DEPARTMENT OF PHYSICAL EDUCATION AND SPORTS
MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI - 12

REGULATION AND SYLLABI FOR DOCTOR OF PHILOSOPHY IN PHYSICAL EDUCATION (Ph.D)

(2018-19 Onwards)

COURSE	NAME OF THE COURSE
1	RESEARCH METHODOLOGY AND STATISTICS IN PHYSICAL EDUCATION
2	SPORTS TECHNOLOGY
3	GENERAL THEORY AND METHODS OF TRAINING
4	HUMAN PERFORMANCE ASSESSMENT AND EVALUATION
5	SPORTS PHYSIOLOGY AND KINESIOLOGY
6	SPORTS PSYCHOLOGY AND SOCIOLOGY
7	SPORTS MANAGEMENT AND MARKETING
8	INFORMATION AND COMMUNICATION TECHNOLOGY IN SPORTS
9	SPORTS BIOMECHANICS AND ERGONOMICS
10	SPORTS MEDICINE AND REHABILITATION
11	ADAPTED PHYSICAL EDUCATION
12	PRINCIPLES OF MOTOR DEVELOPMENT
13	PRINCIPLES OF YOGIC SCIENCES
14	GAME OF SPECIALIZATION
15	MINI PROJECT

RESEARCH METHODOLOGY AND STATISTICS IN PHYSICAL EDUCATION

Objectives:

1. To study an overview of research processes
2. To realize the research methodology
3. To understand the concept of statistical tools in research
4. To be appropriate statistical tools in research
5. To understand thesis preparation and to know the SPSS methods.

UNIT–I: Research in Physical Activity

Nature of Research, Unscientific Vs Scientific Methods of Problem Solving, Types of Research, Overview of Research Process and choosing the title. Literature – Purpose, Sources and Search techniques.

UNIT–II: Formulating the Method

Principles of planning experiments, Describing Participants, Instruments, Procedures, Design and Analysis, Sampling Techniques, Research Design, Ethical issues in Research

UNIT–III: Methods of Data collection

Concepts of Statistical Techniques - Types of Data, Assumption Tests, Methods of Establishing Reliability - Relationship among variables, Multiple Correlation and Chi-square - Using correlation for prediction (Regression equation)

UNIT–IV: Measurement and Scaling Techniques

Types of Error, Degrees of freedom, Level of Significance - Non-Parametric tests; Man Whitny U test, Sign Test - Kruskal-Wallis analysis of ranks, Difference among Groups – T-tests, ANOVA, ANCOVA & Follow-up test, Use of Computers in Statistical Analysis

UNIT–V: Interpretation and Report Writing

SPSS Package – Introduction and application - Organisation of Research Report, Format for Bibliography - Writing and publishing research articles - Application of computer in research and statistics

REFERENCES

Clarke, David H. Clarke, Harrison H. ***Research Process in Physical Education***, New Jersey: Prentice Hall Inc. 1984.

Jerry R. Thomas, Jack K. Nelson and Stephen J. Silverman., ***Research Methods in Physical Activity (5th Ed)***, New York: Human Kinetics. 2005.

Chris Gratton and Ian Jones., ***Research Methods for Sports Studies***, London: Routledge Taylor & Francis Group, 2004.

Kothari C.R., **Research Methodology** (2nd Ed), New Delhi: New Age International Pvt., 2004.

K.D. Broota., ***Experimental Design in Behavioural Research,*** New Delhi: New Age International Publishers, 2006.

SPORTS TECHNOLOGY

Objectives:

1. Introduction and Application of Technology in sports
2. To evaluate the impact of Sports Materials
3. To explore surfaces and its impact on sports
4. To examine the impact of Technology on sports
5. To analyse sports performance using technology

UNIT-I: Sports Technology

Meaning, definition, purpose, advantages and applications, General Principles and purpose of instrumentation in sports, Workflow of instrumentation and business aspects, Technological impacts on sports. Use of computer and software in Analysis of competition and Coaching.

UNIT–II: Science of Sports Materials

Adhesives- Nano glue, Nano moulding technology, Nano turf. Foot wear production, Factors and application in sports, Constraints. Foams- Polyurethane, Polystyrene, Styrofoam, closed cell and open-cell foams, Neoprene, Foam. Smart Materials – Shape Memory Alloy (SMA), Thermo chromic film, High-density modelling foam.

UNIT–III: Surfaces of Playfields

Modern surfaces for playfields, Construction and installation of sports surfaces. Types of materials – synthetic, wood, polyurethane. Artificial turf. Modern technology in the construction of indoor and outdoor facilities. Technology in manufacture of modern play equipments.

Unit – IV: Modern Equipment

Playing Equipments: Balls: Types, Materials and Advantages, Bat/Stick/ Racquets: Types, Materials and Advantages. Clothing and shoes: Types, Materials and Advantages. Measuring equipments: Throwing and Jumping Events. Protective equipments: Types, Materials and Advantages. Sports equipment with nanotechnology, Advantages and Disadvantages.

UNIT–V: Training Gadgets

Basketball: Ball Feeder, Mechanism and Advantages. Cricket: Bowling Machine, Mechanism and Advantages, Tennis: Serving Machine, Mechanism and Advantages, Volleyball: Serving Machine Mechanism and Advantages. Lighting Facilities: Method of erecting Flood Light and measuring luminous. Video Coverage: Types, Size, Capacity, Place and Position of Camera in Live coverage of sporting events.

