SYLLABUS FOR WRITTEN TEST FOR ADMISSION TO Ph.D. IN PHYSICAL EDUCATION 2022-23

RESEARCH PROCESS AND STATISTICAL TECHNIQUES IN PHYSICAL EDUCATION

UNIT-I **INTRODUCTION TO RESEARCH**

1.1 Meaning, need and nature
1.2 Types of research : Basic(Fundamental), Applied and Action research
1.3 Identifying a research problem
1.4 Criteria in selecting a research problem
1.5 Stating the research problem
1.6 Formulating, presenting and listing hypothesis
1.7 Delimitation and limitation of a problem

UNIT-II **LITERATURE SEARCH**

2.1 Reason for surveying related literature
2.2 Major literature resources
2.3 Documentation over-view
2.4 Library sources
2.5 Research reviews
2.6 Card catalogue indices-physical education indices

UNIT-III **DESCRIPTIVE METHODS OF RESEARCH**

3.1 Historical research
. Meaning, nature and scope of historical research
. Sources of historical materials (primary and secondary)
. Evaluation of historical material-internal and external criticism-general Principles of criticism
. Historical hypothesis
. Pitfalls in historical research

3.2 Philosophical Research
. Need, nature and techniques of thinking process
. Methods of philosophy
. Analyzing philosophical research problem
. Inductive and deductive reasoning

3.3 Survey and case study
. Meaning, need and scope of survey and case study in physical education
. Types of survey
. Survey techniques- by questionnaire, interviews, case study
. Qualitative and quantitative research data
. Procedure for developing a questionnaire, a checklist, a schedule, a score card

UNIT-IV **INTRODUCTION TO STATISTICS**

4.1 Meaning need and importance of statistics in physical education
4.2 Types of statistics-descriptive, comparative, relationship, inferential and predictive
4.3 Characteristics of data
. Raw scores
. Single scores
. Attribute and variable
. Types of data
. Population and sample
. Parameters and statistics
. Frequency distribution

. Discrete and continuous class intervals
. Measures of central tendency
. Measures of variability

UNIT-V **NON-PARAMETRIC STATISTIC**

5.1 Uses and application of non-parametric statistic
5.2 Computation of chi-square, rank order correlation and tretrachoric correlation

RESEARCH PROCESS AND STATISTICAL TECHNIQUES IN PHYSICAL EDUCATION

UNIT- I **EXPERIMENTAL RESEARCH**

1.1 Scientific method and experimental research
1.2 Characteristics of experimental method
1.3 Experimental control
1.4 Experimental design
. Single group design
. Repeated measure design
. Static group comparison
. Random groups design
. Post-test only random group design
. Related groups design
. Rotation group design
. Factorial design

UNIT-II **AREAS OF RESEARCH**

2.1 Research in exercise and sport physiology
2.2 Motor learning and motor control
2.3 Psychological studies
2.4 Bio-mechanical research
2.5 Growth and development research

UNIT-III **PREPARATION OF RESEARCH REPORT**

3.1 Formulation and submitting research proposal
3.2 Organization of thesis report
3.3 Technical aspects of writing research report
3.4 Use of illustrative material
3.5 Consideration in writing report and abstract

UNIT-IV **PROBABILITY CURVE**

4.1 Meaning and principles of normal curve
4.2 Binominal expansion and properties of normal curve
4.3 Comparison of various scales

UNIT-V **RELATIONSHIP AND COMPARITIVE STATISTICS**

5.1 Principles of relationship
5.2 Coefficient of correlation
5.3 Product moment correlation
5.4 t-ratio-independent and paired
5.5 ANOVA- one way and two way

FUNDAMENTALS OF SPORT SOCIOLOGY

UNIT-I **INTRODUCTION TO SPORT SOCIOLOGY**

1.1 Meaning and concept sociology
1.2 Importance of its study
1.3 Current status of sport sociology in India and abroad
1.4 trends in sport sociology
1.5 Theories in sociology
1.6 Theories about sports and society(structured and functionalism;
1.7 Critical, conflict, gender and interactionism theories)
1.8 A comparative analysis of sociological theories in sports

UNIT-II **SOCEITY AND CULTURE**

2.1 Definition and concept of society
2.2 Sports in human societies (ancient, feudal, capitalistic and socialistic)
2.3 Sport as a part of social, structural and functional system
2.4 Sociological differences in ancient and modern sports
2.5 Meaning and concept of culture-sub-culture (Material and immaterial)
2.6 Sport as a cultural phenomenon
2.7 Cultural symbols in sport

UNIT-III **STRATIFICATION AND SOCIALIZATION**

3.1 Definition of stratification (classes, caste, age, gender in sports)
3.2 Stratification and social mobility
3.3 Stratification and popularity of sport
3.4 Theories of socialization and sport
3.5 Facilitation and debilitation of sport specialization in genders.
3.6 Desocialization from sport

