

**BHARATHIAR UNIVERSITY – COIMBATORE – 641 046.  
M.Phil. / Ph.D. – PHYSICAL EDUCATION**

**PART I - SYLLABUS**

**(For the candidates admitted from the academic year 2018-19 onwards)**

<b>PAPER I</b>	<b>Research Methods and Advanced Statistics</b>
<b>PAPER II</b>	<b>Modern Trends in Physical Education</b>
<b>PAPER III</b>	<b>1. Sports Physiology 2. Sports Training 3. Sports Psychology 4. Sports Medicine 5. Yoga and Health 6. Measurement and Evaluation in Physical Education 7. Sports Physiotherapy and Rehabilitation 8. Sports Management in Physical Education 9. Fitness and Wellness</b>

## **PAPER-I - RESEARCH METHODS AND ADVANCE STATISTICS**

### **Unit.I Fundamental Concepts:**

- 1.1 Research - meaning and identification of research problem - statement of research problems - criteria for selection of problem.
- 1.2 Types of research – basic – action- applied, Methods of research - historical, longitudinal, experimental, philosophical, surveys - case study.
- 1.3. Variables meaning and identification, independent, dependent, control, intervening variables.
- 1.4. Hypothesis – types of Hypothesis – formulation of hypothesis – Testing hypothesis – Type I and Type II Error.
- 1.5 Areas of research - bio-mechanics, kinesiology, exercise physiology, motor learning, sports medicine, sports psychology, sociology, sports, growth and development etc. Agencies promoting research and new trends in Physical Education- ministry of education, U.G.C., Universities, state Governments. SAI and AIU etc.

### **Unit- II: Research Tools:**

- 2.1. Data – Types - Identification of data - Methods of collecting data - observation, Interview, questionnaires and experimentation.
- 2.2 Establishing of research laboratory Instrumentation.
- 2.3 Concepts and measurement- reliability- validity- Norm's construction.

### **Unit III: The Research Design:**

3. 1. Research design – Types of research design – Need and Importance of research design.
- 3.2. Steps in designing the research proposal - statement of the problem – hypothesis- identification of variables - samples selection of tool- plan of analysis time budget cost resources personnel.
- 3.3. Preparation of the research report - tables - figures - footnotes -- bibliography – follow up with publication.
- 3.4. Introduction to the use of calculators and computers in analysis of data.

**Unit IV. Statistics - Parametric**

- 4.1. Use and Abuse of statistics - Data nominal- ordinal- internal- Ratio- Normal Probability-Normality of data parametric- Meaning- Applications Testing significance of mean difference: 't'- test: paired 't'- Independent 't'. Analysis of Variance: One way- Two way- Three way- Analysis of covariance : Concepts - applications Testing- relational structures- Pearson product moment- Multiple correlation-Partial correlation- Multivariable Analysis: concepts- Multivariate Analysis of Variance- Multivariate Analysis of Co-variance- Multivariate Linear Regression Analysis=Factor Analysis-Applications in sports.

**Unit V. Non parametric**

- 5.1. Non- Parametric statistics - meaning- Applications- Testing the significance of Association- Chi-Square: Meaning- Applications: One way chi-square- Two way chi-square. Testing the significance of mean difference: Sign test - Mann-Whitney test- Friedman test- Kruskalvallis test.
- 5.2. Testing the significance of relationship: Rank order correlation-Biserial correlation – Point Biserial correlation- Tetra choric correlation applications. Logistic regression: Concepts- Applications.

**Reference**

1. David H. Clarke, H. Clarke:Advanced Statistics; with Applications to Physical Education Prentice Hall (1972),ISBN 10: 0130138479
2. David H. Clarke; H. Harrison Clarke.Application of Measurement to Physical Education Published by Prentice Hall PTR ISBN 10: 013039520X
3. *Lund Research Ltd.* "Descriptive and Inferential Statistics". *statistics.laerd.com*. Retrieved 2014-03-23.
4. Hays, William Lee, (1973) Statistics for the Social Sciences, Holt, Rinehart and Winston, p.xii, ISBN 978-0-03-077945-9
5. David W. Stockburger, Introductory Statistics: Concepts, Models, and Applications, 3rd Web Ed. Missouri State University.
6. DeGroot and Schervish. "Definition of a Statistic". Probability and Statistics. International Edition. Third Edition. Addison Wesley. 2002. ISBN 0-321-20473-5
7. Ralph B. D'Agostino (1986). "Tests for the Normal Distribution". In D'Agostino, R.B.; Stephens, M.A. Goodness-of-Fit Techniques. New York: Marcel Dekker. ISBN 0-8247-7487-6.
8. Henry C. Thode, Jr. (2002). Testing for Normality. New York: Marcel Dekker, Inc. p. 479. ISBN 0-8247-9613-6.
9. J.P VERMA and Mohammad Ghufraan ... *Statistical Methods for Sports and Physical Education* , Amazon.com
10. Box, George; Hunter, William; Hunter, J. Stuart. *Statistics for Experimenters*. pp. 66–67. ISBN 978-0471093152.
11. Clarke, David H., Clarke, H. Harrison.Research Processes in Physical Education ,Published by Prentice Hall College Div (1984) ,ISBN 10: 0137745133
12. Geisser, S.; Johnson, W.M. (2006) Modes of Parametric Statistical Inference, John Wiley & Sons, ISBN 978-0-471-66726-1
13. Corder; Foreman (2009) Nonparametric Statistics for Non-Statisticians: A Step-by-Step Approach, John Wiley & Sons, ISBN 978-0-470-45461-9.