REFERENCE:

Dhinu., M.R. (2017) ***Sports Technology***, Friends Pubication, New Delhi. ISBN -978-81-7216-527-7

John Mongilo, (2001), "***Nano Technology 101***" New York: Green wood publishing group.

UK: Butterworth Heiremann. Finn, R.A. and Trojan P.K. (1999) "***Engineering Materials and their Applications***" UK: Jaico Publisher.

Walia, J.S. ***Principles and Methods of Education*** (Paul Publishers, Jullandhar), 1999.

Kochar, S.K. ***Methods and Techniques of Teaching*** (New Delhi, Jullandhar, Sterling

Publishers Pvt. Ltd.), 1982

Charles J.A. Crane, F.A.A. and Furness, J.A.G. (1987) "Selection of Engineering Materials"

GENERAL THEORY AND METHODS OF TRAINING

Objectives

1. To provide knowledge and concept of sports training
2. To develop an understanding of the technical and tactical training
3. To provide the role of sport sciences to achieve the research excellence
4. To apply various training methods and principles for improve performance for various sport
5. To understand and prepare training schedule for research activities

UNIT–I: Introduction of Sports Training

Introduction, Definition and aims of sports training: Characteristics of sports training, training means, Physical exercises, classification of physical exercises, Physical – technical – tactical – psychological preparations

UNIT–II: Sports Performance and Skill Teaching-Learning Process

Sports performance: Definition of Sports performance, Performance capacity and training structure, model of sports performance. Skill teaching and learning process: definition of techniques, skill and style, types of skills, Teaching of motor skills, skill learning stages, methods of teaching skills, Methods of corrections, feedback, importance and types of feedback.

UNIT–III: Planning, Training load and Recovery

Planning: Definition, importance, types of plan, principles of planning, planning of competitions, training sessions, one day plan, micro cycle and meso cycle. Training load: definition and types of training load, factors of load, classification of training load, load and adaptation, adaptation models, judgement of load, over training, causes and remedy of over training, Recovery: Definition factors affecting recovery, means of recovery, and selection of recovery means

UNIT–IV: Periodisation and Principle of Sports Training

Periodisation: Definition, importance, macro cycles and annual plan, Periods, types, aim and contents of different periods, steps in formulation of annual plan. Principle of sports training: Principle of over load, progression, specificity, reversibility, individualization, variation, diminishing return, regulation and its application in training

UNIT–V: Motor Abilities, Control and Regulation of Training Process

Motor Abilities: Strength, Speed, Endurance, Flexibility - Definition, types and factors determining Motor abilities, Programme designing and methods for the development of Motor abilities. Effect of climate changes and high altitude on performance – Control and regulation of training process. Importance, types of control and different motor test for monitoring of training process

References:

Bill Foren, (2001). ***High Performance Sports Conditioning***. USA: Human Kinetics Publishers.
Jensen, C.R. & Fisher A.G. (2000). ***Scientific Basic of Athletic Conditioning***. Philadelphia.
Thomas R. Baechle, & Roger W. Earle, (2000). ***Essentials of Strength Training and Conditioning*** (2nd Ed.). USA: Human Kinetics Publishers.
Cart, E. Klafs & Daniel, D. Arnheim, (1999). ***Modern Principles of Athletic Training***, St. Louis: C. V. Mosby Company
Tudor O. Bompa, (1999). ***Periodisation***. USA: Human Kinetics Publishers.
Ronald, P. Pfeiffer., (1998). ***Concepts of Athletics Training*** (2nd Ed.). London: Jones and Bartlett Publications
Bunn, J.N., (1998). ***Scientific Principles of Coaching***, New Jersey Engle Wood Cliffs, Prentice Hall Inc.

Gary, T. Moran, (1997). ***Cross Training for Sports***. Canada: Human Kinetics

HUMAN PERFORMANCE ASSESSMENT AND EVALUATION

Objectives:

1. To study an overview of measurement and evaluation
2. To understand and conduct grading and fitness tests
3. To conduct performance fitness Tests
4. To conduct skill Tests
5. To measure the dependent and independent variables in research.

UNIT–I: Construction of Tests

Nature of Measurement and Evaluation-Domains of Human Performance. Purpose of Measurement, Testing and Evaluation. Classification of Tests. Criteria for selection and construction of tests-Reliability, Validity and Objectivity. Qualitative versus Quantitative Measurement.

UNIT–II: Grading and Fitness Test

Grading– Norm-referenced and Criterion-referenced grading systems. Process of Grading, Consistence in Grading, Grading Mechanics - Fitness test for Senior Citizen. Fitness test for Adapted Children. Fitness test for Children

UNIT–III: Performance Fitness Tests

Body Composition Assessment. Health Related Physical fitness Assessment Performance Related Physical fitness Assessment. Postural and Body Alignment Tests Anthropometrical Measures

UNIT-IV: Skill Test in various Games

Basketball, Volleyball, Hockey, Football, and Kho-Kho. Racket Games – Tennis, Table Tennis, Badminton.

