

30. COURSE CONTENT AND STRUCTURE

PAPER I APPLIED BASIC SCIENCES

This paper consists of 5 Modules:

- I. Bio Statistics and Research Methodology
- II. Biomechanics and Pathomechanics
- III. Ergonomics
- IV. Nutrition and Exercise Physiology
- V. Teaching Methodology in Physiotherapy

MODULE I

BIO STATISTICS, RESEARCH METHODOLOGY

PART I.

1. Research fundamentals

Research in Physiotherapy
Theory in Physiotherapy research
Research ethics

2. Research design

Research problems, questions and hypotheses
Research paradigms
Design overview
Research validity
Selection and assignment of subjects

3. Experimental designs

Group designs
Single system design

4. Non experimental design

Overview of non-experimental research
Qualitative research
Epidemiology
Outcome research
Survey research

Part II Measurement and Analysis

1. Measurement

Measurement theory

Methodological research

Measurement tools for Physiotherapy research

2. Data Analysis

Statistical reasoning

Statistical analysis of differences: The basics

Statistical analysis of differences: Advanced and special techniques

Statistical analysis of relationship: The basics

Statistical analysis of relationship: Advanced and special techniques

Part III Locating and Evaluating the

Literature Part IV Implementing Research

1. Implementing the projects

2. Publishing and presenting research

Part V Research in Physiotherapy

- History of physiotherapy research
- Present scenario
- Critique of physiotherapy studies
- Historical
- Instrument and tools
- Administration
- Physiotherapy practice

Recommended Books

1. Rehabilitation Research: Principles and Applications by Elizabeth Domholdt (Elsevier Science Health Science Div, 2004)
2. Research for physiotherapist by Hickes

Module II Biomechanics and Pathomechanics

Part I Foundational concepts in Bio and

Pathomechanics Unit:

1. Basic concepts in biomechanics
2. Biomechanics of tissues and structures of the musculoskeletal system
 - Bone
 - Articular cartilage
 - Tendons and ligaments
 - Peripheral nerves
 - Skeletal muscle

3. Functional adaptation of bone under pathological conditions
 4. Mechanics of joint and muscle action
 5. Body balance and equilibrium
- Part II Biomechanics and Pathomechanics of joints

Unit:

1. Upper extremity
2. Lower extremity
3. Vertebral column
4. Thorax and chest wall
5. Temporal mandible joint

Part III Biomechanics of integrated function**Unit:**

1. Gait
2. Posture
3. Arm as a whole

Recommended books

1. Basic biomechanics of the musculoskeletal system by Margareta Nordin and Victor H. Frankle, 2nd edition (Lea and Febiger)
2. Kinesiology of the Human Body: Under Normal and pathological condition by Arthur Steindler, 5th edition (Charles C Thomas, 1977)
3. Joint Structure & Function :A comprehensive analysis by Cynthia C Norkin, Pamela K Levangie (Jaypee Brothers, 2006)
4. Brunnstrom's Clinical Kinesiology by Laura K. Smith & Don Lehmkuh, 5th edition (F A Davis, 1996)
5. The Physiology of the Joints by Kapandji & Matthew J Kendel (Churchill Livingstone, 2008)
6. Clinical Biomechanics of the Spine by Augustus A White & Manohar M Panjabi, 2nd Edition (Lippincott Williams & Wilkins; 1990)
7. Kinesiology :The mechanics and Pathomechanics of Human Movement by Carol Oatis (Lippincott Williams & Wilkins; 2008)
8. Kinesiology: Application to pathological motion by Soderberg, 2nd Edition (Williams & Wilkins, 1997)

Module III Ergonomics**Unit**

1. History of ergonomics
2. Worker care spectrum
3. Postural examination
4. Job analysis
5. Work hardening programme
6. Exit assessment
7. Pre-employment screening
 - Job analysis
 - Job task analysis
 - Job site analysis

8. Work capacity analysis
9. Role of Physiotherapy in industrial set up
10. Workers functional capacity assessment
11. Industrial therapy
12. Adult education
13. Injury prevention and ergonomics

Recommended books

1. **Industrial Therapy** by Glenda L. Key, 1st Edition (Mosby)

Module IV Nutrition and Exercise physiology

Part I Basic Exercise Physiology

Unit

1. Introduction to exercise physiology
2. Nutrition and Performance
3. Energy transfer
4. Measurement of human energy expenditure
5. Systems of energy delivery and utilization
 - Pulmonary system
 - Cardiovascular system
 - Musculoskeletal
 - Nervous System
 - Endocrine system

Part II Applied Exercise Physiology

Unit

1. Aerobic power training
2. Anaerobic power training
3. Special aids in performance and conditioning
4. Exercise at different altitudes
5. Exercise at various climatic conditions
6. Sport diving
7. Obesity and weight control
8. Exercise and aging
9. Clinical exercise physiology
10. Physical fitness test
11. Applied work physiology
12. Fatigue and De-conditioning

Recommended Books

1. **Exercise Physiology** by Mc Ardle, Katch & Katch (Lippincott Williams and Wilkins, 2000)
2. **Exercise Physiology: Exercise, Performance, and Clinical Applications** by Robert A. Roberts and Scott O Roberts William C Brown, 1997)
3. **Clinical Exercise Testing and Prescription Theory and Applications** by Scott O. Roberts, Peter Hanson (C RC Press, 1997)

Module V Teaching Methodology in Physiotherapy

Unit

1. Introduction :

Education :Definition, aims, concepts, philosophies & their education implications, Impact of Social, economical, political & technological changes on education:

- Professional education
- Current trends and issues in education
- Educational reforms and National Educational policy, various educational commissions-reports
- Trends in development of Physiotherapy education in India

2. Teaching – Learning Process

Concepts of teaching and learning: Definition, theories of teaching and learning, relationship between teaching and learning.

Educational aims and objectives; types, domains, levels, elements and writing of educational objectives

Competency based education(CBE) and outcome based education(OBE)

Instructional design: Planning and designing the lesson, writing lesson plan : meaning, its need and importance, formats.

Instruction strategies – Lecture, discussion, demonstration, simulation, laboratory, seminar, panel, symposium, problem solving, problem based learning (PBL), workshop, project, role- play(socio- drama), clinical teaching methods, programmed instruction, self directed learning(SDL), micro teaching, computer assisted instruction(CAI), computer assisted learning (CAL)

3. Instructional media and methods

1. Key concepts in the selection and use of media in education
2. Developing learning resource material using different media
3. Instructional aids – types, uses, selection,preparation, utilization.
4. Teacher's role in procuring and managing instructional Aids – Project and non-projected aids, multi media, video-tele conferencing etc

4. Measurement and evaluation:

Concept and nature of measurement and evaluation, meaning, process, purposes, problems in evaluation and measurement.

Principles of assessment, formative and summative assessment- internal assessment external examination, advantages and disadvantages.

Criterion and norm referenced evaluation.

Standardized and non-standardized tests – Meaning, characteristics, objectivity, validity, reliability, usability, norms, construction of tests-

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5. Continuing Education in Physiotherapy

1. Concepts – Definition, importance, need scope, principles of adult learning, assessments of learning needs, priorities, resources.
2. Program planning, implementation and evaluation of continuing education programs.
3. Research in continuing education.

6. Curriculum Development

1. Definition, curriculum determinants, process and steps of curriculum development, Curriculum models, Types and framework.
2. Formulation of philosophy, objectives, selection and organization of learning experiences; master plan, course plan, unit plan.
3. Evaluation strategies, process of curriculum change, role of students, faculty, administrators, statutory bodies and other stakeholders.
4. Equivalence of courses: Transcripts, credit system.

7. Teacher preparation

1. Teacher – roles & responsibilities, functions, characteristics, competencies, qualities,
2. Preparation of professional teacher.
3. Organizing professional aspects of teacher preparation programs
4. Evaluation: self and peer
5. Critical analysis of various programs of teacher education in India.

8. Administration of Physiotherapy Curriculum

1. Role of curriculum coordinator – planning, implementation and evaluation.
2. Evaluation of educational programs in Physiotherapy- course and program.
3. Factors influencing faculty staff relationship and techniques of working together.
4. Concept of faculty supervisor (dual) position.
5. Curriculum research in Physiotherapy.
6. Different models of collaboration between education and service

9. Management and accreditation of Physiotherapy educational institutions

1. Planning, organizing, staffing, budgeting, recruitment, discipline, public relation, performance appraisal, welfare services, library services and hostel.
2. Development and maintenance of standards and accreditation in Physiotherapy education programs.
3. Role of Indian Physiotherapy Council, State Registration Physiotherapy Councils, Boards and University.
4. Role of Professional associations and unions.