## **PAPER II - MODERN TRENDS IN PHYSICAL EDUCATION**

### **Unit: I Professional Preparation:**

- 1.1 Teacher Training Programme in India-Diploma Course, Certificate Course, Undergraduate course – Post Graduate Course – Higher Education (Research Degrees)–Comparison of Different course contents.
- 1.2 Professional Organizations in Physical Education and sport in India China ,England and America – Comparisons of Professional Organisation in India and other countries.
- 1.3 Teaching Career – Coaching Career – Fitness and Health related career – media – Journalism and adventure sports. Therapy related career – sport careers in media, management and performance.

### **Unit II: Modern teaching technology and Schemes**

- 2.1 Latest technology in teaching and coaching in sports – modern teaching aids- video conferencing - modern trends in teaching and coaching
- 2.2 Publications - Research laboratories – fellowship–Sports authority of India
- 2.3 University grant commission and sports development authority of Tamilnadu
- 2.4 Ministry of Human resource development –Khelo India Schemes State– Central Government.

### **Unit III: Modern Facilities and Equipments:**

- 3.1 Surface technology in sports - Types of surface of play grounds (Track & Field and games)
- 3.2 Modern equipment used in various sports events Electrical and electronic equipments Photo finishing –Video analysis.
- 3.3 Playing equipment training equipments ground equipments for sports and games.
- 3.4 Science Laboratory modern equipments for exercise physiology-sports medicine – sports psychology-sports biomechanics.

### **Unit IV: Talents identification and Training:**

- 4.1 Main tasks of training – main features of sports training junior training programme principle tasks.
- 4.2 Identification of talent – Pre requisites and conditions for developing talent – Early recognition – screening and selection with performance factors.
- 4.3 Specific characteristics of the anatomic, physiological, psychological and motor development of children and adults.
- 4.4 Comparative of various modern training methods.

### **Unit V: Future of Physical Education and Sport:**

- 5.1 Issues and challenges in Physical Education and sports, leadership values – public relations.
- 5.2 Organization and administration – finance and budget – infrastructure facilities –smart class room facilities. Adequate teaching and coaching classes – student's interest-parent interest- management interest for sports and games – job opportunities government and public sectors for sports person.
- 5.3 Application of computer in Physical Education and sports and software technology in training and coaching.

**Reference:**

01. Ducher A Charles “ Functions of Physical Education”.
02. Bunna, Joh W “Scientific Principles of Coaching”.
03. Hay, James G “ Biomechanics of Sports Techniques”.
04. Millor I Doris & Nelson E Richard “Biomechanics of Sports”.
05. Winter A David ”Biomechanics of Human Movement”.
06. O.Willam Daytan” Sthletic Training and Conditioning.
07. F.A.B. Webstar “The Science of Athletics”.
08. Ken, Rawlison: “Modern Athletic Training”.
09. Morehouse & Basch “ Scientific basis of Athletic Training”.
10. Carl E. Klafs & David D Aro eim: “modern Principles of Athletic Training”.
11. John Bonn”Scientific Principles of Coaching”.
12. J.D Lauther: “Scientific Principles of Coaching
13. Government of India reports: Ghothari Commission.
14. Government of India reports: Eanwarabai Patel Commission Report on Secondary Education.
15. Government of India reports:Sports Policy”.
16. University Grants Commission Reports: Development Grants under five year plan.
17. University Grants Commission Reports on financial Assistance for Professional Growth.
18. Government of India report on structure for college of Physical Education .
19. Sports pedagogy by Androvitch 1906 U.S.S.R. Publication.

**PAPER III – 1. SPORTS PHYSIOLOGY**

**UNIT- I: Neuro Muscular System:**

- 1.1 Skeletal muscle – structure and function. The motor unit and strength gradation. Muscle force – velocity and power.
- 1.2 Nervous control of muscular movement. Basic structure and function of the nerves - neuro muscular functions. Nervous system and motor skills.

