

ANNAMALAI UNIVERSITY

Ph.D in Physical Education

2014-15 onwards

Ph.D Syllabus [with out M.Phil]

SEMESTER- I

(Course I: Common to all Ph.D candidates in Physical Education)

RESEARCH METHODOLOGY, EXPERIMENTAL DESIGN & STATISTICS

Objectives:-

The scholar

- **Acquires knowledge of different aspects of Physical Education research**
- **Understand the types and techniques used in Physical Education research**
- **Develop the skills of preparing the research proposal, Hypotheses and research report.**
- **Understand and learn the method of computing statistics and use of SPSS packages**

SYLLABUS

UNIT- I:-

Meaning and definition of research – Qualities of good research – Characteristics of scientific research – Formulation of title – Statement of the problem – Delimitations and limitations. Hypothesis in different form – Operational definitions – Significance of the study. Internal and external validity – Independent and dependent variables – Variables in comparative, relationship and effect studies.

UNIT – II:-

Areas of research: Training methods, exercise physiology, sports Psychology and measurement and evaluation – Writing a proposal by selecting a topic in the above area – Collecting literature from various sources – Experimental design: meaning – Basic principles – Repeated measures design, rotated group design, independent factorial design and mixed factorial design – Thesis format – Organization of chapters.

UNIT – III

Measures of central tendency, Variability, Reliability – t-ratio for independent and repeated group – Level of confidence Standard scales – Different types of line, bar and Pie-diagram. Frequency polygon, histogram and Ogive curve – Sampling processes- Different types of sampling.

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UNIT - IV

One way analysis of variance – Independent and repeated groups – Problem solution – Two way analysis of variance – Independent and repeated group – Problem solution – Two way analysis of variance – mixed design – One factor independent and other factor repeated measure design – Problem solution – Analysis of covariance – one way – Two way – Concepts- Application of Computer in Physical Education research- Usage of SPSS packages in research.

UNIT – V

Simple, partial and multiple correlation – Problem solution – Wherry Dolittle method – Concept. Chi square – Biserial, Tetrachoric, Correlations, phi – Contingency coefficients – Problem solution. Rank order correlation. Sign, Median, Mann Whitney U Test and Kolmogorov.

REFERENCE:

1. Clarke, David H. and Clarke, H. Harrison. Research processes in Physical Education. New Jersey: Prentice Hall Inc., 1984
 2. Best, John W & Kahn, James V. Research in Education. New Delhi: Prentice Hall of India, 1992.
 3. Clarke, H. Harrison and David H. Clarke. Advanced Statistics. New Jersey. Prentice Hall Inc., 1972.
 4. Garret, Harry E. & Woodworth, N.S. Statistics in Psychology and Education. Bombay: Allied Publications Private Ltd., 1958.
 5. Anne L. Rothstein, Research Design and Statistics for Physical Education. Herbert H. Lehman College city University of New York, Prentice Hall, Inc., Englewood cliffs 1985.
 6. Kothari C.R. Research Methodology. Second Edition, Viswa Prakashan, New Delhi, 1990.
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Course – II : MODERN TRENDS IN PHYSICAL EDUCATION

SYLLABUS

Objectives:-

The scholar

- **Acquires knowledge on latest development in the field of Physical Education**
- **Understand the types and techniques used in Sports Field**
- **Develop the skills of preparing the Competitive Examinations**
- **Updating concept and trends in Physical Education**

UNIT- I:-

Philosophies of Education as applied to Physical Education- Idealism, Naturalism, Realism, Pragmatism, Existentialism, Humanism. – Biological basis of Physical activity- benefits of exercise, growth and exercise, exercise and well-being sex and age characteristics of adolescent, body types – Olympic Movement – Historical development of Ancient and Modern Olympic Games- Physical Education in India.

UNIT- II:-

Physiology of Muscular activity, Neurotransmission and Movement mechanism – Factors influencing performance in sports – Bioenergetics and recovery process – Athletic injuries – their management and rehabilitation – Ergogenic aids and doping. Kinetics, Kinematics- linear and angular, levers – Laws of motion, Principles of equilibrium and force, spin and elasticity.

