

Exercise Therapy

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Define aerobic exercises. Explain the changes in the body due to aerobic exercises

Definition:

American College of Sports Medicine (ACSM): Aerobic exercise is any activity that uses large muscle groups, can be maintained continuously, and is rhythmic in nature.

World Health Organization (WHO): Activity in which the body's large muscles move in a rhythmic manner for a sustained period of time. Aerobic activity—also called endurance activity—improves cardiorespiratory fitness.

The changes in the body due to Aerobic Exercises:

Physiological Changes with Aerobic Exercises: Changes in the Cardiovascular and Respiratory systems as well as changes in Muscle metabolism occur after aerobic training.

Cardiovascular Changes

Changes at Rest

1. A reduction in the Resting pulse rate
2. A decrease in atrial rate
3. An apparent increase in parasympathetic (vagal) tone.
4. A decrease in blood pressure occurs
5. The decrease is in systolic blood pressure
6. An increase in blood volume and haemoglobin

Changes During Exercise

1. Reduction in the pulse rate
2. Increased stroke volume
3. Increased cardiac output
4. Increased extraction of oxygen by the working muscle
5. Increased maximum oxygen uptake (VO₂ max).
6. Increased ability of the muscle to extract oxygen.
7. Decreased myocardial oxygen consumption

Respiratory Changes

Changes at Rest

1. Larger lung volumes develop because of improved pulmonary function.

Changes During Exercise

1. Larger diffusion capacities occur for the same reasons as those listed previously

Metabolic Changes

Changes at Rest

1. Muscle hypertrophy and increased capillary density occurs.
2. Number and size of mitochondria are increased.
3. Increasing the capacity to generate ATP aerobically.
4. Muscle myoglobin concentration increases

Changes During Exercise

1. A decreased rate of depletion of muscle glycogen at submaximum work levels may occur.
2. Lower blood lactate levels at submaximum work may occur.
3. An increased capability to oxidize carbohydrate may result because of an increased oxidative potential of the mitochondria and an increased glycogen storage in the muscle.

Other System Changes

1. Decrease in body fat
2. Decrease in blood cholesterol and triglyceride level
3. Increased heat acclimatization
4. Increase in the breaking strength of bones and ligaments and the tensile strength of tendons

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