PAPER II

PHYSIOTHERAPEUTICS

This paper consists of 5 Modules:

- Manual therapy
- Exercise therapy
- Electrotherapy
- Electrophysiology
- Physical and Functional Diagnosis

Module I Manual Therapy

Part I Foundational concepts in Manual therapy Unit

1. History of manual therapy
2. Biomechanical principles in manual therapy
 - Concave-Convex rule
 - Close pack and Loose pack Positions
 - Resting positions
 - Joint status
 - Barrier concepts
 - Fryette's Laws
 - Articular neurology
4. Pain

Part II Joints Mobilization Techniques

(Terminology, Principles, Indications, Contra-indications, Assessment and method of application of the following techniques) **Unit**

1. Kalten born
2. Maitland
3. Mulligan
4. McKenzie
5. Cyriax
6. Butler neural mobilization

Part III Soft Tissue Techniques and Recent Advances in Manual therapy

(Terminology, Principles, Indications, Contra indications, Assessment and method of Application of the following techniques) **Unit**

1. Myofascial release techniques
2. Muscle energy techniques
3. Trigger point release
4. High velocity thrust techniques
5. Positional release techniques
6. Lymphatic manipulations

Recommended Books

1. **Grieve's modern manual therapy: The vertebral column** By Jeffrey Boyling and Grad Dip Man Ther (Churchill Livingstone)
2. **Concern manual therapy books**

Module II Exercise Therapy

Part I Foundational Concepts

Unit

1. Application of Disablement and Enablement models in therapeutic exercise
2. Principles of self management and exercise instruction
3. Prevention, health and wellness

Part II Applied Science of Exercise and Techniques Unit

1. Range of motion
2. Stretching
3. Resisted exercise
4. Principles of aerobic exercise
5. Exercise for balance and posture
6. Aquatic exercises
7. Training with functional devices

Part III Evidenced Based Clinical Applications of Exercise and Techniques

Recommended books

1. **Therapeutic Exercise: Treatment Planning for Progression** by Francis E. Huber, Christly. Wells (W.B. Saunders Company, 2006)
2. **Therapeutic Exercise: Foundations and Techniques** by Carolyn Kisner and Lynn Allen Colby (W.B. Saunders Company, 2007)
3. **Therapeutic Exercise, Moving Towards Function** by Carrie M. Hall and Lori Thein Brody (Lippincott Williams & Wilkins, 2004)

Module III Electrotherapy

Part I Foundational Concepts in

Electrotherapy Unit

1. Bioscience of therapeutic electrical currents
 - Basic physics
 - Basic principles of electricity
 - Types of current
 - Classification of therapeutic electrical currents
 - Parameters of therapeutic electrical currents

1. Bioscience of therapeutic thermal modalities
 - Thermal physics
 - Bio physics
 - Basic principles of thermal agents
 - Classification of thermal agents
 - Parameters of thermal agents
2. Physiology
 - Electrical properties of tissues
 - Skin
 - Tissue repair and healing
 - Sensory and motor nerves
 - Pain
 - Circulatory system and edema
3. Physiological response to electrical stimuli
4. Physiological response to thermal stimuli
5. Clinical effects of electrical and thermal modalities
 - Soft tissue
 - Joints
 - Neuronal activity
 - Muscle performance
 - Visceral tissues
 - Abnormal tissues (Hematomas and malignant tumors)
6. Current concepts in electrotherapy

Part II. Thermal Modalities

Unit

1. Shortwave diathermy
2. Microwave diathermy
3. Infrared radiation
4. Ultrasound
5. Cryotherapy

Part III. Photo Chemical Agents

Unit

1. Laser
2. Ultra violet radiation

Part IV. Electrical Stimulation Modalities

Unit

1. Faradic current
2. Galvanic current
3. Neuromuscular electrical stimulation
4. Transcutaneous electrical nerve stimulation
5. Interferential therapy
6. Functional electrical stimulation
7. High voltage pulsed galvanic stimulation
8. Didynamic currents
9. Russian currents
10. Micro current therapy
11. Low intensity alternating current
12. Rebox
13. Ionotopporosis

Part V. Mechanical Modalities

Unit

1. Traction
2. Compression
3. Hydrotherapy

Part VI. Recent Advances in Electrotherapy

Unit

1. Shock wave therapy
2. Combination therapy
3. Long wave diathermy
4. Magneto therapy

Part VII. Evidence Based Clinical Application of Electrotherapeutics

Unit

1. Pain
2. Muscle strengthening and prevention of atrophy
3. Muscle spasm
4. Central nervous system lesions
5. Peripheral nervous system lesions
6. Edema and peripheral vascular dysfunctions
7. Wound healing
8. Pelvic floor dysfunctions
9. Obesity

Recommended Books

1. Integrating physical agents in rehabilitation by Bernadette Hecox and John Sanko, 2nd edition (Pearson prentice hall 2006)
2. Physicals agents in rehabilitation: from research to practical by Michell H.

Cameron, 2nd edition (Saunders and Elsevier, 2003)

3. Therapeutic Modalities for Allied Health Professionals by William E. Prentice and Frank Underwood (McGraw-Hill, 1998)

Module IV Electrophysiology

Part I Foundational Concept

Unit

1. Historical perspective
2. Terminology
 - Electro diagnosis
 - Electro neuromyography (ENMG)
3. Effectiveness of electrical stimuli

Part II Basic Physiology of Nerve and Muscles

Unit

1. Membrane physiology
2. Muscle physiology
3. Nerve physiology
4. Physiological variables affecting electrophysiological tests

Part III Instrumentation

Unit

1. Components of electro diagnostic apparatus
2. Technical variables

Part IV Principles of Electro Physiological Techniques

Unit

1. Traditional methods
 - Faradic galvanic test
 - Strength duration test
 - Chronaxie test
 - Rheobase test
 - Reaction of regeneration test
 - Nerve excitability test
2. Recent Methods
 - Principles of NCS and EMG

Part V Evidence Based Application of Electrophysiological studies in Physiotherapy Unit

1. Kinesiological electromyography

2. EMG biofeedback
3. Application of traditional and contemporary techniques in Physiotherapy

Recommended books

1. **Electromyography in clinical practice** by Michael J. Aminoff, 3rd edition (Churchill Livingstone)
2. **Clinical neurophysiology** by UK Misra and Kalita, 2nd edition (Churchill Livingstone)
3. **Electro diagnosis in diseases of nerve and muscle: Principles and practice** by Jun Kimura(Oxford university press)
4. **The ABC of EMG: A practical introduction to Kinesiological electromyography** by Peter Conrad (Noroxon Inc. USA 2005)
5. **Integrating physical agents in rehabilitation** by Bernadette Hecox and John Sanko, 2nd edition (Pearson prentice hall 2006)

Module V Physical and Functional Diagnosis

1. Clinical examination in general and detection of movement dysfunction.
2. Principles of pathological investigations and imaging techniques related to neuromusculoskeletal and cardiopulmonary disorders with interpretation.
3. Developmental screening, motor learning –motor control assessment.
4. Anthropometric measurements.
5. Evaluation Methods, Special tests and Scales used in Musculoskeletal, Neurological and Cardiopulmonary disorders.
6. Evaluation of aging.
7. Exercise ECG testing and monitoring.
8. Pulmonary function tests and Spirometry.
9. Physical disability evaluation and disability diagnosis.
10. Gait analysis and diagnosis.

RECOMMENDED BOOKS

1. Mobilization of the extremity joints – Kaltenbore, Harper and Row, Philadelphia.1980
2. Neuro-rehabilitation – Farber, W.B Saunders, Philadelphia 1982
3. Orthopaedic physical therapy- Donatteli, London Churchill Livingstone, 1994.
4. Gaits analysis – Perry J., Black Thorofare, New Jersey, 1992
5. Motor relearning programme for stroke – Carr, Aspen publication, Rock ville, 1987.
6. Sports and physical therapy – Bernhardt Donna, Churchill, Livingstone, London 1995
7. Cardiopulmonary Physiotherapy – Irwin, C.V., Mosby, St. Louis 1990.
8. Pulmonary rehabilitation: guidelines to success – Hoidkins, Butterworth, Boston, 1984.
9. Maitlands Peripheral Manipulation - Elly Hengeveled

SECOND YEAR

SPECIALTY PAPER I

PHYSIOTHERAPY

ASSESSMENT This paper consists of 2 Modules:

I. Anatomy and Physiology II. Physiotherapy Diagnosis

Module I Anatomy and Physiology

(Note : will differ for each elective)

Module II Physiotherapy Assessment

(Note: Part I to IX is common for all the Specialty Subjects & Part X is exclusive for concerned elective specialty)

I. Introduction to Physiotherapy Assessment

Purpose and need for Physiotherapy assessment

Historical perspective

Various categories for movement dysfunction

Preferred practice patterns in Physiotherapy.

