

SCHOOL OF PHYSICAL EDUCATION
DEVI AHILYA UNIVERSITY, INDORE

M.Phil. – I Sem

Research Methodology, Quantitative Methods and Computer Application

Unit – I- Introduction to Research

- a. Location of Research Problem
- b. Criteria for Selecting a Problem
- c. Scientific and Unscientific methods of problem solving
- d. The parts of a Research Proposal and Research Report
- e. Writing the Proposal and Report

Unit – II –Types of Research in Physical Education and Exercise Science

- a. Analytical Research (Historical, Philosophical, Reviews and Research Synthesis)
- b. Descriptive Research (Surveys and Case Studies)
- c. Experimental Research (Internal and External Validity threats and control for internal and external validity)

Unit – III – Ethical Issues in Research

- a. Seven Areas of Scientific Dishonesty
- b. Mistakes Vs Misconduct
- c. Copyright Issues
- d. Protecting Human Subjects
- e. Protecting Animal Subjects

Unit – IV - Statistical Techniques Used in:

- a. Descriptive Statistics
 - i. Use of Measures of Central Tendency and Variability
 - ii. Use and Calculation of Standard Scores
- b. Comparative Statistics
 - i. Two Way ANOVA
 - ii. ANCOVA – (Analysis of Co- Variance)
 - iii. Post Hoc Test of Significance (Scheffe’s, LSD, Tukey HSD)
- c. Relationship Statistics
 - i. Concept of Partial and Multiple Correlation
 - ii. Concept Two Way Regression Analysis
- d. Non Parametric Statistics
 - i. Chi Square and Contingency Table
 - ii. Rank Order Correlation

Unit – V – Practical Approach to Statistical Computation Using the Software

- a. Creating a Data File
- b. Defining variables and its Properties
- c. Computation of Descriptive Statistics (Mean, Standard Deviation, Skewness, Kurtosis, Z Scores etc.)
- d. Computation of Independent and Paired Sample “ t” Test
- e. Computation of One Way and Two Way ANOVA
- f. Computation of ANCOVA
- g. Computation of Correlation and Correlation Matrix
- h. Computation of Chi Square

References: (Research)

1. Baumgartner, T.A., Strong, C.H., & Hensley, L.A. (2000) Conducting and reading research in health and human performance (3 rd ed.) Boston : Mc. Graw – Hill.
2. Berg, K.E. & Latin, R.W. (1994). Essentials of modern research methods in health, physical education and recreation. Englewood Cliffs, NJ: Prentice-Hill.
3. Best, J.W., Kxahn, J.V. (1998). Research in education (8th ed.) Boston. Allyn & Bacon.
4. Bogdan, R. & Biklen, S. (1997). Qualitative research for education (3 rd ed.) Boston: Allyn and bacon.
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13. Rothstein, A.L. (1985). Research design and statistics for physical education Englewood Cliffs, NJ: Prentice Hall.

References: (Statistics)

1. Clarke, H.H. and Clarke, D.H. **Advanced Statistics with application to Physical Education**, London : Prentice Hall, Inc.
2. Garret, H. E. and Woodworth R. S. **Statistics in Psychology and Education**, Bombay: Allied Pacific Co. Ltd., 1958.
3. Guilford, J.P. **Fundamental Statistics in Psychology and Education**, New York: McGraw Hill Book Co., Inc., 1956.

Computer Application

Unit – I – Spreadsheet Tools (Using Microsoft Excel)

- a. Introduction to Spreadsheet Application
- b. Using Features, Formula and Functions
- c. Data Storage and Features of Statistical Data Analysis
- d. Generating Chart and Graphs
- e. Preparing Small Statistical Programs

Unit – II – Presentation Tools (Using Microsoft PowerPoint)

- a. Introduction to Presentation Tools
- b. Using Features and Functions
- c. Creating Presentation , Adding Effects, Customizing Presentation, Editing Presentation, Inserting Pictures/Graphs/Video, Creating Note Page and Showing Presentation