UNIT-IV **SPORT AND GENDER**

4.1 Definition and theories of gender
4.2 Gender disparity and discrimination, and equity
4.3 Gender involvement in sports and masculinity
4.5 Deviance & aggregation in players
4.6 Spectator, fans and violence
4.7 Influence of spectators in dynamic of sports

UNIT-V **COMMUNICATION AND RESEARCH METHODOLOGY**

5.1 Mass communication and its implication in sports
5.2 Commercialization in sports
5.3 Amateurism versus professionalism
5.4 Recent social research methodologies (phenomenology, Hermeneutics, semiotics)
5.5 Qualitative and quantitative research
5.6 Participant observation and interview method in research
5.7 Impact of privatization and globalization on sports

FUNDAMENTALS OF SPORT PSYCHOLOGY

UNIT-I **1** **INTRODUCTION TO SPORT PSYCHOLOGY**

1.1 Meaning and Scope of sport psychology
1.2 Divisions of sport psychology
1.3 Place of sports psychology in sports sciences hierarchy
1.4 Importance of sport psychology

2 **SENSORY PERCEPTUAL PROCESS**

2.1 Meaning, mechanism and stages of sensory perceptual process
2.2 Classification of senses and sensory perceptual process
2.3 Factors in perception
2.4 Implication of sensory-perceptual process in exercise and sport

UNIT-II **1** **MOTOR DEVELOPMENT AND LEARNING**

1.1 Understanding motor development and motor learning
1.2 Motor development and learning in infants and children
1.3 Factors affecting motor developing and motor learning

2 **PSYCHOLOGICAL SKILLS AND THEIR INFLUENCE ON SPORTS PERFORMANCE**

2.1 Attention
2.2 Concentration
2.3 Confidence
2.4 Imagery

UNIT- III **1** **PERSONALITY**

1.1 Concept and definition of personality
1.2 Modern perspective, trait humanistic, social cognitive and biological theories)
1.3 Dynamics of personality in activity and sport

2 **ANXIETY IN SPORT**

2.1 Concept, definition of anxiety
2.2 Anxiety and Arousal
2.3 Effect of anxiety on physical performance

UNIT- IV **1** **MOTIVATION IN ACTIVITY AND SPORT**

1.1 Concept, definition and types of motivation
1.2 Theories of motivation (drive, need and instinct theories)
1.3 Motivation in activity and sports

2 PSYCHOLOGICAL PREPRATION AND COMPLETION

2.1 Phenomenon of competition sport
2.2 Psychological preparation for competition

UNIT-V SOCIO-PSYCHOLOGICAL ASPECTS OF ACTIVITY AND SPORT

2 SOCIO-CULTURE FACTORS AFFECTING PERFORMANCE

1.1 Social ethics and sport
1.2 Attitude towards activity and sport
1.3 Team (group) cohesion

3 SPECTATORS AND PERFORMANCE

2.1 Types of spectators-crowd, fans
2.2 Facilitation and debilitative effects of spectators on performance

FUNDAMENTALS OF SPORT BIO-MECHANICS

UNIT-I

THE STUDY AND ANALYSIS OF HUMAN MOVEMENT

Kinesiology and Bio-Mechanics:
Areas of study
Approaches for studying movement,
Importance of biomechanics in Physical Education and Sports
Research in and out of the Laboratory

INTRODUCTION TO BIOMECHANICS INSTRUMENTATION

Overview of instrumentation and its uses
Clocks and times
Stroboscopy
Cinematography and computer assisted analysis
Videography and computer assisted analysis
Force measuring instrumentation
Accelerometry
Electorogoniometry
Electromyography
Using micro computers for collecting and analyzing data

UNIT-II

LOOKING AT MOVEMENT: SOME MECHANICAL CONCEPTS

Types of motion
Distance and Displacement
Speed, Velocity and uniform acceleration
Acceleration and uniform acceleration
Force and momentum
Pressure
Mass and weight
Gravity
Center of gravity
Work
Power
Energy

Forces and Movement
Forces acting on a system
Reaction forces
Friction force
Centripetal and centripetal forces
Elastic force
Internal and external forces
Motive and Resistive forces
Force diagrams and Vectors

Torque and moment of inertia

The effect of two or more torques on a system
Vector Composition of torque
Torque and body's center of gravity location

Other Kinetics

Lever, types of levers and their mechanical advantage and disadvantage with special reference to physical education and sports application.

Friction, types of friction and their mechanical advantage and disadvantage with special reference to physical education and sports application.