Musculoskeletal

Neuromuscular

Cardiovascular/pulmonary

Integumentary

Today's health care model

II. Influence of Psychological Factors on Rehabilitation

Psychological adaptation

Personality and coping styles

Common defense reactions to disability

Anxiety

Acute stress disorder and post traumatic stress disorder

Depression

Substance abuse

Agitation and violence

Hypersexuality

Psychosocial wellness

Wellness in rehabilitation

Integrating psychosocial factors into rehabilitation

Suggestions for rehabilitative interventions

III. Influence of Values on Patient Care; Foundation for Physiotherapy assessment

Process of assessment

Values and valuing

Code of ethics

The values of patient as a factor in care

The influence of the values on the primary goal of patient care

Value – Laden situation in rehabilitation

IV. Examination of Functional Status and Activity Level

A conceptual framework

Examination of function

Response formats

Interpreting test results

Selected instruments assessing physical function

Multidimensional functional assessment instruments

V. Examination of Environment

Purpose

Examination strategies

Patient – Home environment relationship: Overview of access, usability and safety

Adaptive equipment

Assistive technology

Examination of the workplace

Community access

Documentation

Funding for environmental modifications

Legislation

VI. Guideline for Physiotherapy Documentation

Introduction

Documenting the examination

Documenting the evaluation

Documenting the plan of care

Application of documentation skills

VII. Disablement and Enablement Concepts for Physiotherapy Research and Practice

Traditional model

Consequences of disease model

NAGI model

International Classification of Impairments Disability and Handicap

Model (ICIDH – 1)

National Center for Medical Rehabilitation Research Model 1 & 2 (NCMRR)
Components of Health
International Classification of Functioning, Disability and Health (ICF / ICIDH - 2)

VIII. ICF Coding

History and development of the ICF
The ICF and the WHO family of international classifications
Components of the ICF
ICF coding
Benefits of Using ICF

IX. Evidence Based Practice

Principles of evidence-based Physiotherapy practice
Elements of evidence
Appraising the evidence
Evidence in practice

Note: Part X will differ for each individual Specialties

X. Assessment procedures related to the elective conditions

Recommended Books

1. American physical therapy association: Guide to physical therapy practice, 2nd edition 2001.
2. Physical rehabilitation (4th & 5th edition) by Susan B O Sullivan and Thomas J Schmitz. (Jaypee publication)
3. International Classification of Functioning, disability and health: Short version. (IT'S Publication)
4. Professionalism in physical therapy: History, Practice and Development by Laura Lee Swisher and Catherine G. Page, (Elsevier publication 2005)
5. Effective Documentation for Physical Therapy Professionals, by Eric Shamus and Debra (McGraw Hill company 2004)
6. Physical therapy Documentation: From examination to outcome by Mia Erickson, Ralph Utzman (Slack incorporated 2008)
7. Writing SOAP Notes with Patient / Client management Formats by Ginge Kettenbach, Ph. D., PT, 3rd Edition, 2004, F.A. DAVIS COMPANY. Philadelphia
8. Practical Evidence-Based Physiotherapy Rob Herbert, Gro Jamtvedt, Judy Mead, Kare Birger Hagen Elsevier Butter worth Heinemann; Oxford UK (2005)
9. Guide to Evidence-Based Physical Therapy Practice by Dianne V. Jewell, PT, PhD, Virginia Commonwealth University, Virginia
10. Concern Specialty books for physical therapy assessment and outcome measures

Specialty I Physiotherapy in Orthopedics

Module I Anatomy, Physiology and Clinical conditions

Part I – Fundamentals in Orthopedics

Unit

1. Embryological development
2. Growth & maturation of musculoskeletal system
3. Anatomy and applied anatomy of musculoskeletal system
4. Physiology of musculoskeletal system
5. Applied biomechanics and pathomechanics of bones, joints & soft tissues

Part II Clinical Orthopedics

Unit

1. General musculoskeletal disorders
 - Congenital malformations & deformities
 - Developmental disorders of bone
 - Infections of bone & joints
 - Tumors of the musculoskeletal system
 - Neuro muscular disorders
 - Nerve injuries
 - Soft tissue injuries including burns
 - Spinal deformities
 - Metabolic and endocrine disorders
 - Degenerative joint disorders & arthritis
 - Regional conditions of upper, lower limb & spine
 - Amputation
2. Fractures and Dislocations
 - Introduction to fractures of bone & joints and classification of fractures
 - Introduction to dislocation & recurrent dislocations of Joints
 - Fractures & dislocations of upper limb
 - Fractures & dislocations of lower Limb
 - Fractures & dislocations of spine
 - Fractures of pelvis
3. General principles of Orthopaedic surgery
 - Arthrodesis
 - Osteotomy
 - Arthroplasty
 - Bone grafting
 - Internal and external fixations
 - Distraction and limb reconstruction
 - Correction of bone deformities and joint contractures.
 - Tendon transfers
 - Nerve suturing and grafting.
 - Wound debridement
 - Orthopaedic implants

Module II Physiotherapy Assessment

Part X Assessment

Unit

General Orthopaedic Physiotherapy assessment procedures which includes, Demographic data collection, History, Observatory, Palpatory & examination findings which includes the assessment of pain, Motor examination, Joint laxity, Sensory examination, Posture and Gait evaluation (Jogging, Walking, Running, Ascending & Descending Stairs) and Other relevant system E.g. Cardio respiratory / Neurological examination methods along with disease specific / joint specific/ soft tissue specific tests assigned according to its sensitivity & specificity and obtaining a Physiotherapy assessment)/ Clinical assessment and rationale of laboratory investigations along with differential diagnosis / Functional Assessment (Lower limb function, hand function, gait, posture, A.D. L. Activities and occupational scenarios./ Assessment of Locomotor impairments, disabilities and disability evaluation./Activity Analysis: Lifting, Stair Climbing, Throwing.

Recommended Books

1. Essentials of Orthopedics for Physiotherapists by John Ebenezer – Jaypee Publications
2. Practical Fracture Treatment by Ronald McRae, Max Esser – Churchill Livingstone
3. Oxford Textbook of Orthopaedic & Trauma by Christopher Bulstrode, Joseph Buckwalter – Oxford University Press
4. Campbell's operative orthopedics. - By S. Terry Can ale, James H. Beaty - Mosby
5. Fractures & joint injuries By Watson Jones – Churchill Livingstone
6. Clinical Orthopaedic Examination by Ronald McRae – Churchill Livingstone
7. Daniels and Worthingham's muscle testing: Techniques of manual examination By Helen J Hislop, Jacqueline Montgomery Barbara – Elsevier
8. Muscles – Testing and Function by Florence Peterson Kendall – Lippincott
9. Joint Range of Motion and Muscle length testing By Nancy Berryman Reese - Saunders
10. Orthopedic Physical Assessment, By David J. Magee, PhD, BPT - Saunders
11. Illustrated Orthopedic Physical Assessment, 3e B y Ronald C. Evans, - Mosby
12. Diagnostic Imaging for Physical Therapists by James Swain, Kenneth W. Bush, and Juliette Brosing – Elsevier
13. Differential Diagnosis for Physical Therapists: Screening for Referral, By Catherine C. Goodman, and Teresa Kelly Snyder – Saunders
14. Gait Analysis : Theory And Application By Rebecca Craik and Carol A Oatis – Mosby
15. Current Diagnosis & Treatment in Orthopedics, Fifth Edition (Lange Current Series) 5th Edition by Harry Skinner M.D. Ph.D.

Specialty II. Physiotherapy in Neurology

Module I Anatomy, Physiology and Clinical conditions

Part I Overview of Growth and Development of Nervous

System Unit

1. Normal development of nervous system
2. Aging of nervous system

Part II Basic and Applied Neuro Anatomy

Unit

1. Neuron
2. Neuroglia
3. Peripheral nerves
4. Spinal cord
5. Medulla
6. Pons
7. Midbrain
8. Cerebellum
9. Basal ganglia
10. Other Sub cortical structure
11. Cerebrum
12. Reticular and Limbic system
13. Autonomic nervous system
14. Ventricular system
15. Blood supply of the brain
16. Meninges
17. Special senses

Part III Basic Physiology and Applied Neuro Pathophysiology Unit

1. Basic components of the motor system: Cells and tissues
 - Excitable cell: their morphology and physiology
 - Skeletal muscle: the somatic effectors
 - The neuromuscular junction: the nerve /muscle interface
 - Basic sensory mechanisms and the somatosensory system
2. Control of motor activity: Systems that regulate and coordinate movement
 - Motor control at the spinal cord level
 - Brainstem and motor control
 - Cortical motor systems
 - Cerebellar mechanisms
 - Basal ganglia and their connections
 - Limbic system
 - Special senses

Part IV Basic elements of Neuro Diagnostic Tests Unit

1. CT Scan
2. MRI
3. Carotid angiography
4. Myelography
5. Nerve conduction velocity
6. Late responses
7. Electromyography
8. Evoked potential tests &RNS
9. Muscle and Nerve biopsy
10. CSF examination

Part V Common Clinical Manifestation of Neurological Disorders Unit

1. Disorders of motor unit (Neuromuscular disease)
 - Muscle pain and tenderness
 - Muscle weakness
 - Changes in muscle mass
 - Muscle hyperactivity states
 - Muscle fatigability
 - Abnormal muscle tone (Hypotonic)
 - Abnormalities of sensation
 - Reduced or absent stretch reflexes
2. Disorders of central motor control
 - Abnormal muscle tone
 - Muscle weakness
 - Loss of muscular endurance
 - Altered muscle activation patterns
 - Involuntary movements
 - Associated reactions
 - Abnormalities of coordination
 - Apraxia
 - Hypokinesia
 - Abnormal skeletal muscle reflexes
 - Abnormal balance
 - Abnormalities of sensation
3. Other associated manifestations
 - Altered mental, cognitive and perceptual functions
 - Abnormalities in communications
 - Abnormalities in swallowing
 - Abnormalities of bladder and bowel functions

Part VI Clinical Conditions

Unit

1. Disorders of the motor unit (Neuromuscular diseases). Disorders of muscle (Myopathies) Myasthenia gravis and other disorders of neuromuscular transmission. Disorders of the peripheral nervous system. Disorders of the anterior horn cells (Neuronopathies)

2. Disorders of the central motor control

Disorders of the spinal cord

Parkinsonism and other movement disorders of the basal ganglia

Disorders of the cerebellum and its connection

Traumatic brain injury

Cerebrovascular disease (Stroke)

