FAQs

Q1. What are calories? How many calories should one eat on average?
Ans: A calorie is a unit that measures energy. Calories are usually used to measure the energy content of foods and beverages. In order to lose weight, you need to eat fewer calories than your body burns each day.
An average woman needs to eat about 2000 calories per day to maintain, and 1500 calories to lose one pound of weight per week. An average man needs 2500 calories to maintain, and 2000 to lose one pound of weight per week. However, this depends on numerous factors. These include age, height, current weight, activity levels, metabolic health and several others.

Q2. What is a metabolic response?
Ans: A metabolic response is any reaction by the body to a specific influence or impact. Metabolism is a general term describing the organic process in any cellular structure. A metabolic response can occur with respect to individual cells, a gland, an organ, or a process such as the cardiovascular system.

Q3. How the metabolism of a person changes during exercise.
Ans: Metabolically, there are two types of exercise, aerobic and anaerobic. Aerobic exercise uses oxygen as energy substrate to metabolize food to adenosine triphosphate (ATP). When the supply of oxygen is no longer sufficient to meet the needs of exercising muscles, anaerobic metabolism begins. In anaerobic metabolism, glucose is converted to ATP without oxygen, and lactic acid is generated as a by-product. A healthy person can perform aerobic exercise for several hours; in contrast, pure anaerobic exercise can only be sustained for a few minutes before severe dyspnea and fatigue set in.

Q4. Write short on a) Systemic circulation changes, b) Oxygen extraction changes and c) Pulmonary circulation changes.
Ans: a) Systemic circulation changes: The extra cardiac output delivers more oxygen to exercising muscles. There is a redistribution of the systemic circulation, including vasodilation in the skin and working muscles and vasoconstriction in the visceral organs and nonworking muscles. The net effect of vascular redistribution is a decrease in systemic vascular resistance.

b) Oxygen extraction changes: Apart from increased cardiac output and vascular redistribution, a third mechanism to meet oxygen requirements is increased oxygen extraction from the arterial blood; this results in an increased arterial-venous oxygen content difference.

c) Pulmonary circulation changes: Pulmonary circulation also increases immediately with exercise. Unperfused alveoli become perfused (through recruitment of pulmonary capillaries), and underperfused units receive an increased blood supply. As a result, both pulmonary blood volume and the pulmonary diffusing capacity for oxygen increase.

Q5. Write the key points of fat metabolism during exercise by Dr. Edward F. Coyle.

Ans: The key points of fat metabolism during exercise by Dr. Edward F. Coyle are as follows:

A. People store large amounts of body fat in the form of triglycerides within fat (adipose) tissue as well as within muscle fibers (intramuscular triglycerides).When compared to carbohydrate stored as muscle glycogen, these fat stores are mobilized and oxidized at relatively slow rates during exercise.

B. As exercise progresses from low to moderate intensity, e.g., 25-65% VO2max, the rate of fatty acid mobilization from adipose tissue into blood plasma declines, whereas the rate of total fat oxidation increases due to a relatively large use of intramuscular triglycerides. Intramuscular triglycerides also account for the characteristic increase in fat oxidation as a result of habitual endurance-training programs.

C. Dietary carbohydrate intake has a large influence on fat mobilization and oxidation during exercise; when dietary carbohydrate produces sufficient carbohydrate reserves in the body, carbohydrate becomes the preferred fuel during exercise. This is especially important during intense exercise because only carbohydrate (not fat) can be mobilized and oxidized rapidly enough to meet the energy requirements for intense muscular contractions.