**UNIT – II: Cardio Respiratory Functions:**

- 2.1 Pulmonary ventilation – minute ventilation – ventilator mechanics - pressure change. Gas exchange and transport- total oxygen to  $\text{CO}_2$  blood.
- 2.2 Blood flow and gas transports – cardiac output during exercise. Circulating mechanics – changes in pressure and resistance during exercise. Cardio – respiratory control at rest and during exercise.

**UNIT III: Bio – Energetics:**

- 3.1 Definition of energy, Biological energy cycle, ATP – aerobic and anaerobic energy systems- Aerobic and anaerobic during rest and exercise.
- 3.2 Recovery from exercise – the oxygen debt – replenishment of energy stores during recovery. Muscle glycogen synthesis – liver glycogen replenishment- restoration of own stores.

- 3.3 Measurement of energy, work and power definition of efficiency – cycle ergo meter – mechanical and electrical treadmill – step bench.

**UNIT – IV Physiological Effects of Physical Training:**

- 4.1 Training effects – factors influencing training effects.  
4.2 Exercise and training for health and fitness – causes and risk factors of cardiovascular diseases – the exercise prescription. Environmental aspects.  
4.3 Climate acclimatization: Performance at altitude – Athletic performance at altitude – training and altitude.  
4.4 Heat balance – temperature regulation and heat disorder – physiological responses to cold.

**UNIT – V Nutrition and Exercise Performance:**

- 5.1 Diet before activity, during activity, following activity - exercise and weight control.  
5.2 Exercise and acid balance : Acid base balance following heavy exercise.  
5.3 Exercise and endocrine system: Characters and mechanism of hormones action, Hormonal responses to exercise and training.  
5.4 Effects of age and gender. Age and athletic performance, age and menstrual – exercise during pregnancy.

**Reference:**

1. Pox, Edward L and Mathews Donal K “ The Physiological basis of physical education and athletics, New York : Sander College Publishing 1982.
2. Mcardle. Williams D et al: Exercise physiology – energy nutrition and human performance, Ed.2. Philadelphia, Lea and Febiger 1986.
3. Karpouch and Sinning “Physiology of Muscular Activity” W.B.Seunders company, Philadelphia, London, Toronto 1986.
4. William D. Mcardle, Frank I Katch, Victor L Katch” Exercise Physiology” Lea & Febigen Philadelphia 1982.
5. A Kapandji “The Physiology of the joints’ Churchill Livingstone, Edinburgh London Melbourne and New York 1986.
6. David H Clarke, “Exercise Physiology” Prentice Hall Inc., Englewood cliffs, New Jersey.
7. Morehouse and Miller “ Physiology and exercise” The C.V. Mosley company 1990.
8. Larry G. Shaver” Essential of Exercise Physiology” Surjeet Publications Post Box. No. 2157, Delhi 110 007. India 1982.

## **PAPER – III- 2. SPORTS TRAINING**

### **Unit I :**

- 1.1 Sports training aims, task and characteristics of sports training,
- 1.2 Principles of sports training.
- 1.3 Methods of training: weight training – isotonic, isometric, Isokinetic interval training, circuit training – fartlek training.
- 1.4 Effects of training on physiological systems- muscle, heart – oxygen consumption, blood lactate-lung capacity, work capacity, body composition.

### **Unit II**

- 2.1 Training load: components of training load-intensity, density, duration and frequency principles of training load- adoption of load – principles of over load.
- 2.2 Training Plan: Periodisation – single, double and triple, Periodisation, competition, season and off- season-long term plan, short term plan – micro cycle, meso cycle, macro cycle - training schedules - steps involved in preparation schedule.

### **Unit III:**

- 3.1 Strength: Forms of Strength, Characteristics of Strength means and methods of strength developing.
- 3.2 Endurance; Forms of endurance, characteristics of endurance, mean and methods of developing endurance.
- 3.3 Speed: Forms of speed – characteristics of speed – speed training mean and methods of developing endurance.
- 3.4 Flexibility: Forms of flexibility, characteristics of flexibility, mean and methods of developing endurance.
- 3.5 Coordinative abilities – (agility) eye, foot, hand co-ordination of developing endurance.

### **UNIT – IV:**

- 4.1 Technical preparation – fundamentals and methods for the development of techniques in sports – stages of technical development – causes and correction of faults.
- 4.2 Tactical preparation – Tactical concepts – methods of tactical development.
- 4.3 Psychological preparation, Autogenic training– individual differences – requirement – diet for different season.

### **UNIT V:**

- 5.1 Diet – diet for different sportsman and women, caloric requirement – Diet for different seasons. Carbohydrates, proteins, fats, minerals, water and vitamins-caloric requirement – sports nutrition.
- 5.2 Doping – drugs – effects of dope and drugs on physiological performance – problems in identifying drug abuse – dope test.