UNIT- III:-

Learning process – theories and laws of learning – Motivation, theories and dynamics of motivation in sports – Personality, its dimensions, theories, personality and performance – Group dynamics, team cohesion and leadership in sports – Media and sports – Development of teacher education in Physical Education – Professional Ethics.

UNIT- IV:-

Nutrition and dietary manipulations - Health-related fitness – Characteristics and principles of sports training – Training load and periodization- Technical and Tactical preparation for sports- Sports talent identification- process and procedures.

UNIT- V:-

Concept of test, measurement and evaluation – Principles of measurement and evaluation – Criteria of test evaluation – Concept and principles of management –

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Organisation and functions of sports bodies – Management of infrastructure, equipments, finance and personnel – Methods and Techniques of teaching – Principles of planning Physical Education lessons.

REFERENCE:

1. Clarke, David H. and Clarke, H. Harrison. Research processes in Physical Education. New Jersey: Prentice Hall Inc., 1984
 2. Best, John W & Kahn, James V. Research in Education. New Delhi: Prentice Hall of India, 1992.
 3. Clarke, H. Harrison and David H. Clarke. Advanced Statistics. New Jersey. Prentice Hall Inc., 1972.
 4. Garret, Harry E. & Woodworth, N.S. Statistics in Psychology and Education. Bombay: Allied Publications Private Ltd., 1958.
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SEMESTER- II

COURSE – III : ALLIED SCIENCES IN PHYSICAL EDUCATION

Objectives:-

The scholar

- **Acquires knowledge and importance of Modern Trends**
- **Understand the modern concepts in Physical Education**
- **Enrich the knowledge of emerging areas in Physical Education**
- **Understand and develop skills to face the challenges in Physical Education.**

SYLLABUS

UNIT – I:-

Teacher training programs in India- Diploma Courses, Certificate Courses, Undergraduate courses – Post Graduate Courses- Higher Education (Research Degrees) – Comparison of Different course contents. Professional Organizations in Physical Education and Sport in India – Germany – Britain – Comparison of Professional Organization in India and other Countries.

UNIT – II:-

Teaching Career- Coaching Career – Fitness and Health related career- Therapy related career – Sport careers in media, management and performance. Assistance for infrastructure for coaching programmes for competitions – for publications – for research laboratories –fellowship – SAI-UGC- State – Corporation. Avenues of Placements- Public sector – Private sector.

UNIT – III:-

Types of surface of playgrounds (Track & Field and games) Modern equipments used in various sports events- Playing equipments.

UNIT – IV:-

Main tasks of training – main features of sports training junior training program principle tasks. Identification of talent – Pre requisites and conditions for developing talent - Early recognition - Screening and selection with performance factors. Characteristics : anatomic, physiological, psychological and motor development of children and adults. Comparison of various modern training methods.

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UNIT – V:-

Issues and challenges in Physical Education and sports. Leadership values- Public relations - Future challenges of Physical Education personnel : organization and administration - training and competition.

REFERENCE:

1. Ducher A Charles "Functions of Physical Education".
 2. Bunna, John W "Scientific Principles of Coaching".
 3. Hay, James G "Biomechanics of Sports Techniques".
 4. Millor I Doris & Nelson E Richard "Biomechanics of Sports".
 5. Winter A David "Biomechanics of Human Movement".
 6. O. William Dayton "Athletic Training and Conditioning."
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Course – IV : FIELD OF SPECIALIZATION [Any One]

A. TRAINING METHODS

Objectives:-

The scholar

- Acquires knowledge of different types of Sports Training
- Understand the types and techniques used in Sports Training
- Develop the skills of preparing the Training and Sports coaching program
- Understand and learn the method of testing procedure

SYLLABUS

UNIT – I

Basic principles of training - Physical fitness components, Strength:- Types of strength, static muscular activity, dynamic muscular activity – eccentric muscular activity, concentric muscular activity. Strength development training – General exercises, special exercises - Competition specific strength and endurance - Unit construction for strength development.

UNIT – II

Speed:- Definition of speed – Factors influencing speed – Speed Barrier – Components of load-Training for speed development – Intensity, extent(frequency), and density - Unit construction for speed. Endurance:- Groups of endurance – Types of endurance - short term, medium term and long term endurance - factors to be considered for endurance training - duration, repetition, competition and testing.

