



## EFFECTS OF AEROBIC EXERCISES ON HUMAN PHYSIOLOGY

**Singh S.**

Research Scholar. PGTD of Physical Education, RTM. University Nagpur. (M.S) India  
 Email: *shamshersingh9850@gmail.com*

**Abstract:** Aerobic exercise (also known as cardio) is physical exercise of low to high intensity that depends primarily on the aerobic energy-generating process. Aerobic literally means "relating to, involving, or requiring free oxygen", and refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism. Generally, light-to-moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time. Aerobic exercise has a number of positive effects, from reducing health risks and maintaining healthy body weight, to managing chronic conditions and boosting mood. People who exercise aerobically may actually live longer than those who don't. Short-term effects of exercise are sometimes easier to notice, but several studies demonstrate that long-term effects exist that are just as desirable and beneficial. During aerobic exercise, you move the large muscles in your legs, hips and arms, and your body responds quickly by breathing faster and more deeply. Your heartbeat accelerates, increasing blood flow to your muscles and lungs. Capillaries widen to take more oxygen to your muscles and carry away carbon dioxide and lactic acid. Your body releases endorphins, which are natural painkillers that create an enhanced sense of well-being. A study of long-term aerobic exercise on arterial stiffness in the elderly, reported in "Hypertension Research," a Japanese journal, in 2007, focused on the cardiovascular system. Both systolic and diastolic blood pressure significantly decreased after 30 minutes of aerobic exercise. There were significant decreases noted in arterial stiffness, systolic and diastolic blood pressure after the six-month exercise period, leading researchers to conclude that long-term aerobic exercise can benefit elderly people by improving their cardiovascular health.

**Keywords:** Aerobic Exercises on Human Physiology

### Introduction:

Aerobic exercise (also known as cardio) is physical exercise of low to high intensity that depends primarily on the aerobic energy-generating process. Aerobic literally means "relating to, involving, or requiring free oxygen", and refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism. Generally, light-to-moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time.

When practiced in this way, examples of cardiovascular/aerobic exercise are medium to long distance running/jogging, swimming, cycling, and walking, according to the first extensive research on aerobic exercise, conducted in the 1960s on over 5,000 U.S. Air Force personnel by Dr. Kenneth H. Cooper.

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### Cardiovascular Benefits

A study of long-term aerobic exercise on arterial stiffness in the elderly, reported in "Hypertension Research," a Japanese journal, in 2007, focused on the cardiovascular system. The participants were between 64 and 70 years of age and performed mild to moderate aerobic exercise for 30 minutes twice a week for six months.

Both systolic and diastolic blood pressure significantly decreased after 30 minutes of aerobic exercise. There were significant decreases noted in arterial stiffness, systolic and diastolic blood pressure after the six-month exercise period, leading researchers to conclude that long-term aerobic exercise can benefit elderly people by improving their cardiovascular health.

### **Obesity Reduction**

The "American Journal of Clinical Nutrition" in 1995 reported a study on the effects of aerobic exercise and dietary carbohydrate on energy expenditure and body composition in obese women. The 12-week study followed 23 obese women assigned to aerobic exercise or no exercise and either a low-fat or low-carbohydrate diet. Diet composition did not significantly influence body composition or energy expenditure changes, but there was greater weight loss with a low-carb diet when compared to a low-fat diet. Adding aerobic exercise to a low-carb diet resulted in favorable effects on body composition, physical activity and total daily energy expenditure.

### **Psychological Benefits**

Mind is affected as much as body by aerobic exercise. A University of Missouri-Columbia study researched the long-term effects of aerobic exercise on psychological outcomes. Eighty-two participants completed depression, anxiety and self-concept inventories after a 12-week aerobic fitness program. The exercise participants showed a positive fitness change and psychological improvement at the end of the 12-week program, compared to the control group. At a one-year followup, psychological benefits showed a significant improvement from the baseline.

### **Overall effects and Benefits**

Here are some of the many benefits of aerobic exercise:

- Increases the efficiency of respiration
- Improves blood volume, distribution, and delivery to muscles
- Improves cardiovascular efficiency

- Increases the stroke volume, or the amount of blood pumped from the ventricle during each contraction of the heart
- Increases cardiac output, or the volume of blood pumped by the heart each minute
- Decreases resting heart rate
- Improves the condition and efficiency of breathing muscles
- Improves the efficiency of movement
- Improves the body's ability to use fat as an energy source
- Improves body composition by decreasing body fat
- Strengthens muscles
- Strengthens ligaments, tendons and bones
- Helps decrease the risk of developing coronary artery disease, cancer and diabetes
- Helps decrease anxiety and stress
- Helps you feel better overall

### **Conclusion:**

Aerobic exercise has a number of positive effects, from reducing health risks and maintaining healthy body weight, to managing chronic conditions and boosting mood. People who exercise aerobically may actually live longer than those who don't. Short-term effects of exercise are sometimes easier to notice, but several studies demonstrate that long-term effects exist that are just as desirable and beneficial.

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