UNIT–V: Measures of Variables

Psychological variables - Physiological Variables Haematological and Bio-chemical Variables. Psychomotor Variables - Psychosomatic and Socio-economic Variables

REFERENCES

Barrow, Harold M & McGee, Rosemary. A ***Practical Approach to Measurement in Physical Education***, Philadelphia: Lea and Febiger. 1979.

Safrit, Margaret J. ***Introduction to Measurement in Physical Education and Exercise Science***, St. Louis: Mosby. 1995.

Edmund O. Acevedo and Michael A. Starks., ***Exercise Testing and Prescription lab Manual***, USA: Human Kinetics Publishers, 2003.

Roberta E.Rikli&C.Jessie Jones. (2001). ***Senior Fitness Test Manual***, USA: Human Kinetics Publishers, 2001.

Michael Horvat, Martin E.Block& Luke E.Kelly. (2007). ***Development and Adapted Physical Activity Assessment***, USA: Human Kinetics Publishers, 2007.

Gregory J.Welk. ***Physical Activity Assessments for Health Related Research***, USA: Human Kinetics Publishers, 2002.

Vivian H.Heyward& Dale R.Wagner. ***Applied Body Composition Assessment***, USA: Human Kinetics Publishers, 2004.

SPORTS PHYSIOLOGY AND KINESIOLOGY

Objectives:

1. To guide training and enhance sport performance.
2. Produce pioneering research applied to coaching.
3. To discover their underlying principles, Safety, effectiveness, and efficiency.
4. Understand the importance of thermoregulation during exercise.
5. Rehabilitation of musculoskeletal, cardiac and neurological conditions.

UNIT–I: Skeletal Muscles and Exercise

Macro &Micro Structure of the Skeletal Muscle, Chemical Composition, Types of Muscle fiber, Muscle Tone. Nerve supply to muscle, concept of neuromuscular transmission. Sliding Filament theory of Muscle Contraction, Chemistry of Muscular Contraction –Heat Production in the Muscle. Effect of exercises and training on the muscular system.

UNIT–II: Cardiovascular System and Exercise

Conduction System of the Heart- Blood Supply to the Heart- Stroke Volume- Cardiac Output. Blood Flow at rest and during exercise – hemodynamic principle. Heart Rate-Factors Affecting Heart Rate- Regulation of Heart rate, Cardiac Hypertrophy. Effect of exercises and training on the Cardio vascular system. Cardiac diseases and therapeutic exercises.

UNIT–III: Respiratory System and Exercise

Mechanism of Breathing –Respiratory Muscles, Pulmonary- Ventilation at Rest and During Exercise. Exchange of Gases in the Lungs –Exchange of Gases in the Tissues- Control of Ventilation- Oxygen Debt/ EPOC. Vo2 max: concept, determination and its implication in sports performance. Effect of exercises and training on the respiratory system.

UNIT–IV: Metabolism and Energy Transfer

Metabolism- ATP-PC or Phosphagen System-Lactic Acid System –Anaerobic Metabolism-Aerobic Metabolism. Aerobic and Anaerobic Systems during Rest and Exercise. Energy supply at Short Duration High Intensity Exercises –High Intensity Exercise Lasting Several Minutes-Long Duration Exercises. Measurement of energy cost of an activity.

UNIT–V: Climatic conditions and sports performance Ergogenic Aid

Variation in Temperature and Humidity- Thermoregulation. Sports performance in hot climate, Cool Climate, high altitude. Ergogenic Aid - Androstenedione, Beta Blocker, Choline, Creatine, Human growth hormone on sports performance. Doping agents: Narcotics, Stimulants, Amphetamines, Caffeine, Ephedrine, Sympathomimetic amines. Stimulants and sports performance.

REFERENCES:

Amrit Kumar, R, Moses. (1995). ***Introduction to Exercise Physiology***. Madras: Poompugar Pathipagam.

David, L Costill. (2004). ***Physiology of Sports and Exercise***. Human Kinetics.

Fox, E.L., and Mathews, D.K. (1981). ***The Physiological Basis of Physical Education and Athletics***. Philadelphia: Sanders College Publishing.

Richard, W. Bowers. (1992). ***Sports Physiology***. WMC: Brown Publishers.

William, D. McAradle. (2015). Exercise ***Physiology, Energy, Nutrition and Human Performance***. Philadelphia: Lippincott Williams and Wilkins Company.

SPORTS PSYCHOLOGY AND SOCIOLOGY

Objectives:

1. To realize impact of perception and personality on sports performance
2. To value of arousal regulation and motivation
3. To apply psychological skill training for sports performance
4. To study of children behaviour and adherence in sports
5. To understand the social issues in sports

UNIT-I: PERCEPTION AND PERSONALITY

Sports psychology: Definition – Importance. Perception: Theories of Perception – Perception and Motor Learning – Wrong Perception - Personality: Meaning of personality, Measures of personality, Personality and Sports Performance. Need of Sports Psychology in Physical Education and Sports

UNIT-II: AROUSAL AND MOTIVATION

Arousal: Definition and Regulation- Types and Theories of Aggression – Anxiety – Stress. Motivation: Types of motivation – Achievement motivation and Sports performance. Counselling in sports: Importance, Methods & Techniques of Effective sports counselling.

