

Theory

Cardiovascular Mechanisms: Electrical activity of heart: Automaticity, Rhythmicity, Electrocardiography, Hemodynamics, Blood flow, pressures and resistance and their interrelationships. Nervous and humoral control of cardiac activity (cardiac output) and peripheral circulation.

Exchange of Gases: Physiologic anatomy of lungs, Exchange of O₂ and CO₂ between respiratory surface (the lungs) and body cells. Transport of O₂ and CO₂ in blood. Nervous and chemical regulation of lungs respiration;

Excretion and Osmoregulation: Vertebrate nephron as osmoregulatory organ: Physiological anatomy, Glomerular filtration, Dynamics of glomerular filtration, Factors affecting glomerular filtration, Tubular re-absorption and secretion, Absorptive capabilities of tubular segments, Hypotonic urine formation; Hypertonic urine formation, Autoregulation of glomerular filtration rate, Nervous and hormonal regulation of glomerular filtration

Nutrition: Potentials and Movements in Gastrointestinal tract; Control of Motility and contractility, An overview of digestive secretions in various segments of gastrointestinal tract, Physiological anatomy of digestive tract (mammalian model), Absorption of water, ions and nutrients through highly absorptive surface of small intestine, Absorption in large intestine

Books Recommended:

1. Guyton, A.C. and Hall, J.E., 2016. Textbook of Medical Physiology, 13th Ed.. W.B. Saunders Company, Philadelphia.
2. Withers, P.C., 1992. Comparative Animal Physiology. Saunders College Publishing, Philadelphia.
3. Randall, D., Burggren, W., French, K. and Fernald, R., 2002. Eckert Animal Physiology: Mechanisms and Adaptations, 5th ed. W.H. Freeman and Company, New York

Practicals

Cardiovascular Activity: Normal cardiac activity, effect of temperature, effect of drug, heart block, tetanization of heart. Measurement of blood pressure, Calculation of body mass index. Hemolytic responses of erythrocytes in hyper and hypotonic solutions.

Respiration and Exercise: Oxygen consumption in fish and effect of temperature (by dissolved oxygen meter) and terrestrial animal (mouse). Oxygen consumption (by respirometer), heart rate, blood pressure glycemia altered by exercise.

Endocrine and Reproductive Mechanisms: Effect of insulin on glycemia, study of stages in estrous cycle.

Books Recommended:

1. Tharp, G. and Woodman, D., 2011. Experiments in Physiology, 10th Ed.. Prentice Hall, London.