Multiple sclerosis and other central demyelinating diseases

Vestibular disorders

Cerebral palsy

Neural tube defects

Cranio - vertebral junction anomalies

3. Other conditions

Learning disorders

Visual dysfunction

Cognitive and perceptual dysfunction

Adverse effects of immobilization on the musculoskeletal system

Adverse effects of immobilization on visceral function

Miscellaneous conditions

Module II Physiotherapy Assessment

Part X Physical Therapy Assessment Procedures Used in Neurological

Conditions Unit

1. Patient interview

- Present medical history
- Past medical history
- Social history

2. Assessment of level of consciousness

- Orientation
- Response to stimuli
- Level of consciousness

3. Assessment of cognitive function

- Memory
- Attention
- Emotional response
- Higher level cognitive abilities

4. Assessment of speech and communication

5. Assessment of cranial nerve integrity

6. Assessment of vital signs

7. Assessment of autonomic nervous system function

8. Assessment of sensory integrity
 - Superficial sensation
 - Proprioceptive (Deep) sensation
 - Combined cortical sensation
9. Assessment of perceptual function
 - Homonymous hemianopsia
 - Body scheme and body image disorders
 - Spatial relation syndrome
10. Assessment of motor function
 - Muscle bulk and firmness
 - Muscle tone
 - Muscle Strength
 - Voluntary movement control (Stages of recovery, Synergy pattern, Associated reaction)
 - Muscle endurance
 - Fatigue
 - Involuntary movements
11. Assessment of reflex integrity
 - Superficial reflexes
 - Deep tendon reflexes
 - Primitive or spinal reflexes
 - Tonic or brainstem reflexes
12. Assessment of coordination
 - Gross motor coordination
 - Fine motor coordination
13. Assessment of balance
 - Sensory integration or organization
 - Limits of stability (Steadiness and Maximum balance range)
 - Availability of postural synergies (Postural strategies)
 - Balance reactions
 - Static balance (Sitting and Standing)
 - Dynamic balance (Functional movement tasks, Dual tasks and BOS challenges)
14. Assessment of posture
 - Head, neck and trunk alignment
 - Attitude of extremities
 - Symmetrical and asymmetrical posture (weight bearing)
15. Gait analysis
 - Kinematic analysis
 - Kinetic analysis
16. Upper limb control
 - Reach
 - Grasp
 - Manipulation
17. Functional movement analysis
(Based on NDTA, Stages of Motor control, MRP, Task oriented and Brunnstrom's concepts)
 - a) Movement analysis of individual components of body
 - Trunk movements in sitting
 - Upper extremity movements
 - Upper extremity weight bearing movements
 - Lower extremity movements in sitting
 - Lower extremity movements in standing
 - Trunk and extremity movements in supine

b) Movement analysis of functional mobility skills (tasks)

- Initial activities in supine or side lying position
- Rolling
- Sidelying
- Prone activities
- Prone extension (pivot prone)
- Prone on elbows
- Quadruped (prone kneeling)
- Lower trunk activities
- Hooklying (crook lying)
- Bridging
- Sitting activities
- Sitting
- Kneeling activities
- Kneeling (kneel standing)
- Movement transitions into half kneeling
- Half kneeling
- Modified plantigrade activities
- Modified plantigrade
- Standing activities
- Standing
- Movement transitions
- Supine to sit
- Sit supine
- Sit stand
- Stand to sit
- Gait activities

18. Functional capacity evaluation (FCE) for patients with neurological impairments

19. Work conditioning and work hardening programs for patients with neurological impairments

20. Assessment of patients with assistive devices

- Ambulatory aids
- Orthotics
- Wheel chair

21. Assessment of adverse effect of immobilization

- Musculoskeletal
- Visceral function

Recommended books

Neuro anatomy

1. Text book of clinical neuroanatomy by Vishram singh (Elsevier 2007)

2. Clinical Neuroanatomy for Medical Students by Richard S Snell, 5th Edition (Lippincott Williams & Wilkins, 2001)

Neurophysiology

1. Neurophysiology by RHS Carpenter, 4th edition (Arnold 2003) Clinical neurology

1. Pathophysiology of the motor systems: Principles and Clinical presentations by Christopher M. Fredericks and Lisa K. Saladin (F.A. Davis Company 1996)

2. Brain's diseases of the nervous system by John Walton, 12th edition (Oxford University press)

3. A physiological approach to clinical neurology by James W. Lance and James G. McLeod, 3rd edition (Butterworth's 1981)

4. Muscle and its diseases: An outline primer of basic science and clinical methods by Irwin M. Siegel (Year book medical publishers 1986)
5. Neuroscience fundamental for rehabilitation by Laurie Lundy Ekman (W.B Saunders 1998)
6. Illustrated neurology and neuro surgery by Kenneth Lindsay and Ian Bone (Churchill Livingston, 2004)
7. Basic neurology by John Gilroy (Elsevier)

Neuro physiotherapy Assessment

1. Hand book of neurologic rating scales by Robert M. Herndon, 2nd edition , (Demos publications 2005)
2. Bickerstaff's neurological examination in clinical practice by John Spillane, 6th edition (Blackwell science limited 1996)
3. Physical rehabilitation laboratory manual: Focus on functional training by Susan B O Sullivan and Thomas J Schmitz. (F.A. Davis Company)
4. The development of the infant young child: Normal and Abnormal by R.S. Illingworth, 9th edition (Churchill Livingstone 1996)
5. Functional Movement Reeducation – A contemporary model for stroke rehabilitation by Susan Ryerson and Kathryn Levit (Churchill Livingston and Elsevier, 1997)

Specialty III. Physiotherapy in Cardio Respiratory

Module I Anatomy, Physiology and Clinical conditions

Part I Fundamentals in cardio-respiratory conditions Unit

1. Anatomy, physiology, biomechanics, pathomechanics & applied anatomy related to Cardiovascular & Pulmonary System
2. Development of the Cardio Vascular, Pulmonary systems and deviations from the normal development.
3. Age related changes in Cardiovascular & Pulmonary System
4. Physiology of microcirculation and edema
5. Body positioning and various systemic changes
6. Respiratory muscle physiology, fatigue and training
7. Normal and abnormal responses of Cardiovascular & Pulmonary System during exercise
8. Breathing mechanism in normal and diseased.

Part II Clinical Conditions

Unit

1. Respiratory Conditions
 - Obstructive lung diseases
 - Restrictive lung diseases
 - Suppurative lung diseases
 - Infective lung diseases
 - Occupational lung diseases
 - Chest trauma
 - Chest wall deformities
 - Lung cancers
 - Children with respiratory dysfunction
 - Diaphragmatic diseases
 - Sleep apnoea
 - Hyperventilation syndrome
2. Cardio Vascular Conditions
 - Congenital heart diseases
 - Acquired heart diseases
 - Myocardial infarction
 - Hypertension
 - Diseases of the myocardium
 - Pericardial diseases
 - Tumors of the heart
 - Vascular diseases
 - Peripheral vascular diseases

Part X Assessment of cardiorespiratory conditions

1. Skills of physiotherapeutic & functional Assessment of Cardiopulmonary system.
2. Basic principles and concepts of thoracic imaging, Electrocardiogram, Pulmonary function tests, Respiratory And Cardio -Vascular stress test & Ergometry; Cardiac Catheterization & Coronary angiography.
3. Fitness definition aspect and parameters for fitness testing.

Recommended Books

1. Human Physiology by Guyton
2. Physiology of Human joints by Kapandji
3. Hand book of physiology in Aging - Masoro, C.R.C Press
4. Mechanical Ventilation by Irwin R.S.Bemers
5. Mechanical Ventilation by David W. Chang
6. ECG by Schamroth
7. Interpretation of Pulmonary Function Tests: A Practical Guide by Hyatt, Robert E.; Scanlon, Paul D
8. Principles of Exercise Testing and Interpretation: Including Pathophysiology and Clinical Applications by Kalman Wasserman
9. Baum's text book of pulmonary diseases
10. Crofton and Douglas's Respiratory diseases
11. Egan's Fundamentals of Respiratory care by Robert Wilkins
12. Harrison's Textbook of medicine
13. Brawnwald's Cardiology
14. API's Text book of Medicine

Specialty IV Physiotherapy in Pediatrics

Module I Anatomy, Physiology and Clinical

conditions **Part I Fundamentals in Pediatrics Unit**

1. Nervous system

- Overview of growth and development
- Basic and applied neuroanatomy
- Neurophysiology

2. Musculoskeletal System

- Overview of growth and development
- Musculoskeletal tissue systems - Connective tissue, muscles, bones and alignment of skeletal system.