UNIT-III: PSYCHOLOGICAL SKILL TRAINING AND CONCENTRATION

Psychological Skill Training: Hypnosis - Autogenic training - Progressive Relaxation. Sports Imagery- Self confidence: Building self-confidence. Concentration: connecting concentration to optimal performance – improving concentration.

UNIT-IV: EXERCISE BEHAVIOUR AND ADHERENCE

Exercise Behaviour and Adherence: reason to exercise and for not exercising, Problem of exercise adherence. Children and Sports Psychology: children's reasons for participation and nonparticipation, Parent, Coach and friends role in sports participation.

UNIT-V: SPORTS SOCIOLOGY

Sports Sociology: Group interaction -Competition and Cooperation in sports, Leadership: Types and Style, Audience: Types and effects of audience in sports competitions, National and International integration through sports

REFERENCES:

Robert S. Weinberg. Daniel Gould. ***Foundation of Sport and Exercise Psychology (6th Ed,)***. Human Kinetics, 2015.

Daniel Smith, Michael Bar-Eli. ***Essential Readings in Sport and Exercise Psychology.*** Human Kinetics, 2007 .

Janet Buckworth, Rod K. Dishman. ***Exercise Psychology***, Human Kinetics, 2002.

Nick Ford and David Brown, ***Surfing and Social Theory,*** Routledge Taylor and Francis Group, 2006.

Diane L. Gill. ***Psychological Dynamics of Sport***. New York: Human Kinetics Publishers Inc. 1986.

Kamlesh, M. L. ***Psychology of Physical Education and Sports***. Metropolitan Book Co. Pvt. Ltd. 1983.

SPORTS MANAGEMENT AND MARKETING

Objectives:

1. To management function and marketing techniques
2. To identify issues relevant to modern physical education and sport management
3. To construct and laying the play field facilities
4. To Identify and analyze ethical, legal, and socio-cultural issues, and formulate responses for use in managerial decision making and policy determinations in sport
5. To understand principles of planning, and financial and human resource management

Unit-I: Management and Functions

Meaning of Management - Definition and importance of Sports management - Concept and principles of Management - Functions of Management - Personal Management, objectives and personal policies - Skills of Management, Roles of Manager

Unit–II: Sports Organisation

Attributers of Organization - Classifying Organizations - Organisation and functions of sports bodies Supervision: Qualities of Supervisor - Supervisory Techniques

Unit–III: Physical Education Administration

Maintenance of Records and Registers - Preparation of Budgeting, Generate and utilization of Games Fund - Qualification and Quality of Administrator - Management guidelines for School, College sports programmes - Programme management and factors influencing programme development.Community based physical education and sports programmes

Unit–IV: Facility and Equipment Management

Indoor-Outdoor Sports Facilities - Equipment Management, purchase, care of supplies equipment. Guidelines for selection of equipment and supplies - Guidelines for checking, storing, issuing, caring and maintenance of supplies and equipment - Laying of Play Fields - Tournament Types

Unit–V: Sports Administration and Marketing

Organization of Sports Events - Management of infrastructure, equipment, finance and personnel - Writing of Circulars, Notifications and Invitations - Publicity and Fund Raising - Report preparation of sports event - Selecting and Fixing of Officials - Writing Reports, Monitoring and Writing Up – Press - Sponsoring Teams and public relationship in sports - Principles of public relation and the media- Audit management of sports events - Factors in Sports Marketing - Sports Sponsorship - SWOT Analysis

References

Chelladurai .P. ***Managing organizations for Sports and Physical Activity***, Holcomb Hathaway Publishers: Arizona, 2001.
David C. Watt, ***Sports Management and Administration***, Routledge Taylor & Francis Group, 2004.
Lisa Pike Masteralexis, Carol A. Barr and Mary A. Hums, ***Principles and Practice of Sports Management***, Jone and Bartlett Publishers, 2005.
Philip Kotler, ***Marketing Management***, Pearson Education. Inc, 2003.
Hoye, R. (2012). ***Sport management***, Milton Park, Abingdon, Oxon: Routledge. ISBN-13: 9781856178198, ISBN-10: 1856178196
Bowers, M. (2015). ***Sport management***, Champaign: Sagamore Publishing.ISBN10: 1571677267. ISBN-13: 978-1571677266
Krotee, M., & Bucher, C. (2007). ***Management of physical education and sport***, Boston: McGraw-Hill.ISBN-10: 0072972920. ISBN-13: 978-0072972924

INFORMATION AND COMMUNICATION TECHNOLOGY IN SPORTS

Objectives:

1. To understand all the fundamental of computers and its uses.
2. To develop communication knowledge using Multimedia.
3. To Apply MS Office application in the field of physical Education.
4. To provide an opportunity in approach to Integrating ICT in Teaching Learning Process.
5. To acquire multimedia Technology and its application in sport.

UNIT–I: Fundamentals of Computers

Characteristics, Types, Functions, Advantages & Applications of Computers. Hardware of Computer: Input, Output & Storage Devices. Software of Computer: Concept & Types application in Physical Education and Sport. Concepts, Types & Functions of Computer Networks, Internet and its applications, Web Browsers & Search Engines, Legal & Ethical Issues.