Unit – III – Web Search and Using Electronic Journals

- a. Introduction to internet
- b. Using Various Search Engin Like Googles, Google Scholar, Yahoo etc
- c. Collecting the Domain name of Various Websites Related with Physical Education Sports and Research.
- d. Using Electronic Journals Related to the Subjects and Area
- e. Using Shodh Ganga, and Inflightnet (Infonet Digital Library, Indcat and e Education)

References:

1. Computer Fundamentals: Dr. V Rajaraman.
2. Fundamentals of Information Technology : Chetan Shrivastava, kalyani Publisers
3. MS –Office: Ron Mansfield , BPB Publication.
4. MS-Word 2000: Thumb Rules and: Dr.Snigdha Banerjee, New Age International Publication.
5. SPSS Manual.

DEVI AHILYA UNIVERSITY, INDORE

M.Phil. Semester– I

Review of Related Literature

Unit – I – Review an Overview

Importance of Literature Review in Research in Physical Education.

- a. Concept of Historical, Traditional and Scientific Review.
- b. Basic Search Strategies

Unit – II

- a. Selection of topic for Literature
- b. Chronological development of the topic
- c. Current trends and Future scope

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1. Baumgartner, T.A., Strong, C.H., & Hensley, L.A. (2000) Conducting and reading research in health and human performance (3 rd ed.) Boston : Mc. Graw – Hill.
2. Berg, K.E. & Latin, R.W. (1994). Essentials of modern research methods in health, physical education and recreation. Englewood Cliffs, NJ: Prentice-Hill.
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7. George, D. & Mallery, P. (1999) SPSS for Windows: Step by step. Boston: Allyn and bacon.
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13. Rothstein, A.L. (1985). Research design and statistics for physical education Englewood Cliffs, NJ: Prentice Hall.

M.Phil. Semester– I

EVALUATION TECHNIQUES IN PHYSICAL EDUCATION

Unit – I

Development of Instruments for Evaluating Skill

- a. Skill test
- b. Rating test

Development of Instruments for Evaluating Knowledge

- a. Types of knowledge measuring instruments
- b. Merits and demerits of the different types of knowledge measuring instruments
- c. Construction of different types of knowledge tests
- d. Analysis of knowledge test items

Unit – II

Critical Appraisal of Basic Performance Tests

- a. Physical Fitness – AAHPERD physical fitness test
- b. Motor Fitness – Barrow motor ability test, Scott motor ability test
- c. Health Related Physical Fitness – AAHPERD health related physical fitness test

Unit – III

Measurement of Components of Motor Fitness

- a. Speed – Nelson Hand and Foot Reaction test, Nelson speed of movement test
- b. Agility – SEMO agility test, boomerang test, LSU agility test
- c. Balance – Bass stick test, modified bass stick test for dynamic balance
- d. Flexibility – Modified sit and reach test, bridge up test
- e. Strength – Pull up test, dip strength test
- f. Endurance – Burpees test
- g. Power – Vertical jump test, standing broad jump test, medicine ball throw test

Unit – IV

Critical Appraisal of Standard Skill Tests

- a. Hockey – SAI hockey skill test, Henry Friedel field hockey skill test
- b. Football – SAI football skill test, AAHPER football skill tests
- c. Basketball – SAI basketball skill test, AAHPER basketball test
- d. Volleyball – SAI volleyball skill test, AAHPER volleyball test
- e. Badminton – SAI badminton skill test, French short serve test
- f. Tennis – Dyer tennis test, Hewitt tennis skill test

Unit – V

Anthropometric Measurements

- a. Why measure body structure and composition
- b. Girth measurement – Chest, Upper arm, Forearm, Thigh and Calf
- c. Breadth measurement – Shoulder width, Chest width, elbow width, Hip width and Knee width
- d. Stature measurement – Shoulder height, Sitting Height, Arm Length and Leg Length

Body Composition

- a. Measuring skin fold fat
- b. Computing body density and percent body fat
- c. Optimum percent body fat and desirable body weight

REFERENCES:

1. Measurement and Evaluation in Physical Education – by D.Allen Phillips and James E. Hornak.
2. Measurement By the Physical Education : Why and How – by David K. Miller.
3. Application of Measurement to Health and Physical Education – by H. Harrison Clarke.
4. Measurements in Physical Education – by Donald K. Mathews.
5. Measurements and Evaluation in Physical Education, Fitness and Sports – by James S. Bosco and William F. Gustafson.
6. Practical Measurement for Evaluation in Physical Education – by Johnson and Nelson.
7. Measurement and Evaluation in Physical Education and Exercise Science – by Baumgartner and Jackson.
8. Test and Measurement in Sports and Physical Education – by D.K. Kansal.
9. A Practical Approach to Measurements in Physical Education – by H.M. Barrow and R. McGee.

M.Phil. Semester– I
SPORTS PSYCHOLOGY

Unit - I

Development of Sports Psychology

- A. History of Sports Psychology
- B. Current Concerns in Sports Psychology
- C. Future of Sports Psychology
- D. Role of Sports Psychologist

Introduction to Psychological Skills Training

- a. What is PST?
- b. Why PST is important?
- c. Why sport and exercise participants neglect PST?

Unit - II

The Psychology of Communication and Learning Effectiveness

- A. What is Communication
- B. Types of Communication
- C. Coach and Athlete- Techniques for Improving Communication

Aggression in Sports

- A. Nature of Aggression
- B. Aggression and Sports Performance

Group Cohesion in Sports

Unit - III

Personality and Sports

- A. Measuring Personality
- B. Using Psychological Measures
- C. Personality Research in Sports
- D. Theories of personality

Motivation in Sports

- A. Theories of Motivation
- B. Motivation and its Implications for Coaching and Teaching

Unit - IV

Imagery and Sports Performance

- A. Definition of the Terms
- B. Current Applied Issues in Imagery and Sports

Psychological Characteristics of Peak Performance

- A. Psychological characteristics During Peak Experiences in Sports
- B. Psychological Differences Between Successful and Unsuccessful Athletes
- C. Limitation of Peak Performance Research

Unit - V

Psycho Regulative Procedures of Activation and Relaxation

- A. Burnouts and Stress Management
- B. Muscle to Mind Procedures
- C. Mind to Muscle Procedure

Assessment of Important Psychological Variables

- A. Aggression
- B. Level of Aspiration
- C. Achievement Motivation
- D. State and Trait Anxiety
- E. Self Confidence
- F. Self Concept
- G. Mental Toughness

REFERENCES:

1. Psychology of Sports- The Indian Perspective, Friends Publication India (By Jitender Mohan, N.K.Chadha, Sultan Akhtar)
2. Sports Psychology- A Study of Indian Sportsman, Friends Publication India (By Dr. Agayjit Singh)
3. Educational Psychology Sterling Publishers (By Kundu & Tutoo)
4. Foundations of Sports and Exercise Psychology- Human Kinetics Publishers (By Robert Weinberg & Daniel Gould)
5. Sports Psychology- Concepts and Applications, Mc Graw Hill Publishers (By Richard H Cox)
6. The Sports Psychology Handbook- Western Inc. Publishers (By Shane Murphy)
7. Handbook of Sports Psychology- John Wiley and Sons Inc. (By Robert Singer, Heather Hausenblas & Christopher Janelle)

M.Phil. Semester– I
SPORTS BIOMECHANICS

Unit – I

Anatomical Kinesiology

A. Concept of Bone and its Related Terms

- a. Mechanical axis of bone
- b. Factors affecting the range of joint
- c. Methods of assessing a joint range motion
- d. Method of measuring joint motion with a simple goniometer and electrogoniometer
- e. Orientation plane of body and axis of motion

B. Concept of Muscle and its Related Terms

- a. Muscles attachment and action of major muscles of the body
- b. Various role of a muscle in a given movement.
- c. Influence of gravity and other forces on a muscle action
- d. Spurt and Shunt muscles and their functions
- e. Tendon action of two joint muscles
- f. Methods of studying the action of muscle
 - a. Inspection and Palpation method
 - b. Models and Gadgets
 - c. Muscle Stimulation
 - d. Electromyography

