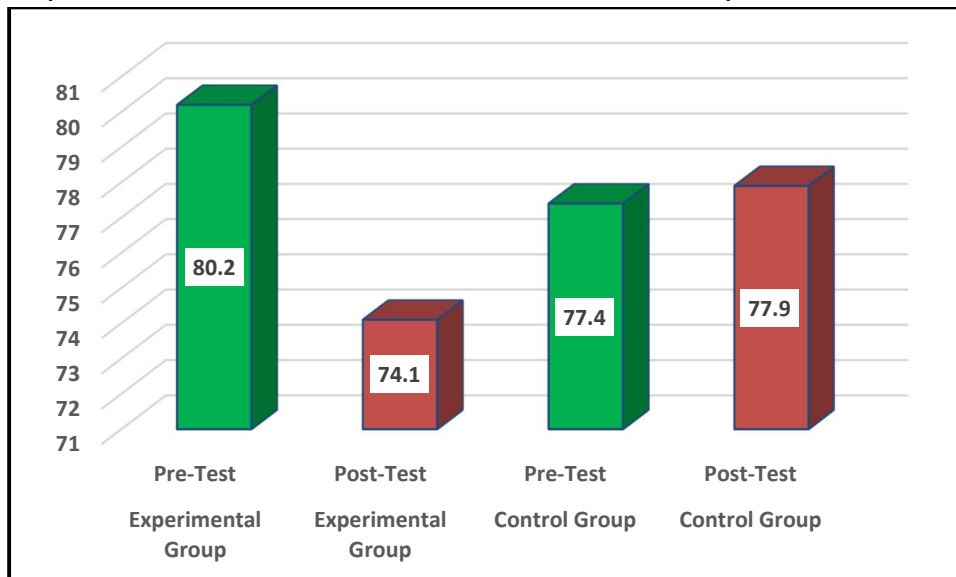
## 3. Result and Discussion of the Study:

**Table 1**  
**Descriptive Statistics of Resting Pulse Rate of Experimental and Control Groups**

Group	Test	N	Mean	S.D.
Experimental Group	Pre-Test	25	80.20	3.85
Experimental Group	Post-Test	25	74.10	3.12
Control Group	Pre-Test	25	77.40	3.01
Control Group	Post-Test	25	77.90	2.95

Table 1 presents the descriptive statistics of resting pulse rate for both experimental and control groups during pre-test and post-test measurements. In the experimental group, the mean resting pulse rate decreased from  $80.20 \pm 3.85$  bpm in the pre-test to  $74.10 \pm 3.12$  bpm in the post-test, indicating a clear reduction after the six-week physical fitness programme. In contrast, the control group showed a very slight increase in mean pulse rate from  $77.40 \pm 3.01$  bpm to  $77.90 \pm 2.95$  bpm, which is not practically significant.

**Figure 1:**  
**Graphical Representation of Pre-Test and Post-Test Mean Pulse Rate of Experimental and Control Groups**



**Table - 2**  
**Analysis of Covariance (ANCOVA) on Resting Pulse Rate of Experimental and Control Groups.**

Source of Variance	Sum of Squares	df	Mean Square	F-value
Adjusted Post-Test Between Groups	152.64	1	152.64	12.87*
Error (Within Groups)	557.23	47	11.86	
Total	709.87	48		

\*Significant at 0.05 level ( $F_{0.05}(1,47) = 4.05$ )

Table 2 presents the Analysis of Covariance (ANCOVA) conducted on the adjusted post-test resting pulse rate scores of the experimental and control groups. The obtained F-value for the adjusted post-test means was **12.87**, which was higher than the required table value of **4.05** at the 0.05 level of significance with 1 and 47 degrees of freedom. This indicates that a significant difference existed between the two groups after adjusting for the influence of pre-test scores.

The adjusted mean pulse rate of the experimental group was lower than that of the control group, suggesting that the six-week physical fitness programme was effective in reducing resting pulse rate among the subjects. Therefore, it can be concluded that regular participation in the fitness training programme significantly improved cardiovascular efficiency and contributed to a lower resting pulse rate in non-sportsmen.

#### 4. Discussion:

The findings of the present study indicate that a six-week physical fitness programme had a significant effect on reducing the resting pulse rate of non-sportsmen. The results obtained from both descriptive statistics and ANCOVA analysis show that the experimental group demonstrated a meaningful decrease in pulse rate compared to the control group.

The reduction in resting pulse rate can be attributed to improved cardiovascular efficiency resulting from regular physical training. Continuous participation in endurance, agility, flexibility, strength, and speed exercises enhances

the functional capacity of the heart, leading to an increase in stroke volume and a decrease in heart rate at rest. As a result, the heart becomes more efficient in pumping blood, requiring fewer beats per minute to meet the body's oxygen demands.

These findings are consistent with previous research studies which suggest that regular physical activity leads to physiological adaptations such as improved cardiac output, increased capillary density, and faster recovery rate after exercise. The present study supports the concept that structured exercise programmes are beneficial for improving cardiovascular health, especially among sedentary individuals and non-sportsmen.

Overall, it can be interpreted that systematic physical training plays a crucial role in enhancing heart function and reducing resting pulse rate, thereby contributing to better physical fitness and health outcomes.

## 5. Conclusions:

On the basis of the findings of the present study, the following conclusions were drawn:

- The six-week physical fitness programme had a significant effect on reducing resting pulse rate among non-sportsmen.
- The experimental group showed greater improvement in cardiovascular efficiency compared to the control group.
- Regular participation in structured exercise training leads to a reduction in resting heart rate.
- Physical fitness training improves overall cardiovascular functioning and recovery rate.
- No significant change was observed in the control group who did not participate in any training programme.

## 6. References:

- [1]. American College of Sports Medicine (ACSM). (2022). ACSM's Guidelines for Exercise Testing and Prescription. Human Kinetics.
- [2]. Bhukar, J. P., & Rani, N. (2019). Analysis of mental toughness of Indian elite long-distance athletes. *International Journal of Physical Education, Sports and Health*, 6(3), 172–175.
- [3]. Billman, G. E., Schwartz, P. J., & Stone, H. (1984). The effects of daily exercise on susceptibility to sudden cardiac death. *Circulation*, 69, 1182–1189.
- [4]. Pluim, B. M., Zwinderman, A. H., van der Laarse, A., & van der Wall, E. E. (2000). The athlete's heart: A meta-analysis of cardiac structure and function. *Circulation*, 101, 336–344.
- [5]. Sharkey, B. J., & Gaskill, S. E. (2013). Fitness and Health. Human Kinetics. Billman G.E, Schwartz P.J, Stone H. The Effects of Daily Exercise on susceptibility to sudden Cardiac Death. *Circulation*. 1984; 69:1182-9.
- [6]. Singh, P. K., & Sarkar, T. (2019). Effect of Exercise on Pulse Rate of Non-Sportsmen. *International Journal of Physical Education and Sports*, 4(11), 07–09. ISSN: 2456-2963.

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### Corresponding Author:

#### Dr. Biju Sukumar

Head of the department,  
Department of physical Education,  
S.N Training college, Nedunganda, Varkala,  
Trivandrum, Kerala, India