UNIT–II: Communication & Classroom Interaction

Concept, Elements, Process & Types of Communication, Communication Barriers & Facilitators of Communication and cloud computing. Communicative Skills in English - Listening, Speaking, Reading & Writing.

UNIT–III: MS Office Applications

Word: Main Features & their uses in Physical Education. Excel: Main Features & their applications in Physical Education. Access: Creating a Database, Creating a Table, Queries, Forms & Reports on Tables and its Uses in Physical Education. Power Point: Preparation of Slides with Multimedia Effects, MS Publisher: Newsletter & Brochure.

UNIT–IV: ICT Integration in Teaching Learning Process

Concept & Importance of ICT, Need of ICT in Education, Scope of ICT: Teaching - Learning Process, Publication, Evaluation, Research and Administration. Challenges in Integrating ICT in Physical Education. Approaches to Integrating ICT in Teaching Learning Process.

UNIT–V: Multimedia Technology Application

Project Based Learning (PBL), Co- Operative Learning, Collaborative Learning. ICT and Constructivism: A Pedagogical Dimension. E-Learning, Web Based Learning, Visual Classroom.

REFERENCES:

B. Ram, New Age International Publication, ***Computer Fundamental***, Third Edition-2000
Brain under IDG Book. India (p) Ltd Teach Yourself Office 2000, Fourth Edition- 2001
Douglas E. Comer, ***The Internet Book***, Purdue University, West Lafayette in 2005
Heidi Steel Low price Edition, ***Microsoft Office Word 2003- 2004***
ITL Education Solution Ltd. ***Introduction to information Technology***, Research and Development Wing-2006
Pradeep K. Sinha & Priti. Sinha. ***Foundations computing*** , BPB Publications -2004.
Rebecca Bridges Altman Peach pit Press, ***Power point for window***, 2002
Sanjay Saxena, Vikas Publication House, Pvt. Ltd. ***Microsoft Office for everyone***, Second Edition.

SPORTS BIOMECHANICS AND ERGONOMICS

Objectives:

- To gain a better understanding of the cause-effect mechanisms of sports motions
- Understanding of knowledge of Ergonomics is to improve working conditions, work tools and work structuring in order for the optimum result to be achieved from the work and the person at work to suffer as few setbacks as possible.
- To explain the concept of mechanical laws involved in human motion.
- Apply and analyze the factors of mechanical laws involved in human movement
- Analyze the mechanical principles of motor skills and sports related skills along with their proper techniques and corrective measures

UNIT–I: Introduction of Sports Biomechanics and Ergonomics

History, meaning and definitions of Sports Biomechanics – brief history, meaning and definition of ergonomics and sports ergonomics – need and importance of biomechanics in physical education and sports – need and importance of sports ergonomics – organisation of ergonomics – Principles of ergonomics

UNIT–II: Kinematics and Kinetics

Definition of Kinematics and Kinetics – Static and dynamic – vector and scalar measurements – Law of kinetics – types of kinetics – types of kinematics – Types of motion - Newton's law of motion – Distance and Displacement – impulse and momentum – Torque, mass and weight – impact and elasticity - Application of kinetics and Kinematics in sports

UNIT–III: **Forces and Lever**

Force: Meaning, units of force, effects of force/Sources of Force, Components and Resultant, Friction, Pressure. Movement of Force, magnitude of forces, centrifugal and centripetal forces – Friction force – classes of Levers – center of gravity – center of mass – line of gravity – kinetic and potential energy - Work, Power and Energy

UNIT–IV: Fluid Mechanism and Projectile Motion

Freely failing bodies, Projectiles, Equilibrium principles, factors affecting Stability – fluid mechanism – Characteristics and nature of fluids - Buoyancy – dynamic fluid force – relative motion – specific weight – drag and lift forces - initiating rotation in the air, water resistance and air resistance – Laminar and turbulent blow – aerodynamics - principles and types of spin and Magnus effect

UNIT–V: Movement analysis and Ergonomics

Analysis of fundamental skills: Walking, Running, Jumping, Throwing, Lifting, Pulling, Pushing, Catching, and Climbing - Analysis of Sports Skills: Athletics, Gymnastics, Swimming, Football, Hockey, Basketball, Volleyball and Cricket – analysis of external forces and their effects on the body and its movements - Ergonomics in health and safety – Ergonomics in physical activity and its effect on health – Video analysis of biomechanics principles in sports

REFERENCES:

Bartlett, R. (2007). Introduction to sports biomechanics. London: Routledge, Taylor & Francis Group. ISBN 9780415339933

Blazevich, A. (2007). Sports biomechanics. London: A. & C. Black. ISBN 9780713678710

Carr, Gerry, sports mechanics for coaches new York human kinetics, 2004.

Hall, S. (2014) Basic biomechanics. Mcgraw Hill Higher Educat. ISBN 9780073522760

McGinnis, P. (2013). Biomechanics of sport and exercise. Champaign, IL: Human Kinetics. ISBN 9780736079662

Peter m. McGinnis, Biomechanics Of Sports And Exercises, USA, Human Kinatics, 1999.

Williams M (1982) Biomechanics of Human Motion, Philadelphia, Saunders Co.