Unit – II

Force and Gravity

A. Force

- a. Classification of Force System
 - a. Linear force system
 - b. Parallel force system
 - c. Concurrent force system
- b. Composition and resolution of force
- c. Internal and External force

B. Gravity

- a. Methods of locating Center of Gravity
 - a. Segmentation method
 - b. Reaction Board Method
 - c. Mannikin Method

Unit – III

Means of Investigation of Human Motion

A. Equipments for measuring human motion

- a. Simple and Electrogoniometer
- b. Accelerometer
- c. Dynamometer (Hand, Leg and Back)

B. Sports Photography

- a. Types of Camera and their use in sports photography
- b. Types of films
- c. Filming Fundamentals
- d. Analysis of Photography

C. Brief Introduction of other means of Investigating Human Motion

- a. Video Feedback System for sports training and coaching
- b. Human TRAC (a computer based 2/3 dimensional human motion tracking system)
- c. Digital Thermography
- d. A computer based force measurement system
- e. Pressure measurement
- f. Electromyography and Digital Electromyography
- g. Heart Rate Monitoring System
- h. Telemetry

Unit – IV

Methods of Analysis of Sports Skill / Performance

- a. **Quantitative Method** (Brief Introduction)
- b. **Qualitative Method** (Introduction and steps of qualitative analysis)
- c. **Measurement and Mathematics in Biomechanics**
 - a. Measurement of Linear and Angular Kinematics
 - b. Use of Various Equations for the measurement of linear and angular Kinematics
 - c. Calculation of sample problems

Unit – V

Qualitative Analysis of Following Sports Skill / Performance

A. Athletics

- a. Sprint Start
- b. High Hurdle Clearance
- c. Hang and Hitch kick technique of Long Jump
- d. Fosbury Technique of High Jump
- e. Peri,O' Brine Technique of Shotput
- f. Rotation Technique of Discus Throw
- g. Five Stride Technique of Javelin Throw

B. Gymnastic and Swimming

- a. Hand Stand in Gymnastic
- b. Forward and Backward Roll in Gymnastic
- c. Forward and Backward Somersault
- d. Hand Spring Skill of Vaulting Table
- e. Giant Swing Forward and Back ward
- f. Front Crawl and Back Crawl technique of swimming
- g. Analysis of Diving Technique in general

C. Other Games

- a. Chest pass and overhead Pass in Basketball
- b. Lay up shot and three point shot in Basketball
- c. Tennis and Floating Serve in Volleyball
- d. Spiking in Volleyball
- e. Back Hand Top Spin Drive in Tennis
- f. Drop Shot in Badminton
- g. Pitching in Baseball and Softball
- h. In Swing and Out swing Bowling in Cricket
- i. Straight Drive in Cricket
- j. Lofted Kick in Football

Note: Method of one sports skill from each section will be taught and other skill will be given as assignment.

REFERENCES:

1. Gary L. Soderberg. KINESIOLOGY – Application of Pathological Motion. Philadelphia: Williams & Wilkins.
2. Gowitzke, B.A. and Milner, M. Scientific Bases of Human Movement. (3rd. ed:1988) Baltimore: Williams and Wilkins.
3. Grimshaw, Paul., Lees, Adrian., Flower, Neil.,&Burden, Adrian. Sports and Exercise Biomechanics. Taylor & Francis.
4. Groves, R and Camaine, D. Concepts in Kinesiology. (2nd. Ed:1983) Philadelphia: Saunders College Publishing.
5. Hay, J. G. The biomechanics of sport techniques. (2nd. Ed: 1978). Englewood Cliffs: Prentice-Hall.
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7. Luttegens, Kathryn., Deutsch, Helga., Hamilton, Nancy. Kinesiology-Scientific Basis of Human Motion. (8th ed) Brown & Bench mark.
8. Nordin, M. & Frankel, V. Basic Biomechanics of the Musculoskeletal System, (1990) Philadelphia: Lea & Febiger.
9. Northrip, J., Logan, G. & McKinney, W. Analysis of Sport Motion. (3rd. ed: 1983). Dubuque: William C. Brown.
10. Rasch, P. Kinesiology and Applied Anatomy. (1989) Philadelphia: Lea & Febiger.
11. Roger M. Enoka. Neuromechanical Basis of Kinesiology (2nd ed) Human Kinetics
12. Shaw, Dhananjoy. Mechanical Basis of Biomechanics. New Delhi : Sports Publication
13. Susan J. Hall Basic Biomechanics (4th ed) Mc Graw Hill
14. Thompson, C. Manual of Structural Kinesiology. (10th ed: 1985). St. Louis: Times Mirror / Mosby College Publishing

