

## **Jiwaji University, Gwalior**

### **Ph.D. Course Work Syllabus, 2020-2021**

**Paper (4):** Advance Course in the Relevant Subject

**Subject:** Physical Education

#### **Exercise Physiology and Sports Medicine**

Definition of Physiology and exercise Physiology, Importance of exercise Physiology in the field of Physical Education and Sports, Structure and function of Voluntary, Involuntary and Cardiac muscles, Sliding Moment Theory, Composition of skeletal muscle, Types of muscle fibre (Read and Write), Properties of muscle, Effects of exercise and training on – (i) Heart and circulatory system, (ii) Respiratory system, (iii) Muscular system

Meaning, definition and importance of sports medicine, sports massage – before, during and after competition, cryotherapy, cryokinetics and cold spray, hydro-collateral packs, hydrotherapy (contrast bath and whirlpool), Paraffin bath, infrared and violet rays, Diathermy, Ultrasound, Principles of injuries prevention, Principles of diagnosis and treatment, soft tissue and muscular-skeletal injuries, stress related injuries

#### **Kinesiology and Biomechanics**

Meaning of Bio-mechanics and Kinesiology, Importance of biomechanics and kinesiology in Physical Education and sports, Mechanical analysis of Running and walking, Define Axis and Planes, Vector and scalar quantity, Linear kinematics, Distance and displacement, speed and velocity, acceleration, Uniform Motion, Law of conservation momentum, Stability and equilibrium, static and dynamic Stability.

Angular kinetics, Centripetal and Centrifugal force, Meaning of work and its types, Meaning of lever and its classification, Buoyancy and specific gravity, spin and its effects, Meaning of friction and its types, Meaning of projectile and its types

## **Sports Psychology**

Meaning and Importance of sports psychology, Meaning of Learning, Theories of Learning, Personality: Meaning and definition, Effects of Personality on sports performance, Meaning of Motives needs and drives, Meaning of competition, determinants of competitive behaviour, Psychological characteristics of pre-competition, during competition and post competition.

Methods of investigation in sports psychology, various methods used in sports psychology

## **Scientific Principles of sports Training**

Sports training, Definition, Characteristics and Principles, Training load- factors of training load, overload, Causes of overloading and its symptoms, tackling of over load, strength, Meaning Factors determining strength, Types of strength training, Speed – Meaning, Forms of speed, Methods of speed development, Endurance - Meaning, Forms of endurance, Means and methods for endurance development, Coordinative abilities – characteristics, significance, types and methods to improve Coordinative abilities

Definition of skill, technique and technical training, characteristics of technique, phases of skill acquisition, Planning: Meaning and Principles of planning, Periodisation: Meaning and types

## **Measurement and Evaluation in Physical Education**

Meaning of test, measurement and evaluation, need and importance of measurement and evaluation, Tests – Meaning and Classification of tests

Tests of Motor Fitness: Indiana Motor Fitness test, Phillips JCR Tests

Physical Fitness Test: AAHPERD Health related fitness battery

Cardio-vascular test: Harvard step test

Skill Test: Johnson Basketball test, SAI Volleyball test