### **Reference:**

1. Dick, Frank W. (1980) Sports Training Principles. London: Lepus Books
2. Fox, Edward L (1984) Sports Physiology. Halt: CBS College Publishing
3. International Fitness Association Web at <http://www.Ifafitness.com>
4. Singh, Hardy (1991) Science of sports Training. New Delhi: DVS Publications
5. Klerner, Susan and Robinson.M.G. (1998) Power Eating. Champaign IL:Human Kinetics

- 6 Nieman, David C (1998) The Exercise Health Connection
7. Shaver, Larry G (1982). Essential of exercise Physiology Delhi: Surjeet Publications
8. Wilmore, J.H. and Costell, D.L.(1999) Physiology and Sports and Exercise. Champaign IL:Human Kinetics

### **PAPER III– 3. SPORTS PSYCHOLOGY**

#### **UNIT-I Areas of Research in Sport Psychology- Motor Learning**

- 1.1 Sport Psychology- Areas of Research in Sport Psychology: Psychophysiology- Psychomotor- Socio Psychology-Psychometrics
- 1.2 Motor learning–Stages of learning- Practice:- Practice considerations-Special considerations: Plateau-Changing technique- Practice Visual- Goal setting.
- 1.3 Factors and conditions affecting motor learning: Perception- Perceptual Mechanism-Attention and concentration.
- 1.4 Kinesthesia-Proprioception: proprioceptors-Impacts in: learning –Training- Movement. Feedback-Types of Feedback-Servomechanism-Knowledge of results– Reinforcement-Types of reinforcement. Memory-Retention and Forgetting.

#### **UNIT–II Emotion and Sports:**

- 2.1 Emotion: Types of emotion- Emotion and Nature of sport- Influence of heredity and environment- Emotional impacts in sport performance.
- 2.2 Stress: Competitive stress – Types of stress. Stress and Sport performance- Relationship between stress and learning, performance.
- 2.3 Aggression: Theories of Aggression- Catharsis effect. Types of aggression.
- 2.4 Anxiety–Anxiety and performance-Inverted U-Hypothesis- Arousal Level arousal- Anxiety and Arousal

#### **UNIT–III: Psychological Applications: Preparation -Skill Training:**

- 3.1 Typology of athletic activities and psychological demands.
- 3.2 Psychological characteristics of Superior Athletes.
- 3.3 Psychological preparation of the superior athlete: Pre-competition-,during Competition and PostCompetition.
- 3.4 Psychological Skill Training: Meaning- Need and importance –Mental training Imagery Training- Visual Motor Bheavioural Rehearsal Training- Stress Management Training- Types of Stress Management Training- Autogenic Training- Application in sports.



**UNIT–IV: Motivation and Personality**

- 4.1 Motivation-Achievement motivation-Amotivation-Individual Differences.  
Motives:Competition- Participation in Physical activity. Importance of motivation in sport. Types of motivation: Intrinsic- Extrinsic.
- 4.2 Theories of motivation; Instinct theory- Drive theory- Maslos Hirarchy of Need and Self-determination theory –Competence theory Motivational Techniques: Goal Setting- Music- Positive Self talk-Rewards.
- 4.3 Personality: Types of personality-Personality and Sport.  
performance –Effects of sport on Personality.
- 4.4 Theories of personality: Trait theory- Social learning theory.

**UNIT–V: Psychometrics**

- 5.1 Psychometrics: Meaning-Assessing Intelligence-Testing Attitude- Aptitude  
Measures: Anxiety- Sport Anxiety–Stress- Competitive stress- Fear–Sport Confidence.
- 5.2 Sport confidence-Flow states- Fear of performance.
- 5.3 Measuring Personality – Sport personality. Measuring Social aspects: Sociogram-Adjustment-Cohesiveness- motivation- Motives for Competition- Motives for Exercise Participation.
- 5.4 Measuring coordinative abilities- Perception- Reaction time-Span of Apprehension-Coordination-Kinesthesia ability

**Reference:**

1. Kamlesh, M. L. (Jan 12, 2011). Psychology in Physical Education and Sport. Pinnacle Technology. ISBN 9781618202482. Retrieved 8 December 2014.
2. Suinn, R. M. (1990). *Plenum behavior therapy series. Anxiety Management Training: A behavior therapy*. New York, NY, US: Plenum Press.
3. Deci E, Ryan R (1985) *Intrinsic Motivation and Self-determination in Human Behavior*, New York: Plenum
4. Orlick, T. (1986) *Psyching for Sport*. USA; Human Kinetics Publishers, Inc.
5. Hale, B. (1998) *Imagery Training*. UK; The National Coach Foundation
6. Rainer Martens, Robin S. Vealey, Damon Burton.Human Kinetics Europe, Limited, 1990 - Sports & Recreation - 277 pages
7. Weinberg, R.S. & Gould, D. (2010). *Foundations of Sport and Exercise Psychology*. Champaign, IL: Human Kinetics.
8. Driska, A. (2011). A brief history of sport psychology.
9. Abrams, M. (2010) *Anger Management and Sport; Understanding and Controlling Violence in Athletes* Champaign, IL: Human Kinetics
10. Marchant, D.B. (2010). Psychological assessment: Objective/self-report measures. In S. J. Hanrahan & M.B. Andersen (Eds.), *Routledge handbook of applied sport psychology* (pp. 111-119). London: Routledge.