UNIT – III

Mobility:- Definition, classification, factors influencing mobility, role of mobility, training to develop mobility, mobility unit construction. Periodisation:- Meaning, single periodation, double periodation - Different periods:- Preparatory period, competition period, transition periods - Meaning of the term units - micro cycles, meso cycle and macro cycle.

UNIT – IV

Effect of drugs – Alcohol, Caffeine, Smoking and performance. Blood doping, anabolic steroid, drug abuse in athletics. Effect of climatic changes – High altitude training for long distance runner. Effect of aerobic endurance training on heart rate,

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heart size, blood pressure, blood distribution, lung volume, respiratory rate, maximal oxygen uptake and lactic acid.

UNIT – V

Testing processes – Strength, Speed, Endurance, agility, Flexibility, Vital capacity. Percentage of body fat, VO_2 max. Tools:- Spirometer, sphygmomanometer, grip dynamometer, Leg dynamometer, install pulse apparatus, bio-monitor, flexo-meter, skin fold caliper, treadmill.

REFERENCE:

1. Frank W.Dick sports Training Principles. London:Lepus Book Co., 1980.
 2. Frances wakefield, Berothy Harikins and John M.Cooper, Make and Field Fundamentals for Girls and Women. London C.V. Mosby Co., 1970.
 3. Larry G. Shaver, Essentials of Exercise Physiology, Surjeet Publication, Delhi.
 4. Ramesh Bharadwaj; Drug Abuse in Sports. Publisher, Sports Publications, Bandermotram Press, Delhi 2011.
 5. Rob Steamaker and RAY Browing, Serious training for Endurance Athletes, 2nd Edition, 1989, USA.
 6. Hardajal Singh, Science of Sports Training, (New Delhi, D.V.S Publications, 1991)
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Course – IV : FIELD OF SPECIALIZATION

B. SPORTS PSYCHOLOGY

Objectives:-

The scholar

- **Acquires knowledge and importance of Sports Psychology**
- **Understand the types and techniques used in accessing personality**
- **Develop the skills of Psychological Training**
- **Understand and learn the method of testing procedure of psychology traits.**

SYLLABUS

UNIT – I :

Meaning and definition of sports Psychology. Perceptual motor learning – The retention of motor skills – Transfer of skills - attention and its role in learning motor skills.

UNIT – II:

Nature of personality – Dimensions of Personality - Assessment of personality – The issue of heredity in personality – Factors affecting Personality - Personality traits of sportsmen – Personality of coach.

UNIT – III:

Theories of motivation – Achievement motivation – Motivation and participation in Physical activity – motivation and sports performance - level of aspiration and achievement - Method of assessing aspiration.

UNIT – IV:

Sports performance in groups – Team cohesion - sociometry in sport – Leadership in sports – Sports audience – Effect of sport audience on performance. Activation in sport – Method of assessing activation level of athletes.

UNIT – V :

Psychological characteristics of players during pre, during and post competition. Mental training – Psychological preparation of superior athletes. Psychodynamics in sports. Autogenic training.

REFERENCE:

1. Vanko Mirolave: Bryant Cratty J. Psychology and the Superior Athlete, The Macmillan Co., London 1984.
2. Cratty Sryant, J. Psychology in contemporary sports, Englewood Cliffs, Prentics – Hall, Inc New Jersey, 1983.
3. Cratty Bryant J. Movement Behaviour and motor learning Philadelphia, Lea and Febiger (USA) 1992.

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4. Cratty Bryant, Psychological and sociological basis of Physical activity, Englewood Cliffs, New Jersey, Prentice Hall Inc. 1994.
 5. Singer Robert N. Motor Learning and Human Performance. New York, Macmillan Publishing company, Inc.1995.
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Course – IV : FIELD OF SPECIALIZATION

C. MEASUREMENT AND EVALUATION

Objectives:-

The scholar

- **Acquires knowledge and importance of Test and Measurement**
- **Understand the types and techniques used in accessing fitness**
- **Develop the skills of constructing the test**
- **Understand and learn the method of administration the test.**

SYLLABUS

UNIT - I

Need for tests – Criteria of test selection – Classification of tests – Construction of knowledge and skill tests.

UNIT - II

Motor and Health related fitness tests – Circulatory and respiratory endurance tests – Body dimensions and physique, posture appraisal – Centre of gravity tests – Flexibility tests – Kraus-Weber muscular fitness tests – Roger's strength and physical fitness indices.