M.Phil. Semester– I

EXERCISE PHYSIOLOGY

Unit - I

(A) Introduction to Exercise Physiology and muscular activity

Concept of Exercise Physiology, need of exercise physiology in physical education and sports. Muscular contraction, Hypertrophy of muscles in relation to physical activity.

(B) Neuromuscular Physiology

Neuron, Motor units, Kinesthesia, Neuro-muscular junction, Tone, posture and equilibrium.

Unit - II:

(A) Bio-Energetics

Fuel for muscular work and energy for muscular contraction, Recovery oxygen, Energetics of Phosphagen resynthesis, Muscle glycogen resynthesis, Lactate removal and recovery, Restoration of oxygen and myoglobin stores, Lipid metabolism.

(B) Energy

Direct and indirect Measurement of Energy, Measurement of energy cost of exercise, Computation of Efficiency, Factors affecting Efficiency, Ergometry, Treadmill, Stationary, Swimming Ergometry and other devices.

Unit - III:

(A) Physiological changes due to exercise and training

Effect of exercise and training on various systems, Oxygen debt, Second wind, Micro-circulation; Effect of exercise on carbohydrate, fat and protein metabolism.

(B) Physiological aspects of exercise and environment

Physiological concept of Fitness, Work capacity under different environmental conditions.

Unit - IV:

(A) Anaerobic Training and Physiological Responses

General consideration, Training principles, training phases, warm up and cool down exercises, Training methods for anaerobic performance, Physiological effects of anaerobic training, anaerobic training and skeletal muscles and heart.

(B) Aerobic Training and Physiological Responses

General consideration, Training principles, training phases, warm up and cool down exercises, Training methods for anaerobic performance, Physiological effects of anaerobic training, anaerobic training and skeletal muscles, Cardio- respiratory (systemic) changes.

Unit - V:

(A) Nutrition and exercise performance

Physiological consideration of diet in relation to components, quantities and significance. Sports and diet, diet before, during and after competition, carbohydrate and glycogen boosting.

(B) Drugs and Ergogenic aids

Effect of smoking, Drinking and Drugs and athletic performance, Anabolic and androgenic steroids, Doping methods and dope testing.

REFERENCES:

1. Guyton A.C. **Text Book of Medical Physiology** W.B.Saunders Company, Philadelphia, 1976.
2. De. Varies, H.A. **Physiology of Exercise for Physical Education and Athletics** Staples Press, London, 1976.
3. Karopovich, P.V. and Sinning W.E. : **Physiology of Muscular Activity**
4. Bourne G.H. **The Structure and Function of Muscle**, Academic Press, London, 1972.
5. Morehouse L.E. & Miller, A.T. **Physiology of Exercise** C.V. Mosbey Company, Saint Louise, 1976.
6. P.O. Astrand & K. Rodahl **Text Book of work Physiology** M.C. Graw. Hill Kogakusha Ltd, 1970
7. Williom D. Mc. Aadle, Frank I. Katch, Victor I. Katch, Williams & Wilkins **Energy, Nutrition, and Human Performance** Waverley Company Paris 1996.
8. Robert A. Robergs, Scott O. Roberts, **Fundamental Principles of Exercise Physiology for Fitness, Performance and Health** McGraw Hill, 2000.
9. Gene M. Adams, Third Edition: **Exercise Physiology Laboratory Manual** McGraw Hill, New York 1998.
10. E. Dward L. Fox, Richard W. BowersMerle L. Foss: **The Physiological Basis of Physical Education and Athletics** W. M.C. Brown Publishers, Dubuqe Iowa, 1988.
11. David H. Clarke: **Exercise Physiology** Prentice- Hall inc. Cliffs. New Jersey, 1975
12. Lawrance E. Mowhouse, Augstus T. Miller, Jr. Seventh Edition: **Physiology of Exercise** The C.V. Mosby Company, 1976
13. Larry G. Shaver, **Essentials of Exercise Physiology** Surjeet Publications, New Delhi, 1982.
14. **Exercise Physiology, Energy, Nutrition and Human Performance** by Mcardle W.D.: Katch, Frank. I & Katch: Victor L. (3rd Edition, Lea & Febiger) (Philadelphia/London), 1991.
15. **Text Book of Work Physiology – Physiological Basis of Exercise** by P.O. Astrand and K. Rodahi, (3 rd Edition) McGraw – Hill Intimation Edition, Medical service, 1986.
16. **The Physiological Basis of Physical Education and Athletics** (4th Edition) by Fox, Bowers and Foss W. B. Saunders Company (USA) 1988.