3. Cardio Pulmonary system

- Overview of growth and development
- Respiratory muscle physiology in normal and diseased

Part II Clinical Conditions

Unit

1. Neurological conditions

- Cerebral palsy
- Neural tube defects
- High-risk infants
- Brachial plexus injury
- Brain injuries
- Spinal cord injury
- Developmental coordination disorders
- Gullain barre syndrome
- Spinal muscular atrophy
- Infectious diseases of brain

2. Musculoskeletal conditions

- Orthopedic conditions
- Juvenile rheumatoid arthritis
- Muscular dystrophy
- Poliomyelitis
- Congenital muscular torticollis
- Arthrogryposis multiplex congenita
- Osteogenesis imperfecta
- Sports injuries in children
- Limb deficiencies and amputations

3. Cardiopulmonary conditions

- Conditions requiring mechanical ventilation
- Pulmonary conditions - Asthma, Cystic Fibrosis, Infant Respiratory Distress Syndrome, Bronchopulmonary Dysplasia, Musculoskeletal System

- Impairments, Neuromuscular System Impairments
- Cardiac conditions - Cardiovascular structural deficits
- Cardiac and thoracic surgeries
- 4. Genetic syndromes
 - Genetics and development
 - Chromosomal Disorders
 - Single Gene Disorders
- 5. Pediatric oncology
 - Etiology, types, signs & symptoms, physiotherapy management
- 6. Burns
 - Classification and pathophysiology, Physiotherapy management

Module II Physiotherapy Assessment

Part X Assessment guidelines

Unit

1. Detail assessment procedures related to the elective conditions
Overview of pediatric neurological, musculoskeletal and cardiopulmonary Assessments
2. Principles of Laboratory investigations and other tests - Computerized Tomography Scan, Magnetic Resonance Imaging, Electromyography, Nerve Conduction Study, Evoked Potentials, Muscle Biopsy, Thoracic Imaging, Pulmonary Function Tests, and Exercise Testing

Specialty V Sports Physiotherapy

Module I Anatomy, Physiology and Clinical conditions

Part I Fundamental in Sports

Unit

1. Anatomy & Physiology

- Basic science and injury of muscle, tendon and ligament
- Embryological development, growth & maturation of musculoskeletal system.
- Applied anatomy & physiology of musculoskeletal system.
- Applied biomechanics and pathomechanics of bones, joints & soft tissues.
- Basic exercise physiology - Physiological responses and adaptations to

Exercise in central nervous, musculoskeletal, cardio respiratory, sensory, Autonomic nervous and endocrine systems

2. Clinical Conditions related to sporting emergencies Injuries includes Common causes, mechanism, pathophysiology, Signs, symptoms, medical and surgical treatment of following sports related injuries and also should know the recent advances in the surgical, medical management of sports related injuries of

- Head, face and neck
- Shoulder
- Elbow, forearm, wrist and hand
- Trunk (Hip, Spine and Ribs)
- Internal (Abdominal/Thoracic)
- Knee, Patella and thigh
- Lower leg, ankle and foot
- Epiphysis
- Skeletally immature athletes, female athletes and differently abled
- Injuries Related to Specific Sports - E.g. Foot Ball, Volley Ball, Basket Ball, Swimming, Running athlete etc.

Module II Physiotherapy Assessment

Part X Assessment

1. Basic skills of physical & functional and sports specific assessment of various sports injuries

2. Pre participation evaluation

3. Orientation to investigatory procedures in Orthopedics and Sports

- Basics of X-ray and views taken
- Basics of CT Scan
- Basics of MRI Scan
- Basics of biopsy procedures
- Basics of critical care Investigatory procedures
- Basics of electromyography & interpretation
- Basics of isokinetic testing

Specialty VI Physiotherapy in Obstetrics and Gynecology

Module I Anatomy, Physiology and Clinical conditions

Part I Overview of Female Anatomy

Unit

1. Historical insights female nomenclature
2. General female anatomy
 - The female breast
 - The female abdomen
 - The female pelvis
 - The bony pelvis
 - Biomechanics of the female pelvis
 - The reproductive tract
 - The abdominal muscles
3. Obstetric Concerns
 - Pelvic axes, position, obstetric diameters and shape
 - Abnormal bony pelvis
 - Mechanical Impact of the fetus on anatomic relations
 - Influence of fetal weight on blood supply
 - Influence of fetal weight and postural changes
 - Hormonal impact of pregnancy on anatomic relations
4. Gynecologic concerns
 - Contents of the pelvic cavity
 - The urinary tract
 - The anorectal region
 - Neuroanatomy and neurophysiology of pelvic floor
 - Muscles of the pelvis and pelvic floor/ diaphragm
 - The perineum/external genitalia

Part II The Adolescence Female

Unit

1. Puberty and menarche.
2. Eating disorders
3. Urinary dysfunction in adolescence.
4. Diet for adolescence.

Part III Physiology of Pregnancy

Unit

1. The endocrine physiology related to reproductive medicine
2. Physiology of ovulation and menstruation
3. Pregnancy and fetal development
4. Physical and physiological changes during pregnancy
 - Endocrine system

- Reproductive system
- Cardiovascular system
- Respiratory system
- Breasts
- Skin
- Gastrointestinal system
- Nervous system
- Urinary system
- Musculoskeletal system

Part IV Antenatal Period

Unit

1. Pregnancy tests
2. Antenatal care
3. Antenatal education
4. Pre conceptual care
5. Diet and weight gain
6. Planning and leading labor and parent craft classes
7. Antenatal complications
8. High risk pregnancy
9. Urinary dysfunction during pregnancy
10. Adaptation of mother following musculoskeletal changes during pregnancy.

Part V. The Physical and Physiological Changes during Labor and

Puerperium Unit

1. Physical and physiological changes
2. Events of normal labor
3. Complications of labor
4. Post natal physical and mental condition
5. Psychological and emotional changes and coping with the demands of newborn

Part VI Climacteric

Unit

1. Physiological and endocrine changes of the menopause
2. Menopausal systemic changes and their management
3. Physical, psychological and emotional symptoms
4. Urinary dysfunction.

Part VII Common Gynecological Conditions

Unit

1. Gynecological health
2. Gynecological disorders and its management and PT treatment
 - Infective conditions
 - Cysts and new growths
 - Displacements and genital prolapse

- Disorders associated with menstruation
- Back ache and abdominal pain
- Polycystic ovarian syndrome
- Infertility
- Premature ovarian failure/Premature menopause
- Psychosexual problems
- Vulvodynia

Part VIII Urinary Function and Dysfunction

Unit

1. Normal urinary tract function
2. Lower urinary tract dysfunction
3. Incontinence of urine – common types
4. Voiding difficulties
5. Principles of urodynamic, radiological and electromyographical investigations
6. Pregnancy, childbirth and urinary incontinence

Part IX Bowel and Anorectal Function and Dysfunction

Unit

1. Normal bowel function
2. Bowel and anorectal dysfunction
3. Childbirth and anal incontinence

Part XI Oncologic Issues with Women's Health

Unit

1. Breast cancer and lymphodema

Module II Physiotherapy Assessment

Part X Assessment

Unit

1. Antenatal period
 - Routine assessment
 - Evaluation of maternal musculoskeletal disorders
2. Assessment during labor
3. Postnatal period
 - Routine Assessment
 - Evaluation of postnatal problems
4. Pelvic floor assessment
 - Measurement of pelvic floor muscle function and strength and pelvic organ Prolapse

5. Assessment of pelvic pain

6. Bladder and bowel dysfunction

- Assessment of urinary dysfunction
- Assessment of urinary incontinence in neurologically impaired patients
- Physiotherapy assessment for fecal incontinence and bowel dysfunction

7. Pre and post operative assessment for gynaecological surgery

8. Assessment of lymphodema and osteoporosis

Specialty VII Physiotherapy in Hand Conditions

Module I Anatomy, Physiology and Clinical conditions

Part I Fundamentals in Hand conditions Unit

1. Embryology of hand

- Development of hand
- Hand evolution

2. Anatomy

Bones

- Carpal bones
- Metacarpals
- Phalanges

Joints

- Wrist joint
- Carpal joints
- Carp metacarpal joints
- Metacarpophalangeal joints
- Deep transverse metacarpal ligaments:
- Interphalangeal joints of hand

3. Surface Anatomy

Normal appearance of the hand

Position of the flexor retinaculum and the recurrent branch of the median nerve
Motor functions of the median and ulnar nerves in the hand

Visualizing the positions of the superficial and deep palmar arches
Pulse points

4. The Thumb

Opposition of the thumb

- The geometry of the thumb opposition
- The TM joint
- The MP joint of the thumb
- The IP joint of the thumb
- The motor muscles of the thumb
- The actions of the extrinsic muscles of the thumb
- Opposition of the thumb

5. Muscles

- Dorsal interossei
- Palmar interossei
- Adductor pollicis
- Thenar muscles
- Hypothenar muscles
- Lumbrical muscles

6. Soft tissues

- Carpal tunnel and structures at the wrist
- Palmar aponeurosis
- Palmaris brevis
- Anatomical snuffbox
- Fibrous digital sheaths
- Extensor hoods
- The ligamentous complex
- The tunnels and synovial sheaths of the flexor tendons
- The tendons of the long flexors of the fingers
- The tendons of the extensor muscles of the fingers

7. Arteries and Veins

- Ulnar artery and superficial palmar arch
- Radial artery and deep palmar arch
- Veins

8. Nerves

- Ulnar nerve
- Median nerve
- Superficial branch of the radial nerve

9. The lymphatic system

10. Applied anatomy

- Hand pathologies
- Tissue healing
- Abnormal positions of the hand and fingers
- Hand anomalies

