

EXERCISE PHYSIOLOGY

(3+0 Cr. Hr)

COURSE OBJECTIVES

The course has been developed with the objective to provide knowledge of exercise physiology, exercise responses, methods to improve performance, fitness, age and exercise, gender differences, weight control, obesity and exercise environment.

COURSE CONTENTS:

i. INTRODUCTION

- a. Definition and nature of exercise physiology.
- b. Importance of exercise physiology in Physical Education

ii. MUSCULAR SYSTEM AND EXERCISE

- a. Muscle: Structure and function
- b. Fiber types and biochemistry
- c. Mechanism of Transmission of Nerve Impulse in Muscles
- c. Metabolic fuels for exercise and recovery

iii. CARDIOVASCULAR SYSTEM AND EXERCISE

- a. Muscle blood flow and blood pressure
- b. Work out put, Oxygen consumption and cardiac output.
- c. Training effects on heart, stroke volume and heart rate
- d. Effects of heart disease and old age on athletic performance.

iv. ENVIRONMENT AND EXERCISE

- a. Acclimatization to heat, cold, altitude
- b. Environmental Hazards in training
- c. Temperature regulations
- d. Exercise and temperature regulation in hot climate
- e. Humid climate (Hyponatrimia)
- f. Hot and dry climate (General Heat Disorders)
- g. Cold climate (Hypothermia, Frostbite and Frostnip etc.)
- h. Air pollution
- i. Environment and Exercise
- j. High altitude effects on exercise

v. NERVOUS SYSTEM AND EXERCISE

- a. Effects of nervous system during exercise
- b. Neuromuscular coordination

vi. GLANDULAR SYSTEM AND EXERCISE

- a. General metabolic and endocrine changes
- b. Effects of therapeutic medication

- c. Hormonal changes

vii. GENDER DIFFERENCES

- a. Exercise and sex differences
- b. Male and Female athletes
- c. Effect on performances and control

viii. OBESITY

- d. Definition and types
- e. Hazards
- f. Diabetes
- g. Coronary Heart Diseases (CHD)

ix. RESPIRATORY SYSTEM

- a. Gaseous exchange
- b. Respiratory volumes
- c. Effects of exercise on respiratory system
- d. Hemoglobin Dissociation Curve

RECOMMENDED BOOKS

1. Kenney, W. L., Wilmore, J., & Costill, D. (2015). *Physiology of sport and exercise 6th edition*. Human kinetics.
2. Ehrman, J., Gordon, P., Visich, P., & Keteyian, S. (Eds.). (2018). *Clinical Exercise Physiology, 4E*. Human Kinetics.
3. Housh, T. J., & Housh, D. J. (2017). *Applied Exercise and Sport Physiology, With Labs*. Routledge.
4. Sharma, J. (2015). *EXERCISE PHYSIOLOGY HEALTH FITNESS AND PERFORMANCE*. Horizon Books (A Division of Ignited Minds Edutech P Ltd).
5. Boone, T. (2014). *Introduction to exercise physiology*. Burlington, MA: Jones & Bartlett Learning.