SPORTS MEDICINE AND REHABILITATION

Objectives:

1. To understand the sports injuries
2. To understand and application of therapeutic modalities
3. To develop rehabilitation programme for sports injuries.
4. To develop rehabilitation programme for lower body sports injuries.
5. To apply massage and First aid techniques in sports arena.

UNIT-I: ATHLETIC INJURIES AND PREVENTION

Sports Medicine: Definition and Importance. Common types of Athletic injuries: Skin Injuries - Soft Tissue injuries – Thermal injuries – Bone Injuries - General Principles of Injury Prevention. RICE – PRICE procedure for minor injuries.

UNIT-II: THERAPEUTIC MODALITIES

Therapeutic Exercise - Therapeutic Modalities: Cold Modalities: Ice Packs, Ice Immersion, Ice massage, Cryostretch - Heat Modalities: Moist Hot Packs, Paraffin Baths - Electrical Modalities: Ultrasound, Shortwave Diathermy, Microwave Diathermy:

UNIT-III: ATHLETIC REHABLITATION

Sports Rehabilitation - Shoulder girdle injuries and Rehabilitation: Clavicle Fracture - Acromioclavicular joint sprain - Shoulder joint Dislocations - Tennis elbow- Head and Spine Injuries.

UNIT-IV: LOWER BODY INJURIES AND REHABILITATION

Leg-ankle injuries causes and Rehabilitation: shin pain, Achilles tendonitis, Ankle sprains. Knee injuries: Knee dislocation, Thigh injuries: Quadriceps contusion, Hamstring strain

UNIT-V: FIRST AID AND MASSAGE

Massage - Types of Manipulation Techniques - First Aid: Definition – Importance. Primary Survey (Airway, Breathing, circulation) Rescue breathing – CPR. First aid for Strain – Sprain – Drowning – Haemorrhage – Electrical shock - Food poison.

References:

Larry J. Durstine and Geoffrey E. Moore, ***Exercise Management for Person with Chronic Diseases and Disabilities*** (2nd Ed,), USA: Human Kinetics, 2003.

David R. Mottran, ***Drugs in Sport*** (5th Ed.,), Routledge Taylor and Francis Group, 2011.

C.S. Jeyaprakash, ***Sports Medicine***, J.P. Brothers, New Delhi, 2003.

Melinda J. Flegel, ***Sports First Aid*** (5 th Ed,), USA: Human Kinetics, 2014.

William C. Whiting and Ronald F. Zernicke, ***Biomechanics of Musculoskeletal Injury***, USA: Human Kinetics, 1998.

Bengt O. Eriksson et al., ***Sports Medicine***, Guinness Publications, 1990.

ADAPTED PHYSICAL EDUCATION

Objectives:

1. To understand the sports injuries
2. To understand and application of therapeutic modalities
3. To develop rehabilitation programme for sports injuries.
4. To develop rehabilitation programme for lower body sports injuries.
5. To apply massage and First aid techniques in sports arena.

UNIT–I: Introduction to Adapted Physical Education

Adapted Physical Education: Definition – History –Need and Importance. Adopted sports: Purpose – aims – Goals . Principles, Practices and Creativity physical activities/programmes in special children.

UNIT–II: Identification and causes of specific diseases

Attention deficit hyperactivity disorder : Meaning, Symptoms, Causes and Treatment. Meaning of Autism and its Signs Symptoms & Causes. Emotional disturbance: Characteristics, Causes and Treatment. Specific learning disabilities**:** Common types of learning disabilities their causes, treatment and intervention. Amputations & its types and dwarfism: types, causes, diagnosis and treatment

UNIT-III: Class organization

Class organization strategies: identifying the cause, embrace special needs, setting high expectations and goals. Managing individual programmes: specially designed instructions, programme modifications, classroom accommodations, supplementary aids and services, transportation. Monitoring students performances: Purpose and Implementation Organizing the instructional environment.

UNIT–IV: Paralympics Sports

History of Paralympics. Paralympics events: list of IPC summer and winter sports. Rules and regulations. Eligibility criteria: medical classification & functional classification.

UNIT–V: Organization & Administration

Types and Needs. Kinds of Programme, Importance of Physical education. Talent identification programme for special needs children. Factors of Communication with Parents and Public.

REFERENCES

Alexander, M. & Schwager, S. (2012) Meeting the physical education needs of children with autism
spectrum disorder. Champaign, IL: Human Kinetics
Bielenberg, K. (2008) All active 35 inclusive physical activities. Champaign, IL: Human Kinetics,
Block, M. 2007) A teacher's guide to including students with disabilities in general physical education. 3rded. Baltimore, MD: Brookes Publishing Co.
Canales, L & Lytle, R. (2011) Physical activities for young people with severe disabilities. Champaign, IL:Human Kinetics.
Davis, R. (2002) Inclusion through sports: A Guide to enhancing sport experiences. Champaign, IL: HumanKinetics.
Davis, E. A. (2012) Physical activities in the wheelchair and out: An illustrated guide to personalizing
participation. Champaign, IL: Human Kinetics

PRINCIPLES OF MOTOR DEVELOPMENT

Objectives:

1. To understand the motor components.
2. To understand the growth and development.
3. To analyse and apply the knowledge of motor skills to identify the movements.
4. To study the neurophysiological basis of movement.
5. To study the genetics and motor skills along with motor skill assessment.