11. Physiology

Hand and wrist from spinal root level

Developmental physiology of the upper limb and hand

12. Kinesiology of the wrist and hand

Biomechanics & Pathomechanics of the hand

Functions of the hand

The mode of prehension Percussion contact gestures

The positions of function and of immobilization

Partially amputated hands and fictional hands

The motor and sensory function of the upper limb

Motor and sensory tests of the upper limb

Three motor tests of the prehensile ability of the hand

The prehensile ability of the hand

Part II Hand Conditions and Dysfunctions

1. Arthritis
2. Orthopaedic conditions
3. Neurogenic conditions of hand
4. Infections and sequel of the hand
5. Hand burns and sequel
6. Extensor tendon derangements
 - _ Swan neck deformity
 - _ Boutonniere deformity _
 - Duputryens Contracture
7. Hand trauma
 - _ Crush injuries,
 - _ Zones of hand injuries
 - _ Ligamentous injuries
 - _ Volar plate injuries
 - _ Tendon injuries
 - _ Fractures & dislocations of hand & wrist
 - _ Amputation
 - _ Volkman's ischaemic contracture
8. Occupational hand disorders
 - _ Computer operators
 - _ Musicians
 - _ Pneumatic tools operators
 - _ Hand arm vibration syndromes
 - _ Hand cuff and arrest injuries _ Defense injuries
 - _ Mechanics
 - _ Ergonomics advices
9. Other conditions
 - _ Diabetic hand
 - _ Various nail pathologies
 - _ Various hand deformities
 - _ Vascular conditions of the hand

Part III Special Surgical Procedures that require post operative physiotherapy

- Tendon repair
- _ Tendon transfers
- _ Tenolysis
- _ Soft tissue repair / release
- _ Various grafting procedures- skin, nerve, tendon
- _ Amputation & re-implantation _ Arthroplasty .
- _ Modified modquad release
- _ Neurotization
- _ Flaps
- _ Plastic surgical techniques of the hand
- _ Syndactyly release
- _ Nerve transfer surgery
- _ Revascularization procedures

Part IV. Basic of Imaging in Hand and Wrist Disorders like X ray, CT Scan, MRI etc.

M.P.T. Regulations 2018-2019

Reference books

1. **Gray's Anatomy** Richard L. Drake Wayne Vogl Adam W.M Mitchell
2. **Rehabilitation of the hand and upper extremity** 5th edition Mackin
3. **The practice of the hand surgery** 2nd edition Wilamp Hooper
4. **Operative surgery of the hand** 4th edition rob & smith
5. **Environment & occupational medicine** William N 4th edition
6. **Emergency medicine** Judith E Tintinalli 6th edition
7. **Oxford textbook of public health** Roger Delels
8. **Forensic medicine clinical and pathological aspects** Jasm Payne
9. **Orthopedics examination evaluation and intervention** Mark Dutton
10. **Greens operative hand surgery** 5th Ed green hotchkin
11. **Lister's the hand** Paul Smith 4th edition
12. **Campbell's operative orthopedics** S. Terry Canale & Jsmrd
13. **Musculoskeletal disorders in the work place principles and practice** Nordin

Module II Physiotherapy Assessment

Part X Assessment

Unit

1. Hand evaluation
 - Subjective assessment
 - History
 - Objective assessment
 - Inspection
 - Palpatory findings
 - Physical examination
 - Pain assessment
 - Scar assessment
 - Range motion
 - Strength
 - Edema
 - Functional Evaluation Tests
2. Hand evaluation aids
 - Hand dynamometer ,
 - Goniometer ,
 - Sensory evaluation kit ,
 - Sensory-motor integration kit.
 - Digital algometer

Specialty VIII Community Physiotherapy

Module I Anatomy, Physiology and Clinical

conditions Part I Fundamental Concepts Unit

1. Introduction

- Definition of community
- Current status
- Trends and challenges of community Health
- Psycho-social and socio – economical aspects of community

2. Culture

- Primary and secondary characteristics of culture
- Cultural conception of the self
- Breast feeding care in multicultural population
- Food customs and their role in pregnancy and infant feeding

3. Bio-cultural ecology

- Skin color and biological variations
- Endemic, heredity and genetic diseases

4. Epidemiology

- Basic principles
- Distribution of disease
- Determinants of diseases

5. Family

- Origins
- Residence
- Economics
- Education and employment
- Dominant language and communication practices
- Decision making and gender roles in family
- Roles of aged and extended family
- Alternative life style

6. High risk behaviours

- Obesity and functional impairment
- Exercise and nutritional supplementation
- Death rituals
- Spirituality
- Poverty and homelessness

7. Health and Illness: Levels of healthcare & fitness

8. Applied anatomy, physiology and biomechanics related to:

- Women's health
- Mother & child
- Sports
- Industrial health.

9. Social Aspects

- Nutrition and diet

- Physically challenged patient
- Living with chronic illness
- Child care prevention and social medicine
- Immunization programs – malnutrition and early detection of disabling conditions
- Educated child birth, post natal complications and prevention of postural defects, fitness programs
- Drug dependence and iatrogenic disorders

Part II Occupational & Industrial health

- Introduction: Trends, issues, definition, aims, objectives, workplace safety
- Occupational environment- Physical, social, decision making, critical thinking
- Occupational hazards for different categories of people physical, chemical, biological, mechanical, accidents.
- Occupational diseases and disorders

Part III National and International Health

Agencies Part IV Health Disorders

- Preventive aspects of health disorders
- Developmental disorders, pediatric disorders
- Sports, Industrial and occupational disorders
- Geriatric diseases
- Gynecological health, women's reproductive health and health care
- Tuberculosis
- Sexually transmitted diseases, acquired immune deficiency syndrome
- Poliomyelitis, malaria, leprosy, typhoid, cancer
- Hypertension, cardiac disorders
- Occupational lung disorders
- Communicable and non communicable disorders

Module II Physiotherapy Assessment

Part X Detail assessment Procedures Related to the Community

Physiotherapy Unit

1. Disability detection
2. Assessment of musculoskeletal pain
3. Assessment of dysfunction related to community health
4. Disaster evaluation
5. Evaluation and assessment of elderly problems
6. Ergonomic evaluation
7. Kleinman's explanatory model for disability
8. Early detection and intervention
9. Information gathering, surveys, record keeping, report writing, community resources, devising individual programs, plans and evaluating process, monitoring needs, reviews, discharge, communication and participative evaluation
10. Screening and identification of early mental retardation
11. Gross motor and fine motor assessment
12. Screening and assessment check list

Specialty IX Geriatric Physiotherapy

Module I Anatomy, Physiology and Clinical

conditions Part I Introduction to Geriatrics Unit

1. Concepts about aging
 - Myths and stereotypes about aging
2. Biology of aging
 - Longevity, cellular and molecular aging
3. Theories of aging
 - Biological, psychological and sociological theories
4. Cultural aspects of aging
5. Physiological changes in various systems
 - Aging musculoskeletal system
 - Aging and the nervous system
 - Aging cardiac vascular system
 - Aging respiratory system
 - Effects of aging on vascular function.
 - Aging digestive system.
 - Aging immune system.
 - Thermoregulation considerations for aging patients.

Part II Clinical Conditions in Geriatrics

Unit

- Endocrine and metabolic disorders
- Sexual dysfunction in elderly
- Neoplasm in elderly
- Dermatologic diseases and disorders
- Infectious diseases in elderly
- Functional vision changes in aging.
- Functional hearing changes in aging.
- Nutritional deficiency disorders
- Sleep problems in elderly.
- Psychiatric problems in geriatrics musculoskeletal conditions
- Neurological conditions
- Cardio respiratory conditions
- Gastrointestinal disorders
- Urologic disorders in elderly

Module II Physiotherapy Assessment

Part X Detail Assessment Procedures Related to the Geriatric Conditions Unit

1. Principles and concepts of assessment
 - A conceptual framework for examination, evaluation and diagnosis of Elderly
 - Functional assessment of the elderly
 - Environmental design: accommodating sensory changes in the elderly
 - Cognitive impairment
 - Depression and function in the elderly
2. Examination procedures
 - Vascular examination
 - Musculoskeletal examination
 - Neurological examination
 - Physical assessment
 - Cognitive assessment
 - Psychosocial assessment
 - Activities of daily living
3. Geriatric screening
4. Assessment of falls

SPECIALTY PAPER II

PHYSIOTHERAPY INTERVENTIONS

Specialty I Physiotherapy in Orthopedics

Part I Fundamental concepts

Unit

- Basic Skills in Orthopaedic Physiotherapy evaluative procedures
- Physical assessment including relevant investigations of musculoskeletal System and appropriate outcome measures.
- Evidence based practice

Part II Physiotherapy Management Procedures

Unit

1. General musculoskeletal disorders
 - Congenital malformations & deformities
 - Developmental disorders of bone
 - Infections of bone & joints
 - Tumors of the musculoskeletal system
 - Neuro muscular disorders
 - Nerve injuries
 - Soft tissue injuries including burns
 - Spinal deformities
 - Metabolic and endocrine disorders
 - Degenerative joint disorders & arthritis
 - Regional conditions of upper, lower limb & spine
 - Amputation
2. Fractures & Dislocations
 - Fractures & dislocations of upper limb
 - Fractures & dislocations of lower Limb
 - Fractures & dislocations of spine
 - Fractures of pelvis
3. Importance of orthosis, prosthesis & mobility aids in musculoskeletal problems
 - Orthoses & mobility aids – materials, designs and biomechanical compatibility.
 - Applied mechanics in the application of prostheses
 - Procedures in prosthetic & orthotic fabrication of temporary splints for face, upper & lower Limb for support, prevention of deformities & Functional training.