M.Phil. Semester– I

SPORTS MANAGEMENT

Unit – I

A. Historical Evolution of Management

B. Overview of leadership, Management and administration in physical education and sports.

- a. The Nature of Leadership, Management and Administration, the Unified concept of Management
- b. The Purpose, Scope of Managing Physical Education Fitness and sports programmes
- c. The Effective leader and Director.

Unit – II

A. Basic Skills/Functions in the process of Management

- a. Making wise Decisions
- b. Communicating effectively
 - c. Managing Time and setting Priority.
 - d. Planning for the activity Based Programme
 - e. Organising for the activity based programmes.
 - f. Controlling the activity Based programmes.
 - g. Delegation of Duty in the Activity Based Programmes.
 - h. Staffing and leading personnel in Activity Based programmes.

B. Fundamentals of Organizational Behaviour

- a. Foundation of a Behavioural Approach to work.
- b. The Individual and work Environment.
- c. The Human Behaviour and the climate of the work Environment.
- d. Understanding Motivated Behaviour Human Needs and Motivation, Goal setting and reinforcement, counseling and reward system.
- e. Leadership and the Human Behaviour in the work Environment
Leadership style, participative Management, Real and Imagined Leadership and effective, group performance.

Unit – III

A. Training of Administrators

- a. Training of Administrator/ Manager for better performance competency, Based Approach.
- b. Analysis administrator performance problems.
- c. How to develop behaviour and how to stop problematic behaviour punishment and extinction.
- d. Philosophy, personality and an administrator/Manager.
- e. Principles, policies and standard practices of Management.

Unit – IV

- a. Office Management.
- b. Class Management and management of Teaching Staff.
- c. Managing sports Facilities Designing and Planning sports facilities, sports facility specifications facilities and stretchers.
- d. Management of sports equipment, selection, purchase, maintenance and security.
- e. Financial Management in Physical education and sports.
- f. Management of recreation and leisure services.

Unit – V

- a. Risk Management in sports.
- b. Legal aspects of Physical Education and Administration in sports.
- c. Community Involvement and Public relation.
- d. Stress, burnout and conflicts in Management of Physical Education and sports.
- e. Unions and Labour Relations.

REFERENCES:

1. Railey, Him H and Tschauer, Peggy Railey Managing Physical Education, Fitness and Sports Performance 2nd Ed. (London: Mayfill Publishing company 1988)
2. Frost, B. and Lackhart, B.D. Marshall Stanley, J. Administration of Physical Education and Athletics Concept and Practices 2nd Ed. (New Delhi Universal book stall, 1992)
3. Horine, Larry Administration of Physical Education and Sports Programme, 2nd Ed. (Soulvand: W. M. C. Brown Publishers, 1991)
4. Francis, James G. and Milbourn, Gene J.R. Human Behaviour in the Work Environment (California : Goodyear Publishing Company. Inc. 1980)