

BHARATHIAR UNIVERSITY – COIMBATORE – 641 046.

M.PHIL. / PH.D. – Physical Education

SYLLABUS

(w.e.f. 2008-2009 onwards)

- PAPER I - Teaching Techniques / Pedagogical Methods in Physical Education**
- PAPER II - Research Methodology and Trends in Physical Education**
- PAPER III -**
- 1. Sports Physiology**
 - 2. Sports Training**
 - 3. Sports Psychology**
 - 4. Sports Medicine**
 - 5. Yoga and Physical Fitness**
 - 6. Measurement and Evaluation in Physical Education**
 - 7. Sports Physiotherapy and Rehabilitation**
 - 8. Sports Management in Physical Education**

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PART 1 – SYLLABUS (w.e.f 2008-2009 onwards)

**PAPER I TEACHING TECHNIQUES / PEDAGOGICAL METHODS 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 – Germany – Britain – Comparisons of Professional Organisation in India and other countries

**UNIT II: CAREERS IN PHYSICAL EDUCATION AND SPORT AND SCHEMES
OF GOVERNMENT (CENTRAL AND STATE):**

- 2.1 Teaching Career – Coaching Career – Fitness and Health related career – Therapy related career – sport careers in media, management and performance.
- 2.2 Assistance for infrastructure for coaching programmes for competitions – for Publications for research laboratories – fellowship–SAI-UGC–State– Corporation.
- 2.3 Avenues of placements – public sector – private sector.

UNIT III: MODERN FACILITIES AND EQUIPMENTS:

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

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 study of various modern training methods.

UNIT V: FUTURE OF PHYSICAL EDUCATION AND SPOT:

5.1 Issues and challenges in Physical Education and sports leadership values – public relations.

5.2 Future and challenges in Physical Education personnel in organization and administration – in training – in competition.

Reference Books:

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.
- 19.Government of India report on structure for college of Physical Education .
- 20.Sports pedagogy by Androvitch 1906 U.S.S.R. Publication.

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PART I – SYLLABUS (w.e.f 2008 - 2009 onwards)

**PAPER – II RESEARCH METHODOLOGY AND TRENDS IN
PHYSICAL EDUCATION**

Unit – I Fundamental Concepts:

- 1.1 Research Problem – meaning and identification – statement of research problems – criteria for selection.
- 1.2 Types of research – historical, longitudinal, experimental, philosophical, surveys (case study)etc.
- 1.3 Variables – meaning and identification, dependent, control, intervening variables.
- 1.4 Hypothesis – meaning and importance – statement of hypothesis – null hypothesis.
- 1.5 Possible areas of research – bio-mechanics, kinesiology, exercise physiology, motor learning, sports medicine, sports psychology, sociology of 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 Methods of collecting data – observation, interview, questionnaires and experimentation.
- 2.2 Design and construction of questionnaires, schedules, test, attitude scale and rating scales.
- 2.3 Establishing of research laboratory – Instrumentation.
- 2.4 Concepts and measurement – reliability and validity

Unit – III: The Research Design:

- 3.1 Meaning and purpose of research design.

- 3.2 Steps in designing the research procedure – statement of the problem – hypothesis – identification of variables – samples selection of tool – plan of analysis time budget cost – resources – personnel etc.
- 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 Basic Statistical Concepts:

- 4.1 Measures of Central tendency and variability
- 4.2 The normal distribution and its uses.
- 4.3 Concepts of sampling distribution and standard error
- 4.4 Testing of hypothesis – comparing two groups- ‘t’ test – type I and II errors – Chi-square test.
- 4.5 Analysis of variance – need for analysis of variance – one way analysis of variance – two way analysis of variance, ‘f’ test.
- 4.6 Analysis of co-variance.

Unit V Correlation and Regression Methods.

- 5.1 Meaning of correlation – co-efficient of correlation – Pearson’s product moment methods
- 5.2 Further methods of correlation – rank difference method, Biserial, point Biserial, phi-coefficient.
- 5.3 Partial and multiple correlations and regression – meaning and computation – limitations to the use of partial and multiple correlation.