4. Special orthopedic physiotherapeutic approaches

- Physiological and accessory movements, biophysics of contractile and non contractile tissues, response to mechanical loading.
- History of manual therapy. overview of various manual therapy approaches for all the skeletal joints.
- Principles of Assessment, Treatment and Concepts of Maitland, Mulligan, Mckenzie, Kaltenborn, Mobilization
- Principles and application of different soft tissue mobilizations like Myofascial Techniques, Neural Tissue Mobilization, Muscle Energy Technique, Cyriax etc.
- Therapeutic exercise as an adjunct to manual therapy.
- Pilates-school of thought, Chiropractic school of thought, Osteopathic school of thought
- Joint manipulation – peripheral joints and vertebral joints.
- Neuromuscular Taping techniques
- Advances in the field of manual medicine
- Swiss ball therapy
- PNF Techniques

5. Special topics

- Classification of sports specific injuries and its management
- Community based rehabilitation for musculoskeletal disorders
- Ergonomics in musculoskeletal dysfunctions with special emphasis to industrial safety.
- Understanding of disability & its compensation strategies
- Emergency care & musculoskeletal therapeutics
- Role of Physiotherapist as a member in disaster management team.
- Recent advances in pain evaluation & physiotherapy management.
- Team Approach of Physiotherapy management In poly trauma
- Home program & counseling of care givers

Recommended Books

- 1. Skeletal Growth and development: Clinical issues and basic science advances. The Symposium Series** by Joseph A Buckwalter – AAOS
- 2. Introduction to Physical Therapy**, By Michael A. Pagliarulo - Mosby
- 3. Kinesiology: The mechanics and Pathomechanics of Human Movement** by Carol A Oatis - Lippincott
- 4. Cash Text Book for Orthopedics and rheumatology for physiotherapist** by John Elizabeth Cash & Patricia A Downie – Lippincott
- 5. Joint Mobilization / Manipulation: Extremity and Spinal Techniques** by Susan L Edmond – Mosby
- 6. Foundations of Chiropractic** by Meridel I Gatterman – Mosby
- 7. Grieve's Modern Manual Therapy: The Vertebral Column**, By Jeffrey Boyling and Gwendolen Jull – Churchill Livingston
- 8. Kinesiology of the Musculoskeletal System: Foundations for Rehabilitation**, By Donald A. Neumann, PhD, PT – Mosby
- 9. Maitland's Peripheral Manipulation**, By Elly Hengeveld, and Kevin Banks, - Butterworth-Heinemann.
- 10. Maitland's Vertebral Manipulation**, By Geoff D. Maitland, - Butterworth-Heinemann

11. **Hand and Upper Extremity Rehabilitation: A Practical Guide**, By Susan L. Burke, Churchill Livingstone
12. **Manual Therapy for the Peripheral Nerves** By Jean-Pierre Barral, DO(UK) and Alain Croibier, Osteopathe DO, MRO (F) – Churchill Livingstone
13. **Neuromuscular Rehabilitation in manual and physical therapies: Principles and Practice** by Eyal Lederman – Churchill Livingstone
14. **Orthopaedic Physical therapy Secrets** by Jeffrey D Place - Elsevier
15. **Principles and Practice of orthopedics and sports medicine** by Garret
16. **A Physiotherapist's Guide to Clinical Measurement** by John Edward Fox, and Richard Jasper Day – Elsevier
17. **Orthotics and Prosthetics in Rehabilitation**, By Michelle M. Lusardi, PhD, PT and Caroline C. Nielsen, PhD - Butterworth-Heinemann
18. **Clinical Application of Neuromuscular Techniques: The Upper Body** by Leon Chaitow, and Judith DeLany, - Elsevier
19. **Handbook of Postsurgical Rehabilitation Guidelines for the Orthopedic Clinician By Hospital for Special Surgery** – Mosby
20. **An Illustrated Guide to Taping Techniques – Principles & Practice** By Thomas John Hewetson – Mosby
21. **Paraplegia & Tetraplegia A Guide for Physiotherapists** by Ida Bromley – Churchill Livingstone
22. **Therapeutic exercises using swiss ball** By Caroline Corning Creager – Executive Physical therapy
23. **Manual Mobilization of the Joints – The Kaltenborn Method Volume I, II** By Freddy Kaltenborn
24. **Treat your own Back** by Robin McKenzie
25. **Treat your own Neck** by Robin McKenzie
26. **Cervical and Thoracic spine : Mechanical Diagnosis & Therapy Vol I & II** By Robin McKenzie
27. **The Lumbar Spine: Mechanical Diagnosis & Therapy Vol I & II** By Robin McKenzie
28. **The Human Extremities: Mechanical Diagnosis & Therapy** by Robin McKenzie
29. **Manual Therapy** by Brian R Mulligan
30. **Documentation for Rehabilitation: A Guide to Clinical Decision Making**, By Lori Quinn, and James Gordon - Saunders
31. **Clinical Orthopaedic Rehabilitation** by S Brent Brotzman
32. **Treatment and rehabilitation fractures** by Vasantha L Moorthy & Stanley Hoppenfield - Lippincott
33. **Physiotherapy for Amputees: The Roehampton Approach** by Barbara Engstrom – Churchill Livingstone
34. **Textbook of orthopedic medicine Vol I & II** by James Cyriax - Bailliere

Specialty II Physiotherapy in Neurology

Part I. Foundational Concepts in Neurological Physiotherapy

Unit

1. History of neurological physiotherapy
2. Motor development concepts
3. Motor control and its clinical applications
4. Motor learning and its clinical applications
5. Recovery of function and neural plasticity
6. Conceptual framework for clinical practice
7. Constraints of motor control (Neurological impairments)

Part II. Special Neuro Physiotherapeutic Approaches

Unit

1. Traditional approaches
 - Compensatory training approach
 - Muscle reeducation approach
 - Neuro physiological approaches
(Bobath, Brunnstrom, Roods, PNF, Sensory integration therapy)
2. Contemporary approaches
 - Motor relearning programme
 - Task oriented approach (Shumway cook)
 - Novel approaches
 - Constrained movement therapy
 - Body weight supported treadmill training
 - Functional electrical stimulation
 - Neuro muscular electrical stimulation (NMES)
 - Mirror box therapy
 - Mental imagery technique
 - Virtual reality therapy
 - Robotic movement therapy (MAT)
 - Bimanual approach
 - Biofeedback
 - Neuro dynamics in neurological conditions
3. Eclectic approach

Part III. Physiotherapy Intervention for Neurological Conditions

Unit

1. Disorders of the motor unit (Neuromuscular diseases)
 - Disorders of muscle (Myopathies)
 - Myasthenia gravis and other disorders of neuromuscular transmission
 - Disorders of the peripheral nervous system
 - Disorders of the anterior horn cells (Neuronopathies)

2. Disorders of the central motor control
 - Disorders of the spinal cord
 - Spinal Cord Injury
 - Parkinsonism and movement disorders of the basal ganglia
 - Disorders of the cerebellum and its connection
 - Traumatic brain injury
 - Cerebrovascular disease (Stroke)
 - Multiple sclerosis and other central other central demyelinating diseases
 - Vestibular disorders
 - Cerebral palsy
 - Neural tube defects
 - Cranio - vertebral junction anomalies

3. Other conditions
 - Learning disorders
 - Visual dysfunction
 - Cognitive and perceptual dysfunction
 - Adverse effects of immobilization on the musculoskeletal system
 - Adverse effects of immobilization on visceral function
 - Miscellaneous conditions

Part IV. Special Topics

Unit

1. Vestibular rehabilitation
2. Pain management
3. Retraining of bladder and bowel dysfunctions
4. Management for oromotor dysfunctions
5. Visual deficits and its management
6. Myofascial release technique
7. Swiss ball therapy
8. Orthotics for neurological conditions
9. Alternative and complementary therapies
10. Craniosacral therapy.

Recommended Books

General Neuro physiotherapy

1. Neurological rehabilitation by Darcy A.Umphred, 5th Edition, 2007 (Mosby Elsevier Publication.)
2. Physical management in neurological rehabilitation by Maria Stokes (Elsevier Mosby publication 2004)
3. Physiotherapy in neuro conditions by Gladys Samuel Raj (Jaypee brothers 2006)
4. Spinal cord injury functional rehabilitation by Martha Freeman Somers, 2nd edition (Prentice Hall publication)
5. Physiotherapy in disorders of the brain : A clinical guide by Janet H.Carr and

- Roberta B. Shepherd (William Heinemann medical books limited)
6. Cash textbook of Neurology for physiotherapists by Patricia Downie, 4th edition (Jaypee Wolf 1992)
 7. Neurologic interventions for physical therapy by Suzanne Tink Martin and Mary Kessler, 2nd edition (Saunders Elsevier)
 8. Functional neurorehabilitation through the life span by Dolores B. Bertoti (F.A. Davis Company 2004)
- Neuro physiotherapeutic approaches
1. Brunnstrom's movement therapy in hemiplegia: A neurophysiological approach by Kathryn A. Sawner and Jeanne M. La Vigne, 2nd edition (Lippincott Company 1992)
 2. Motor control: Translating research into clinical practice by Anne Shumway - Cook And Marjorie Woollacott, 3 edition (Lippincott Williams and Wilkins)
 3. Neuro developmental treatment approach : theoretical foundations and principles of clinical practice by Janet M. Howle (NDTA2002)
 4. PNF in practice: Susan Adler
 5. Vestibular rehabilitation by Susan J.Herdman, 2nd edition (F.A. Davis Company 2000)
 6. Mobilization of the nervous system by David S.Butler (Churchill Livingstone 1996)
 7. Myofascial release and NDT
 8. Stroke Rehabilitation: Guidelines for exercise and training to optimize motor skill By Janet Carr and R. Shepherd (Elsevier, 2003)
 9. Neurological Rehabilitation, Optimizing motor performance by Janet Carr and R. Shepherd (Butterworth and Heinemann Ltd, 2004)
 10. Functional Movement Reeducation – A contemporary model for stroke Rehabilitation by Susan Ryerson and Kathryn Levitt (Churchill Livingston and Elsevier, 1997)
 11. A Motor Relearning Programme for Stroke by Janet Carr and R. Shepherd (Butterworth and Heinemann Ltd, Oxford Publication)

Specialty III Physiotherapy in Cardio Respiratory Conditions

Part I Basic Foundations

Unit

1. History of Cardio pulmonary Physiotherapy
2. Concepts in Cardio-respiratory Physiotherapy
3. Concepts in Cardio-pulmonary Rehabilitation.
4. Principles, Program planning and implementation.