11. Marks, D. (1983). Mental imagery and consciousness: A theoretical overview. In A. Sheikh (Ed.) *Imagery: Current Theory, Research and Application* (pp. 96-130). New York: Wiley.
12. Buckworth, J. & Dishman, R.K. (2002). *Exercise psychology*. Champaign, IL: Human Kinetics.
13. Michell, J. (1999). *Measurement in Psychology*. Cambridge: Cambridge University Press. DOI: 10.1017/CBO9780511490040
14. Thompson, B.R. (2004). *Exploratory and Confirmatory Factor Analysis: Understanding Concepts and Applications*. American Psychological Association.
15. Davison, M.L. (1992). *Multidimensional Scaling*. Krieger.
16. Jones, L. V., & Thissen, D. (2007). A history and overview of psychometrics. In C.R. Rao and S. Sinharay (eds). *Handbook of Statistics, 26: Psychometrics* (pp.1-27). Amsterdam: North Holland. A free version of this chapter can be obtained [here](#).
17. Stout, W. (2002). Psychometrics: From practice to theory and back. *Psychometrika*, 67(4), 485-518. A free version of this paper can be obtained [here](#).
18. Groenen, P. J., & Andries van der Ark, L. (2006). Visions of 70 years of psychometrics: the past, present, and future. *Statistica Neerlandica*, 60(2), 135-144.
19. Borsboom, D. (2006). The attack of the psychometricians. *Psychometrika*, 71(3), 425-440.
20. Ryan, Richard; Edward L. Deci (2000). *"Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions"*. *Contemporary Educational Psychology*. 25 (1): 54–67.
21. Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum.
22. Atkinson, John; Norman Feather (1974). *A Theory of Achievement Motivation* (6 ed.). Krieger Pub Co. ISBN 0-88275-166-2.
23. Cofer, Charles N; Appley, Mortimer H (1967), *Motivation: Theory and Research*, New York, London, Sydney: John Wiley & Sons
24. Shumway-Cook, Anne; Woollacott, Marjorie H. (2001). *Motor control : theory and practical application*. Philadelphia: Lippincott Williams Wilkins. ISBN 978-0-683-30643-9. OCLC 499223436.
25. Robert N. Singer. *Motor learning and human performance: an application to physical education skills* Macmillan, 1975, ISBN 0024107409, 9780024107404.

## **PAPER III – 4. SPORTS MEDICINE**

### **UNIT – I**

- 1.1 A brief, history of sports Medicine – definition – meaning, preventive – curative and rehabilitation aspects – Need and importance of Sports Medicine.
- 1.2 Types of sports injuries – general principles of injury management – Management of soft-tissue injuries, bone injuries, nerve injuries.

### **UNIT – II**

- 2.1 Regional Athletic injuries and management – head injuries, Neck and cervical spine injuries – shoulder injuries – arm and elbow injuries – wrist and hand injuries – Chest and abdominal injuries- thigh and hamstring and knee injuries – lower leg, ankle and foot injuries.
- 2.2 Evaluation and management of specific disorders – Traumatic lesions of the spinal cord- after care of fracture – treatment of back disorders, and deformities – low back pain and scoliosis.

### **UNIT – III**

- 3.1 Applied sports medicine: Role of exercise in the prevention of various diseases: Cardio –Vascular- Postural disorders – Asthma – diabetes – obesity.

### **UNIT – IV**

- 4.1 Importance of sports nutrition. Exercise and food intake – before during and after activity – computerized meal and exercise plan – role of carbohydrate in prolonged and servers training. Diet prescription for football , basketball, volleyball and tennis players and athletes of jumps, Throws and running

## **UNIT – V:**

5.1 Therapeutic modalities and procedure - principles of therapeutic modalities and procedures – hydrotherapy - Diathermy -ultrasound- electrical muscle stimulation – transcutaneous electrical nerve stimulation (TENS) cry kinetic) cold and therapeutic exercises) cold spray – paraffin bath, ultraviolet- therapeutic exercises cold spray – massage.