Reference books:

- 01.“Research Methods Applied to Health, Physical Education, Recreation”, by American Associations of Health, Physical, Education and recreation.
- 02.“Research Methods in Education “, by Crofford.
- 03.Cambell. B.C. “Form and Style in Thesis Writing “.
- 04.Thorabin.
- 05.Best John W.” Research in Education 1959”, Prentice Hall Inc.
- 06.Gord, Carter V& Doughless: “Educational, Psychological and Sociological, New

- York, Appleton Century Crafts, 1954.
07. Hillway Tyrans: "Introduction to Research" Boston, Houghton Mifflin Co., 1956.
08. Smith Henry L. "Education Research Principles and Practices"
 Bloomington, Indiana, Educational Publishers, Inc. 1944.
09. Fruederick, L. "The Elements of Research" New York, Prentice Hall, California
 1950.
10. Neilson N.P. "An Elementary course in Statistics Test and Measurements in
 Physical Tests. Palo Alto, California 1960.
11. Clarke H.W. "Application on Measurement to Health and Physical Education,
 Published by Prentice Hall Inc., 1961.
12. Garrelt E. Hentry: "Statistics in Psychology and Education" Bombay – Vakils
 Fuffer and Simons Pvt. Ltd., 1969.
13. Clark H David & Harrison Clarks: "Research Process in Physical Education and
 Health", Englewood Cliffs, New Jersey, Prentice Hall Inc., 1970.
14. Elementary Statistical Methods – Helan M Welker Joseph Lev.
15. Herschel T. Naniel: "Elementary Principles of Statistics".
16. A.C. Rosender : "Elementary Principles of Statistics".
17. P. Devadas Rajamma; & K. Kulandaivel: "A Handbook of Methodology of
 Research."

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PART 1 – SYLLABUS (w.e.f 2008 - 2009 onwards)

PAPER III – SPORTS PHYSIOLOGY

UNIT I : BIO – ENGERGETICS:

- 1.1 Definition of energy-Biological energy cycle, ATP – aerobic and anaerobic comparing with energy systems- Aerobic and anaerobic during rest and exercise.
- 1.2 Recovery from exercise – the oxygen debt – replenishment of energy stores during recovery . Muscle glycogen synthesis – liver glycogen replenishment- restoration of own stores.
- 1.3 Measurement of energy, work and power definition of efficiency – cycle ergo meter – mechanical and electrical treadmill – step bench.

UNIT- II:

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

UNIT – III:

- 3.1 Pulmonary ventilation – minute ventilation – ventilator mechanics - pressure change.
- 3.2 Gas exchange and transport- total oxygen to CO₂ blood.
- 3.3 Blood flow and gas transports – cardiac output during exercise. Circulating mechanics – changes in pressure and resistance during exercise.
- 3.4 Cardio – respiratory control at rest and during exercise.

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 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 Books:

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

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PAPER – III Sports Training

Unit I :

Sports training aim, task and characteristics of sports training, Principles of sports training. Methods of training: weight training – isotonic, isometric, Isokinetic interval training circuit training – fartlek, training.

Effect of training on physiological systems- muscle, heart rate – oxygen consumption, blood lactate-lung capacity, work capacity, body composition.

Unit II:

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

Unit III: Training for important motor components:-

- a) Strength: Forms of Strength, Characteristics of Strength means and methods of strength training strength training for women and children.
- b) Endurance; Forms of endurance, characteristics of endurance, mean and methods.
- c) Speed: Forms of speed – characteristics of speed – speed training mean and methods.
- d) Flexibility: Forms of flexibility, characteristics of flexibility, mean and methods.
- e) Co-ordinative abilities – (agility) eye, foot, hand co-ordination.

UNIT – IV:

Technical preparation – fundamentals and methods for the development of techniques in sports – stage of technical development – causes and correction of faults. Tactical preparation – Tactical concepts – methods of tactical development.

Psychological preparation – individual differences – requirement – diet for different season – doping – drugs-effects.

UNIT V:

Diet – diet for different sportsman and women, caloric requirement – diet for different seasons – doping – drugs – effects.