UNIT-III

BODY BALANCE AND STABILITY CONTROL

Balance
Equilibrium and stability
Controlling balance in static positions
Controlling balance during movement

NEWTONS LAWS OF MOTION

Law of inertia (Liner Motion)
Law of moment of Inertia (Angular Motion)
Law of Momentum (Linear Motion)
Law of Angular Momentum (Angular Motion)
Law of Action and Reaction (Linear Motion)
Law of Action and Reaction (Angular Motion)

UNIT-IV

OBSERVING AND ANALYZING PERFORMANCE

The Nature of skills
Overall performance objective of skill
The analysis process

Projectile-Related Activities

Properties of motion related to projecting for vertical distance
Projecting for vertical distance with a horizontal component
Projecting for horizontal distance
Projecting for accuracy
Principles derived from Projectile Motion

FLUID FORCES

Fluid drag force
Fluid lift force

Application of Arrangement in Sport

Effective of dragon the body and objects in sport
Effects of life in sport
Life force produced by spin: The Magnus effect

Application of Hydrodynamics in Swimming

Buoyancy & floatation
Resistive forces in swimming skills
Propulsive forces in swimming skills
Swimming speed & efficiency

UNIT-V

STRUCTURE OF MOTOR ACTION

Structure of cyclic & acidic motor action and movement combination
Functional relationship of different phases of motor action

Qualities of Motor Movements

Movement rhythm
Movement coupling
Movement flow
Movement precision
Movement amplitude

Biomechanical principles:

Principles of initial force
Principles of optimum path of acceleration
Principles of conservation of momentum
Principles of Action and Reaction

FUNDAMENTALS OF EXERCISE PHYSIOLOGY

UNIT-I **PHYSIOLOGICAL OF MUSCLE ACTION**

1.1 **Neuromuscular Concepts of Muscle Action**

- Structure and function of Skeletal muscle
- Contractile mechanism
- Neural transmission and Motor response
- Muscular adaption to training

1.2 **Metabolic and Hormonal Control:**

- Energy systems during rest and exercise
- Measuring energy expenditure
- Nature of hormone action
- Metabolic adaptation to training

UNIT-II **EXERCISE AND TRAINING FOR FITNESS AND PERFORMANCE**

2.1 **Physical Activity and Health and Fitness**

- Role of physical activity in disease prevention
- Behaviour supporting fitness and health
- Elements of total fitness(Wellness)

2.2 **Training for Sport and Fitness:**

- Principles of Training
- Overtraining, under training optimum training
- Benefits of resistance training
- Adaptation t aerobic and anaerobic training

UNIT-III **NUTRITION, BODY COMPOSITION FOR FITNESS AND PERFORMANCE**

3.1 **Nutritional Aspect of Fitness And Performance :**

- Balance diet
- Water and electrolyte balance
- Athlete's diet
- Physiological basis of diet for sedentary, physically active and sports Person.

3.2 **Optimal Body Composition For Fitness And Performance:**

- Concepts of body composition
- Assessment of body composition
- Body composition for optimal health and fitness
- Body composition and sports performance

UNIT-IV **HEALTH DISORDERS AND PHYSICAL ACTIVITY**

4.1 Cardiovascular Disease And Physical Activity:

. Concepts of cardiovascular disease
. Cardiovascular disease risk factors
. Reducing risks through physical activity

4.2 Obesity, Diabetes and Physical Activity

. Obesity and its causes
. Etiology of diabetes
. Role of exercise in prevention and treatment of obesity and diabetes.

UNIT-V **FUNDAMENTALS OF EXERCISE PRESCIPTION AND PHYSIOLOGICAL TESTING OF SPORTMEN**

5.1 Prerequisites of Exercise Prescription:

. Medical clearance
. Consent form
. Readiness to exercise (PAR-Q)
. Stop test indicators, pre exercise session preparations
. Monitoring exercise intensity

5.2 Sport Specific Physiological Testing Perquisites:

. Pretest preparation checklist
. Medical examination
. Consent form
. Quality assurance
. Protocols for physiological assessment of players

FUNDAMENTALS OF SPORT MANAGEMENT AND ADMINISTRATION

UNIT-I **MANAGEMENT AND ADMINISTRATION**

1.1 Definition, meaning and concept of sports management and administration
1.2 Nature, scope and principles
1.3 Function of sports management
1.4 Profile of a successful administration/manager

UNIT-II **FACILITIES AND FINANCE MANAGEMENT**

2.1 Planning and development of facilities
2.2 Developing multipurpose sports facilities
2.3 Management of safety measures
2.4 Fundraising, accounting and budgeting

UNIT-III **LEADERSHIP**

3.1 Leadership types and traits of a successful leader
3.2 Time Management
3.3 Managing meetings
3.4 Personnel management and voluntary management

UNIT-IV **SPECIAL SERVICES**

4.1 Types of sports events
4.2 Formation of committees
4.3 Draw of fixtures, schedules and ceremonies
4.4 Reporting and evaluation

UNIT-V **OFFICE MANAGMENT**

5.1 Meaning and definition of office management
5.2 Elements and functions of office management
5.3 Layout of physical education department
5.4 Office correspondence