### **Reference:**

01. Edward L. For, Donald K. Mathews: The Physiological basis of Physical Education and Athletic, Baundura college Publishing.
02. Anthony P. Millar, sports Injuries and their Management, Willaims & Witkins and Associates Pvt. Limited, Australia.
03. Krusen Kottke, Ellwood, Physical Medicine and Rehabilitation, W.B. Saunders company, Philadelphia, London, Toronto.
04. James A could III George I Davies, Orthopaedic and sports physical therapy, The C.V. Mosby company St. Locus – Toronto Prenetion.
05. Richards Schredier John C Kennnedey Marcus L Plant, Sports Injuries Mechanism, Prevention and Treatment, Williams & Wilkins, Baltimore, London, Losangele: Sydney.
06. Rohert N. Swinger: Motor learning and human performance, the Macmillian Co., new York.
07. Miroslav Vanke and Bryant'J Cratty: Psychology and the Athlete, Macmillan Co., London.

## **PAPER III – 5. YOGA AND HEALTH**

### **UNIT – I**

- 1.1 Yoga -Meaning – need and importance of Yoga, Historical background of yoga.
- 1.2 Types of yoga- Bhakti yoga- karma yoga- Gnana yoga-Raja yoga- Hatha Yoga- Ashtanga yoga.

### **UNIT – II**

- 2.1 Asanas - Definition, Aim and Objectives of Asanas- Muscular and neural Macular and neural mechanisms involved in asanas.
- 2.1 Asanas vs. muscular Exercises-classification of asanas – salient features of meditative, cultural and relaxative asanas – correct performance of asanas as per classical instructions in yogic texts- Benefits of asanas.

### **UNIT – III**

- 3.1 Pranayama - Definition, aim and objective of pranayama– classification - Phases of pranayama - comparison of pranayama with normal breathing and deep breathing – Respiratory factors involved in Pranayama.

- 3.2 Kriyas - Definition, aim and objective of Kriyas- Pre-requisites and precautions in their practices - Outline of their techniques and classification – Effect of pranayama on various systems.

#### **UNIT – IV**

- 4.1 Meditation, Bandhas and Mudras:- Definition, Aim and Objectives – Outline of selected Bandhas and Mudras – Role of Bandhas in different phases of pranayama – Neurophysiologic and psycho-physiological mechanisms involved in Meditation, Bandhas and Mudras.
- 4.2 Chakras - Types of Gunas - Yogic diet- Physiological, Therapeutic and Spiritual effects of Yoga - Values of yoga.

#### **UNIT:- V**

- 5.1 Health -Definition, meaning- factors that influence Health. Need and importance of health - Guiding principles of health and health education.
- 5.2 Physical fitness -Definition – meaning– factors that influence Physical fitness - wellness – Definition- meaning - factors that influence wellness. Components of Health related physical fitness - Assessment of health related fitness.

#### **Reference:**

01. Swami Digamberji. Yoga and Physical Education, Kavivalyadhama. Konavla, India.
02. Yogamimamsa, Quarterly Publication Kaivalyadhama Lonavla, India.
03. Dr.M.L.Gharota, Science of Yoga, Kaivalayadhama, Lonavla, India.
04. Dr.Karambalkar, Therapeutic value of yoga, Kaivalyadhama, Lonavla, India.
05. Barry L.Johnson and Jack K Nelson, Practical Measurements for evaluation in Physical Education Burgess Publishing Company, University of Minnesota.
06. Werner.W.K.Hoeger and Sharon A Hdger, Fitnees and wellness, morton publishing company, Englewood.
07. Resthowel and A.K. Uppal, Foundations of Physical Education, Friends Publication, New Delhi.

## **PAPER –III – 6. MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION**

### **Unit- I**

#### **1.1 Meaning of Measurement and Evaluation**

Inter relationship of Measurement and Evaluation  
Basic principles of Measurement and Evaluation  
Modern Trends in Measurement and Evaluation.

- 1.2 Need for selecting appropriate measurement and Evaluation in Physical Education and Sports. Criteria for selecting Evaluation and measurement.  
Technical Standards: Objectivity, Reliability, Validity, Norms.  
Administrative considerations: Equipment, Time, Money, Utility, Facility, Feasibility.

### **Unit-II**

- 2.1. Tests of Physical Performance:-Speed, Agility, Balance, Strength, Endurance, Flexibility, California -Perceptual Motor abilities, and Generality of components.
- 2.2 Tests of Physical fitness: Basic fitness test, AAHPER Youth fitness test- Physical fitness index -Sargent test-National Physical Efficiency tests- Indiana motor fitness test, -Test for High School and college men- Krausweber Tests,

### **Unit-III**

- 3.1 Motor Fitness Tests: J.C.R. Test-Oregon motor fitness test-California Motor fitness test
- 3.2 Motor Ability Test: Barrow motor ability test-Carpender motor ability test-Scott motor ability test-Latchaw motor ability test.

### **Unit-IV**

- 4.1 Motor Educability Test: OPNA Brane motor educability test- Johnson Metheny motor ability test- Cardio-Vascular Test- Callagher & brouha Harvard step test for secondary Boys- Tuttle Pulse ratio test - Schneider Cardio-Vascular test.
- 4.2 Postural Test: IOWA Posture test- Woodruff body ligament Posture test-Foot Print angle test.