UNIT–I: Introduction to Motor Development

Definition-Motor Development, Motor Learning, Moto Control, Physical growth, Maturation and Aging- Newell's Model of Motor Development-Theoretical perspectives in Motor Development - Principles of Motion and Stability - Classification of Motor Activities.

UNIT-II: Growth and Development

Prenatal and Postnatal Development-Development of the cardio respiratory system, Skeletal System, Muscular System, Adipose System, Endocrine System and Nervous System-Growth in Stature and Body Weight- Chronological age and age groups.

UNIT-III: Motor Skills

Movements of Infant - Motor Milestones-Development of human Locomotion: Creeping, Crawling, Walking and Running-Development of Ballistic Skills: Throwing, Kicking, Punting and Striking-Development of Manipulative Skills: Grasping, Reaching, catching and anticipation.

UNIT-IV: Neurological Basis of Movement

Motor Units and Electromyography – Motor Synergies – Motor Disorders - Sensory-Perceptual Development: Visual, Kinesthetic, Auditory and Intermodal perception- Development of Postural control and Balance.

UNIT-V: Genetics and Growth

Genetic Regulation of Growth: The Human Genome and Gene, Types of hormone and their actions-Physical Activity as a factor in Growth, maturation and Performance - Motor Skill Assessment (BOT-2 & Bayley Motor Skill Test).

REFERENCES

Allen W. Burton., & Daryl E. Miller. (1998).*Movement Skill Assessment*.USA: Human Kinetics.

Kathleen M.Haywood., & Nancy Getchell. (2014). *Life Span motor Development(6thEd.,)*.USA: Human Kinetics,

Robert M. Malina., Claude Bouchard.,&Oded Bar-Or. (2004). *Growth, Maturity and Physical Activity(2ndEd.,)*.USA: Human Kinetics.

Claude, Bouchard., Steven N. Blair., & William L. Haskell. (2007). *Physical Activity and Health*.USA: Human Kinetics.

Cratty Bryant, J. (1975). *Movement Behaviour and Motor Learning*. Philadelphia Lea &Febiger.

Mark L. Latash. (2008). *Neurophysiological Basis of Movement (2nd Ed.,)*.USA: Human Kinetics.

PRINCIPLE OF YOGIC SCIENCE

Objectives:

1. To well known about Yoga foundation and its principles
2. To understand the principles and concept of yoga sutra
3. To understand and apply yogic practices for research activities
4. To integrate yoga for enhancement of sports performance
5. To apply yogic sciences to human systems for conducting research activities

UNIT I: Foundation of Yoga

Origin of Yoga – History (epic and modern) and Development of Yoga - Meaning and Definition of Yoga - Aim and Objectives of Yoga - Nature and Principles of Yoga – Concept of Yoga - International Day of Yoga – Yogic principles of healthy living – Yoga for health and wellbeing – Elements of yoga

UNIT II: Principles and Concept of Yoga Sutra

Ashtanga Yoga: Concept of Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi and their usefulness - Yogic concept of diet and its relevance in the management of lifestyle - Types and nature of Samadhi - Four types of Karmas – Patanjali's eight limbs of yoga sutra principles

UNIT III: Yogic Practices and its Applications

Benefits and Practicing Asana: Asnas Standing Postures - Prone postures - Supine postures - Balancing postures - Yoga asana and its values; **Pranayama:** Types, benefits and methods - Nadis: Meaning, methods and benefits; - Breath awareness - Sectional breathing - Nadishuddhi, Bhastrika, Ujjai, Cooling pranayama (Sitali, Sitkari and Sadanta), Bhramari, Pranayama (with Antar & Bahya Kumbhaka); **Meditation:** Pranav and Soham Japa - Yoga Nidra (1,2,3), Antarmauna, Ajapa Dharana (Stage 1,2,3) - Breath Meditation and Om Meditation; **Kriya:** Concept of Kriya Yoga of Patanjali - Dhauti (Kunjal), Vastra dhauti, Danda dhauti, Laghoo and Poorna sankhaprakshalana - Neti (Sutra and Jala) – Kapalbhati - Agnisara - Nauli **Bandhas and Mudras:** Jivha Bandha, Jalandhara Bandha, Uddiyana Bandha, Mula Bandha, Maha Bandha, Yoga Mudra, Maha Mudra, Shanmukhi Mudra, Tadagi Mudra, Vipareet Karni Mudra **Chakras:** Major Chakaras - Benefits of clearing and balancing Chakras; **Surya namaskar**

UNIT IV: Applications of Yoga

Yoga in education – Yoga for stress management – Yoga for personality development - Integrated approach of Yoga Therapy in the treatment of diseases - Yoga Supplemental Exercises - Yoga Compensation Exercises - Yoga Regeneration Exercises - Power Yoga - Role of Yoga in Psychological Preparation of athletes: Mental Wellbeing, Anxiety, Depression, Concentration and Self-Actualization – management of diseases through yogic practices

Unit V: Yoga Science and Human Systems

Effect of Yoga on Physiological System: circulatory, musculo-skeletal, digestive, nervous, excretory; effect of yoga on cardiovascular and respiratory systems; Yoga impact on immune and reproductive systems – yoga and its impact on allied sciences: Behavioral psychology, personality, cognitive psychology and mental wellbeing - Effects of Kundalini Shakti and Shatchakra Sadhana

REFERENCES:

Authors Guide (2015), International Day of Yoga, Common Yoga Protocol, New Delhi: Ministry of AYUSH, Government of India.