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, Hardyal (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

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PART 1 – SYLLABUS (w.e.f 2008 - 2009 onwards)

PAPER III – SPORTS PSYCHOLOGY

UNIT I : The Nature of Learning:

- a) Motor learning – coordination of motion, Theories of learning
- a) Kinesthesia, proprioception and labyrinthine, receptors, reflex action and the automatizing motor skills.
- b) Feed back, servomechanism and knowledge of results – reinforcement and readings – retention and forgetting.
- c) Factors and conditions affecting motor learning : speed of perception – attention and concentration. The learning curve, imitation and learning – self activity and mental practices, trial and continuous revision learning – the whole and part learning, autogenic technique, ergogenic effects.

UNIT – II The role of emotion in sports performance:

- a) Motivation and arousal – theories.
Patronage and political support in development of sports.
- b) Stress and competition.
- c) Aggression
- d. Anxiety – anxiety and all round performance, fears of athletes – reindicting anxiety.

UNIT – III: Evaluation of the Superior athlete:

- a) A. typology of athletic activities based upon their psychological demands.
- b) Psychological preparation of the superior athlete pre, during and post competition psychological preparation.
- d) Model training – intellectual training of the athlete – social – psychological preparation of the athletes – conceptualizing – automation – imaginary.

UNIT – IV :

- a. Motivational techniques
 - Building confidence, Dedication and prides.
 - Discipline, fear and motivation
 - Motivation in practice and in games.
- b. Situational motivation
 - Forging positive attitudes and relationships
 - Handling the self motivated athlete
 - Motivating the self motivated athlete
 - Motivating the “ Problem” Athlete
 - Handling the “Superstar” Athlete
- c. Motivating girls and women

UNIT – V: Psychological assessment of testing:

- a. Assessing intelligence
- b. Testing for special aptitude
- c. Personality assessment
- d. Behavioral assessment

REFERENCE BOOKS:

01. L.L.E. William Jack Judy A Blucher, Psychology of Coaching Theory and Application, Subject Publication, Delhi, 1982.
02. Morgan William P. Contemporary Readings in Sports Psychology Spring Field, Minois, USA, 1970.
03. John D.Lauther: Sports Psychology, Prentice Hall Inc. Englewood.

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PART 1 – SYLLABUS (w.e.f 2008 - 2009 onwards)

PAPER III – SPORTS MEDICINE

UNIT – I:

A brief, history of sports Medicine – definition – meaning, preventive – curative and rehabilitation aspects – The participation, physical examination. Types of sports injuries – general principles of injury management – Management of soft-tissue injuries, bony injuries, nerve injuries.

UNIT – II:

Regional Athletic injuries and management – head injuries – shoulder injuries – arm and elbow joint injuries – wrist and hand injuries – thigh and knee injuries – lower leg, ankle and foot injuries.

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 soliosis.

UNIT – III :

Applied sports medicine: Role of exercise in the prevention of various diseases: Cardio – vascular – disorders – Asthma – diabetes – obesity.

UNIT – IV:

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.

UNIT – V:

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

Meaning and definition of physical rehabilitation. Rehabilitation – goal of rehabilitation, rehabilitation programme – types of exercises – isometric – isotonic – isokinetic – manual resistance – proprioceptive neuromuscular facilitation programme for neck, shoulder, shoulder joint, arm and elbow joint – wrist and hand, lower- back, hip joint – thigh, knee, lower leg, ankle and foot.

Reference Books:

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 Geroge I Davies, Orthopaedic and sports physical therapy, The C.V. Mosby company St. Locus – Toronoto Prenetion.
05. Richards Schredier John C Kennedy 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.

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PAPER III – YOGA AND PHYSICAL FITNESS

UNIT – I

Meaning – need – importance of historical background of yoga types of yoga. Bhakti yoga, karma yoga, Gnana yoga, Raja yoga.

UNIT – II

Effects of yoga on different systems of human body, impact of yoga on daily life. Scientific effects of yogasanas. Pranayama-Kriyas: Therapeutic uses of yoga. Yoga and dietary principles.