### **Unit-V**

#### **5.1 Test of Specific Sports Skills:**

Badminton - Miller Wall Volley Test, French Short Serve Test.  
Basketball - Knox Basketball test, Leilich Basketball test.  
Hockey -Schmithals French test Field Hockey test, Friedal field hockey test.  
Soccer -Warner test of Soccer skills test, AAHPER Football Skill test.  
Tennis -Dyer Tennis test, Broer-Miller Forehand, backhand drive test.  
Volleyball-LIBA -STAUFF Test, Brady volleyball test.

### Reference

1. Nilgoose, Erle: "EVALATION IN HEALTH EDUCATION AND PHYSICAL EDUCATION", New York, McGra-Eill Book Co., Inc.
2. Cureton, Thomas K. `PHYSICAL FITNESS APPRAISAL AND GUIDANCE" St. Louis, The Mosby Company, 1947.
3. Bovard John F., Frederich W., Hagman, Parcelcia E., "TEST AND MEASUREMENT IN PHYSICAL EDUCATION ", Philadelphia, W.B.,Sounders Company, 1949.
4. Meyers, Cariton R. and Blesh, Erwin T. " MEASUREMENT IN PHYSICAL EDUCATION", New York, The Fonald Press Company, 1962.
5. Campbell, W.R. and Tauker, N.M. "AN INTRODUCTION TO TEST AND MEASUREMENT IN PHYSICAL EDUCATION", London, C.Bellk & Sons Ltd., 1967.
6. Hunsicker, Paul A., and Monteyer, Hendry J. "APPLIED TESTS AND MEASUREMENTS IN PHYSICAL EDUCATION" New York, Prentice Hall,1953.

## PAPER – III – 7. SPORTS PHYSIOTHERAPY AND REHABILITATION

### Unit-I

- 1.1 Definition - meaning of sports physiotherapy- Need and importance of sports Physiotherapy-
- 1.2 Need and importance of sports Rehabilitation- Guiding principles of physiotherapy/ General consideration.

### Unit-II- Sports Injuries:

- 2.1 Nature and Scope of injuries in Sports Programme.  
Classification of injuries, Causes of injuries in Sports
- 2.1 First-aid box and its requirements on the play field.  
Qualification and duties of trainer and coach in First-aid.

### Unit-III

- 3.1. On field Management of Sports injuries:  
(a) Head injuries & joint, (b) Muscular injuries, (c) Cartilage & ligament, (d) Bone injuries, (f) Ligament and tendons, (g) Skin.
- 3.2. First-aid Management and rehabilitation progamme  
a) Fractures, b) Sprain, Strain, Cramp, Tear myositis, muscle pull  
c) Wounds and bleeding, d) Bleeding.

### Unit-IV

Physiotherapy and its use in the treatment and rehabilitation in Sports injuries.

- 4.1 a. Exercise Therapy, b.Principles of the prescription of exercise Therapy
- 4.2 a. Massage - Types & Techniques of Massage, b. indication and coutra indication of massage therapy
- 4.3 Heat Therapy: a) Hot Water fermentation: Its uses and effects b) Ice cold treatment: its uses and effects
- 4.4) Electrotherapy: General introductory working Knowledge of following instruments:  
i)Ultra - Violet, ii) infra-red Lamp, iii) Ultra Sonic, iv) Short wave diathermy.

**Unit-V- Active Treatments:**

- 5.1. Strengthening Exercises - isometric Exercises isotonic exercises-isokinetic Exercises-Eccentric exercises- concentric exercises-stretching exercises-static and dynamic stretching- Requirement for stretching.
- 5.2. Rehabilitation exercise programmer for various joints of the body - Neck, shoulder, Elbow, Wrist, Hip, Knee ,and Ankle.

**Reference:**

- 1.Borozne, Joseph & Pechar Stanley: Safety in Team Sports. Washington, Aahper pub. 1977.
- 2.Domron,C.F. & Wisconsin, Modison: Accident Surveillance system for Sports,Wasington, Ashper pub. 1977.
- 3.Borozne,joseph & pechar,Stanely: Safety in Aquatic Activities, Washington,Aahper pub:1977.
4. Borozne,Joseph & pechar,Stanley: Safety in individual & Dual Sports, Washington,Aahper pub. 1977.
5. Yost Charles Peter: Teaching Safety in the Elementary School, Washington,Aahper pub.1972.
6. Clarke Kenneth S. : Drugs & the Coach, Washington, Aahper pub.1977
7. Aahper publication: Professional Preparation in Dance, Physical Education Recretation Education Safety Education and School health Education, Washington, Aahper pub.1974
- 8.Borozne Joseph & Pechar Stanley: Administration & Supervision for Safety in sports,Washington,Aaphper pub. 1977.
9. Aahper pub: Profession preparation in Safety Education and School health Education, Washington Aahper Pub.1974.