UNIT - III

Motor ability and educability tests: Mecloy's – Larson's – Newton's – J.C.R. – Barrow motor ability tests – Johnson and Metheny – Johnson Motor Educability Tests.

UNIT - IV

Skill tests: Basketball-Badminton-Football-Volleyball-Hockey - Tennis.

UNIT - V

Administration of tests, suggestions for administering tests – testing personnel – Time for testing – Test records - Preparation of reports – Construction of tables and Graphic exhibits – purposes of reporting.

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REFERENCE:

1. Bosco, James S. Measurement and evaluation in Physical Education, Fitness and Sports. New Jersey: Prentice Hall Inc.1983
 2. Clarke H. Harrison, Application of measurement to health and Physical Education. New Jersey: Prentice Hall Inc., 1976.
 3. Mathews, Donald K. Measurement in Physical Education. London: W.B. Saunders Co., 1958.
 4. Harold M. Borrow, Rosemary McGee Kothleen A. Tritschler, Practical Measurement in Physical Education and Sports IVth Ed, Febiger, 1989, U.S.A.
 5. Irene Polmer, Tests and Measurements, Aworkbook in Health and Physical Education, New York A.S. Barnes and Company, 1932.
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Course – IV : FIELD OF SPECIALIZATION

D. EXERCISE PHYSIOLOGY

Objectives:-

The scholar

- **Acquires knowledge and importance of Exercise Physiology**
- **Understand the types and techniques used in accessing Physiological variables**
- **Develop the skills of using equipments to evaluate physiological character**
- **Understand and learn the growth and development, environmental effects.**

SYLLABUS

UNIT – I

Structure and function of skeletal muscles:– Skeletal muscle and exercise – Types of contraction – Sliding filament theory - muscular theory of contraction – Heat production in muscle, types of muscle. Growth and development – Physical performance of young athletes. Training the young athletes - ageing - Body composition and ageing – Environmental stress and ageing. Sex differences in body size and composition – Athletic ability – Physiological adaptation to exercise and training – Special consideration for female athletes.

UNIT – II

Qualifying sports training and optimal body weight for performance – Excessive training – Over training – Detraining – Retraining. Nutrition: Nutrition classification– Water and electrolyte balance – Sports diet – drinks. Ergogenic aids – Pharmacological agents and hormonal agents – Physiological agents.

UNIT - III

Structure and functions of cardiovascular system and effect of exercise on pulmonary ventilation and energy metabolism – Factors affecting the aerobic training. Evaluating endurance capacity – Cardiovascular, Respiratory, Metabolic adaptations to training.

UNIT - IV

Exercise : Oxygen debt – Second Wind – lactic acid formation – Lactate threshold – Energy system - Aerobic and Anaerobic metabolism – Types of Muscular contraction – Muscular adaptation to exercise – Chemical composition of Muscles.

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UNIT – V

Work capacity under different environmental conditions under hot, humid, cold, high altitude – Energy costs of various sports activities – Anaerobic metabolism – Aerobic metabolism – Energy release. Measurement Evaluation: Assessment of Max-VO₂ using Treadmill bicycle ergometer and Spirometers – Assessment of power using Margaria Kalamann tests - Reaction time, movement time, Systolic and diastolic blood pressure. Mean pressure, Pulse rate – Finger dexterity - Steadiness test - assessing body composition.

REFERENCE:

1. Clark David H. Exercise Physiology, Prentice Hall, Inc. Englewood Cliffs, N.J. 1975 (Test Book)
2. Guyton A.C. Test Book of Mechanical Physiology, W.S. Saunders Co., Philadelphia, 1976.
3. Devrise H.A. Physiology of Exercise for Physical Education Athletics staples press, London, 1976.
4. Bourne G.H. The Structure & Function of Muscle Academic London, 1972.
5. Morehouse L.E. & Millar A.T. Physiology of Exercise, C.V. Henry Co., Saint Louis, 1976.
6. Astrand & K. Rodahi – Text Book of work Physiology, McGraw Hill Kogakusha Ltd., 1970.
7. Mathews K.K. & Fox E.L. Physiological basis of Physical Education and Athletics W.B. Savinckle & Co., Philadelphia, 1976.

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