UNIT – III

Definition – meaning of physical fitness – its need and importance, meaning of wellness – differences between physical fitness and wellness – the relationship between fitness / wellness and health – components of physical fitness and their meanings and importance.

UNIT – IV

Assessment of physical fitness – Athletic related fitness and health related fitness. Problems associated with measurement of Physical Education Strength and endurance, assessment and prescription . Problems associated with measurement of cardio-vascular endurance.

UNIT – V

Body composition – techniques for assessing body composition.

Nutrition for weight control and wellness.-Effects of exercises on physical fitness – preventive and curative. Exercise for cardiovascular disease – chronic obstructive pulmonary diseases – diabetes -back pain

Reference Books:

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, Kaivalyadhama, 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 Burguss 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.

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PAPER –III

MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION

Unit-I

- 1)-Meaning of Measurement and Evaluation
 - Inter relationship of Measurement and Evaluation
 - Basic principles of Measurement and Evaluation
 - Modern Trends in Measurement and Evaluation

- 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

- 1) Tests of Physical Performance.
Speed, Agility, Balance, Strength, Endurance, Flexibility, California
Perceptual Motor abilities, and Generality of components.

- 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

- 1) Motor Fitness Tests:
 - J.C.R. Test
 - Oregon motor fitness test
 - California Motor fitness test

- 2) Motor Ability Test:
 - Barrow motor ability test
 - Carpender motor ability test
 - Scott motor ability test
 - Latchaw motor ability test.

Unit-IV

- 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

- 2) Postural Test
 - IOWA Posture test
 - Woodruff body ligament Posture test
 - Foot Print angle test

Unit-V

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 Books

- 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, Parclcia 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.

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PAPER -III
SPORTS PHYSIOTHERAPY AND REHABILITATION

Unit-I

Definition - meaning of sports physiotherapy- Need and importance of sports
Physiotherapy-Need and importance of sports Rehabilitation- Need and importance of
Sports Medicine (Preventive) curative and rehabilitative aspects).

Unit-II

Sports Injuries:

1. (a) Nature and Scope of injuries in Sports Programmer.

Classification of injuries.

Causes of injuries in Sports

(b) First-aid box and its requirements on the play field.

Qualification and duties of trainer and coach in **First-aid**

Sports Medicine Clinic - An outline.

Unit-III

Management of Sports injuries:

1.(a) Soft-tissue injuries:

- i) Injuries to skeletal Muscic & tender-
strain, pull, cramp, tear myositities, tendinitis.
- ii) injuries to skull -abrassion,cuts,boils.
- iii) injuries to ligaments & Cartilage-Sprain,sunovities.
- iv) Injuries to other vital organs

b) First-aid Management and rehabilitation progamme

- i)Fractures-types and nature
- ii) First aid to fractures
- iii)Dislocation- common joints involved in dislocation.

Unit-IV

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

- 1) (a) Exercise Therapy
 - b Principles of the prescription of exercise Therapy
- 2) (a) Massage - Types & Techniques of Massage
 - b indication and counter indication of massage therapy
- 3) Heat Therapy:
 - a) Hot Water formentation: Its uses and effects
 - b Ice cold treatment: its uses and effects
- 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

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

Reference Books Recommended:

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, Stanley: 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 Recreation Education Safety Education and School health Education, Washington, Aahper pub.1974
8. Borozne Joseph & Pechar Stanley: Administration & Supervision for Safety in sports, Washington, Aahper pub. 1977.
9. Aahper pub: Profession preparation in Safety Education and School health Education, Washington Aahper Pub.1974.

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PAPER -III

SPORTS MANAGEMENT IN PHYSICAL EDUCATION

Unit-1

Meaning of sports Management-principles of sports management-personnel management- Facility management -Programme Management.

Unit-2

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 non profit organizations- Types of businesses-Cash management-Budgeting

Unit-3

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

Unit-4

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

Unit-5

Computer Application: - Managing information of computers- using computers to help manage information- 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 (4th 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.Cmputer's best use is in information management.
5. Bonnie Park house. The Management of sports, Mosby year book.