## **PAPER –III – 8. SPORTS MANAGEMENT IN PHYSICAL EDUCATION**

### **Unit-I**

- 1.1 Meaning of sports Management-principles of sports management.
- 1.2 Personnel management- Facility management -Programme Management.

### **Unit-II**

- 2.1 Accounting and Budgeting:- Definition and role of accounting in the sport and fitness enterprise-Assumptions and principles of accounting- The accounting system- Depreciation- accounting for nonprofit organizations.
- 2.2 Types of businesses -Cash management-Budgeting

### **Unit-III**

- 3.1 Sports Marketing:- Meaning of sport marketing- Factors involved in the marketing of sport-
- 3.2 Strategic market management- Market awareness- developing a target market strategy- the sport product -Price-Promotion-Place-Marketing plan.

### **Unit-IV**

- 4.1 Ethics:- Fundamental concepts of Ethics- Personal moral development -theories of ethics - Models of ethical analysis- Personal ethics and organizational responsibility.
- 4.2 Ethics and professionalization of sport management-Implication for sport management preparation and practice.

### **Unit-V**

- 5.1 Computer Application: - Managing information of computers- using computers to help manage information.
- 5.2 The administrative use of computers in professional sport-The administrative use of computers in college sport- sport management specific computer software.

### **Reference:**

- 1. Baumol, W., and Blinder, A. Economics': Principle and policies (4<sup>th</sup> Edition) Orlando, Florida: Harcourt brace Jovanovich.
- 2. Lazer, W., and culley, J. Marketing management. Boston: Houghton Mifflin Co.
- 3. Mullin B.Sport Marketing, Promotion and Public relations. Amherst, Marshachuselts: National Sports Management, Inc.
- 4. Good Paster, K. Ethics in Management Boston: Harvard business school.
- Cheng, V.Computer's best use is in information management.
- 5. Bonnie Park house. The Management of sports, Mosby year book.

## **PAPER-III – 9. FITNESS AND WELLNES**

### **Unit: I - FITNESS**

- 1.1 Fitness:-Definition, Meaning and Concept of fitness – Components of fitness – Speed, Strength, Endurance, Flexibility. Assessment of Fitness- Muscular strength, Endurance, Flexibility, Speed.
- 1.2 Fitness tests - AAHPERD Youth Fitness Test, AAHPERD Health Related Fitness, 12 Minutes Cooper Test, Hard Ward Step Test, Ideal body, Body composition - Factors influencing Fitness.

### **Unit: II - WELLNESS**

- 2.1 Wellness:- Definition, Meaning and Concept of Wellness - Components of Wellness – Stress, Tension, Emotions.
- 2.2 Personality – Factors influencing wellness, Assessment of - Stress, Tension, Emotions, Personality.

### **Unit: III - DEVELOPMENT OF FITNESS AND WELLNESS**

- 3.1 Development of Fitness and Wellness components – Basic principles of training and conditioning – Various methods of training – Resistance training (Isotonic – Isometric –Isokinetic) - Aerobic training – Plyometric training – Flexibility training - Fartlek training.
- 3.2 Development and Management of – Stress, Tension, Emotion, Personality and Environment management. Relationship between Fitness and wellness.

### **Unit: IV – NUTRITION AWARENESS AND DIET**

- 4.1 Nutrition – Definition, awareness of nutrition and nutrition for active people — Component of Carbohydrates, Protein, Fat Minerals and Vitamins –Energy requirements in various activities – Caloric expenditure – Caloric calculation.
- 4.2 Diet – Definition, Dietary guidelines, Diet planning – Diet supplementation – Diet modification food facts and fallacies, Ergogenic aids – Drugs – Dopes – Electrolyte and water replacement.

### **Unit: V – PROBLEMS AND EXERCISES**

- 5.1 Special problem and exercise instruction- Hypertension- Diabetes – Anorexia – Arthritis – asthma peptic ulcer – Obesity - Cardio vascular disorders – Back pain – Knee pain – Heel pain.
- 5.2 Exercise programme for children – Adolescent youth – middle ages – senior clients

### **References:**

1. Carry Egger, Nigel champion and Allan Botton. The Fitness leader's Hand book, Fourth Edition. A and C Block London, 1999
2. Houley E.T. and Franks B.D Health Fitness Instructor's Handbook. Third Edition. Human Kinetics', Champaign Illinois,. 1997
3. Lederberg, J. "Health in the World of Tomorrow", Pan American Health Organisation, Sanitary Bureau, WTO.
4. Fleishman, Edwin A. The Structure and Measurement of Physical Fitness. Englewood Cliffs, N.J. : Prentice – Hall, Inc., 1967.