George Feuerstein. (1975).Text Book of Yoga. London: MotilalBansaridass Publishers (P) Ltd.,

Gore.(1990). Anatomy and Physiology of Yogac Practices.Lonavala: KanchanPrkashan.

Helen Purperhart (2004) The Yoga Adventure for Children. Netherlands: AHunter House Book.

Iyengar, B. K. S. (2000). Light on Yoga. New Delhi: Harper Collins Publishers.

Kuvalyananda Swami & S.L. Vinekar.(1963). Yogic Therapy – Basic Principles and Methods. New Delhi: Govt of India, Central Health Education and Bureau.

Kenghe.C.T. (1976). Yoga as Depth-Psychology and para-Psychology (Vol-I): Historical Background, Varanasi: BharataManishai.

Moorthy .A.M &Alagesan.S. (2004).Yoga Therapy. Coimbatore: Teachers Publication House.

Swami SatyanandaSaraswathi. (1984). Kundalini and Tantra. Bihar: Yoga Publications Trust.

Swami Kuvalayananda. (1998). Asanas.Lonavla: Kaivalyadhama.

Swami Satyananda Sarasvati. (1989). Asana Pranayama Mudra Bandha.Munger: Bihar School of Yoga, Swami Sivananda. (1971). The Science of Pranayama. Chennai: A Divine Life Society Publication,

Tiwari. O .P. (1998). Asanas-Why and How. Lonavla: Kaivalyadhama.

Thirumalai Kumar. S and Indira .S(2011) Yoga in Your Life, Chennai: The Parkar Publication.

Khalsa, M., & Bhajan,. (2008). Meditations for addictive behavior. Minneapolis, MN: I Was There Press.ISBN-10: 0979919215. ISBN-13: 978-0979919213

Lysebeth, A. (1979). Pranayama, the yoga of breathing. London: Unwin Paperbacks.ISBN10: 0041490509. ISBN-13: 978-0041490503

PanVdVaW, N. (2003). Meditation. New Delhi: D.K. Printworld.ISBN-10: 8124602115 ISBN13: 978-8124602119

Ramacharaka,. (2009). The science of breath. Waiheke Island: Floating Press.ISBN10: 1508983704. ISBN-13: 978-1508983705

Desikachar, T. (1999). The heart of yoga. Rochester, Vt.: Inner Traditions International.ISBN13: 978-0892817641. ISBN-10: 089281764X

Iyengar, B. (1979). Light on yoga. New York: Schocken Books.ISBN-10: 0805210318. ISBN13: 978-0805210316

Kaminoff, L., & Matthews, A. (2012). Yoga anatomy. Champaign, IL: Human Kinetics.ISBN10: 1450400248. ISBN-13: 978-1450400244

GAME OF SPECIALIZATION

Objectives:

1. To define and acquaint training preparation of Game/Sport
2. To employ the rules and regulation of Game/Sport
3. To emphasis on preparation for the Game/Sport.
4. To acquaint the student with progressive teaching stages of fundamentals skills of Game/Sport.
5. To orient & employ the rules and regulation in organization of competition in Game/Sport.

Unit – I: Introduction (Growth and Development)

Origin and development, Layout and marking of play filed/ground/courts and measurement of equipments used in Game/Sport.

UNIT–II: Techniques/Skills Development

Classification of techniques/skills. Training for mastery in technique/skill. Tactics and Strategy of Offensive and defence. Various playing position- System of play. Offensive and defensive system of play. Fitness – General – Specific training programme, Drills, Recreational and lead up games.

UNIT–III: Training (Means and Methods)

Training methods and means for the development of motor abilities, Basic Concept of preparation of training schedules, Tactical training in game/sport. Psychological preparation required during competition in game/sport. Periodization in training of players in game/sport. General/specific fitness tests and performance/skill test in game/sport.

UNIT–IV: Test Measurement and Evaluation

Importance of test, Measurement and Evaluation of game Performance. Fitness and Skill tests, Subjective and Objective Knowledge tests, Periodical assessment of performance. Analysis of team performance.

UNIT–V: Awards and Tournaments

Organization set up – Federation – International, National, State, District Sports federations & its affiliated units – Tournaments – World Championship, Olympics games, Commonwealth games, Asian Games and other International and Domestic tournaments. Awards and Honours.

REFERENCES:

Thomas Hanlon., (2010) The Sports Rules book (5th Edition) Human Kinetics, Champaign, IL, United States

R.G. Goel., Gaurav Goel., (2003) Encyclopedia of Sports and games. (Twelfth edt.,) Vikas Publishers., New Delhi.

Sunil.kumar., Sharma.O.P., (2013) Encyclopedia of Sports and games. Khel Sahitya Kender., ISBN: 9788175247246, 817524724X

The Diagram Group., (1994) Rules of the game: The complete illustrated encyclopedia of all the sports of the world, Turtleback Books