Part II Special Techniques

Unit

- Body positioning techniques
- Relaxation techniques
- Breathing exercises
- Breathing re-education techniques
- Advanced airway clearance techniques
- Facilitating ventilatory patterns and breathing strategies
- Evidence based practice in Cardiac Rehabilitation
- Evidence based practice in Pulmonary Rehabilitation
- Ventilator – dependent patient
- Adjuncts to Chest Physiotherapy
 - Humidification
 - Nebulization
 - Aerosol delivery
 - Mechanical ventilation (Invasive, Non Invasive)
 - Airways
 - Tracheostomy care
 - Suction
 - Manual hyper inflation
 - Lung expansion therapies
- Mobilization

Part III Management for Clinical Conditions

Unit

1. Cardio vascular system
 - Cardiac conditions
 - Peripheral vascular diseases

2. Respiratory system

Obstructive, Restrictive, Suppurative, Infective, Occupational lung diseases, Chest trauma, Chest wall deformities, Lung cancers, Children and Neonates

1. Physiotherapy Management after Surgery
2. Life-style modifications; stress modification by exercise
3. Cardio-pulmonary fitness training and disability evaluation
4. Scientific basis for exercise program
5. Fitness for cardiac patients – Normal & Abnormal Cardiac activity and effects on Cardio – vascular system
6. Effects of various exercise regimens on CVS and body.
7. Importance of team work and infection control.

Recommended Books

1. Cardio pulmonary physical therapy by Scott Irwin
2. Cardio pulmonary physical therapy by Donna frownfelter
3. Principles of cardio pulmonary physical therapy by Asbury & Petty
4. Cardio pulmonary physical therapy by HelenHillegas, (Saunders)
5. PT for RT & cardiac problems by Weber
6. Cardio pulmonary physical therapy by Joanne Watchie
7. Physiotherapy for respiratory and cardiac problems by Pryor JA; Prasad SA, Elsevier
8. Respiratory care – A guide to clinical practice by Burton G.G. & Hodgkin
9. Brompton's Chest Physiotherapy
10. Physiotherapy in respiratory care by Hough a Jaypee Publishers
11. Chest physiotherapy in intensive care unit by Mackenzie CF Williams and Wilkins
12. Cardiovascular and Pulmonary physical therapy by Felter D.F. Mosby
13. Exercise and the heart by Froelicher V.F. Elsevier
14. Cardiovascular health and disease in women by Douglas PS. Saunders
15. Acute care handbook for physical therapist by Jamie C.Paz Michel P. West. Butterworth Heine Mann
16. Physical therapy for children by Campbell Suzann K, W.B Saunders, Philadelphia
17. Chest physiotherapy in Intensive care unit by Mackenzie, Williams & Wilkins, Baltimore
18. Cardiopulmonary symptoms in physiotherapy by Cohen M, Churchill, Livingstone, London
19. Physical rehabilitation: assessment and treatment by O'Sullivan, F.A Davis, Philadelphia
20. Clinical application of ventilatory support by Kinky Churchill, Livingstone, New York
21. Pulmonary rehabilitation: guidelines to success by Bodkins, Butterworth, Boston
22. Cardiac rehabilitation by Amundsen lord, Churchill, Livingstone, London
23. Physical therapy of the cancer patient by McGaryex Charles, Churchill, Livingstone, New York
24. Multidisciplinary approach to breathing disorder by Leon
25. Clinical Exercise testing by Jones
26. Pulmonary rehabilitation. The Obstructive and Paralytic Conditions by John
27. Coronary artery disease essentials of prevention and Rehabilitation Program by Peter
28. Pulmonary Rehabilitation by John Hodgkin (Elsevier)

Specialty IV Physiotherapy in Pediatrics

Part I Fundamental Concepts

Unit

1. Motor control
 - Theories, variables, motor skill acquisition in children
2. Motor Learning
 - Theories, motor learning constructs, motor learning and teaching strategies
3. The child's development of functional movement
 - Motor development theories
 - Developmental processes and principles
 - Stages of motor development
4. Reflexes and Reactions
 - Survival and vestigial reflexes
 - Attitudinal postural reflexes
 - Righting reactions
 - Balance reactions
5. Ethical and Legal Framework of pediatric Physical therapy practice
6. Models of team interaction and service delivery in pediatric Physical Therapy practice

Part II Advanced Approaches used in Pediatric Physical

Therapy Unit

1. Special approaches
 - Neurodevelopment therapy
 - Sensorimotor approach
 - Sensory integration therapy
 - Proprioceptive neuromuscular facilitation
 - Electromyography biofeedback
 - Constraint-induced movement therapy
 - Myofascial release
 - Mobilization and manipulations
 - Muscle energy technique
 - Advanced airway clearance techniques
2. **Early intervention services**
 - Effectiveness and implications for pediatric Physical Therapy practice
 - Family centered Care
 - Role of Physical therapist
 - Elements of early intervention

Part II Physical Therapy management

1. Management of Pediatric Neurological, Musculoskeletal and Cardiopulmonary conditions using advanced Physical Therapy interventions.
2. PT for pediatric orthopaedic conditions
3. Role of Physical therapist in Neonatal and Pediatric Intensive care units
4. Cardiopulmonary resuscitation in children
5. Sports injuries in children

Components of physical performance and sports

Performance Physiotherapy management for sports injuries

6. Genetic syndromes

Physical therapy management for various genetic syndromes resulting in neurological, Musculoskeletal and cardiopulmonary impairments.

7. Pediatric oncology

Physical therapy interventions for different types of cancers, bone marrow Transplantation and terminal disease

8. Burns

Physical therapy management in emergent, acute, skin graft, rehabilitation and Reconstructive phases

Splinting, pressure garments and inserts

9. Assistive technology

- Role of assistive devices
- Determining a child's equipment needs and equipment selection
- Commonly used equipments

Recommended Books

1. **Pediatric Physical Therapy** , Jan Stephen Tecklin, 3rd (1999) and 4th (2008) editions, Lippincott Williams & Wilkins.
2. **Physical Therapy for Children** , Suzann K.Campbell, 3rd edition, 2006, Saunders Elsevier.
3. **Physiotherapy for Children**, Teresa Pountney, 2007, Butterworth Heinemann Elsevier.
4. **Meeting the Physical Therapy Needs of Children** , Susan K.Effgen, 2005, F.A.Davis Company, Philadelphia.
5. **Physiotherapy in Pediatrics**, Roberta B. Shepherd, 3rd edition, 1995, Butterworth Heinemann.
6. **Neurologic Intervention for Physical Therapist Assistant**, Martin Kessler, 1st & 2nd Edition, 2008, W.B.Saunders Company Ltd.
7. **Physiotherapy and the growing child** , Yvonne R Borna & Julie MacDonald, 1996, W.B.Saunders Company Ltd.
8. **Pediatric Rehabilitation**, Gabriella E. Molnar, 3rd edition, 1999. Hanly & Belfus, Philadelphia.
9. **Treatment of Cerebral Palsy & Motor Delay** , Sophie Levett, 4th edition, 2004. Blackwell Publishing.
10. **Pediatric Therapy, A Systems Approach** , Susan Miller Porr, 1999, F.A.Davis Company.
11. **Reflex and Vestibular Aspects of Motor Control, Motor Development and Motor Learning** , R.Barnes, Carolyn A Crutchfield, 1990, Stokesville Publishing Company.
12. **Neurological Rehabilitation**, Darcy A. Umphred, 4th & 5th edition, 2007, 2001, MOSBY Elsevier.
13. **Physical Rehabilitation**, Susan B.O Sullivan, 4th & 5th editions, 2007, Jaypee Brothers.
14. **Cash's Textbook of Neurology for Physiotherapists**, Patricia A. Downie, 4th edition, 1992, Jaypee Brothers.

15. **Cardiovascular & Pulmonary Physical Therapy evidence & practice** , Elizabeth (Dean & Donna frownfelter, 3th (1996) & 4th (2006) editions, MOSBY Elsevier.
16. **Pediatric Physical Examination**, Karen G.Dunder Stadt, 2006, MOSBY Elsevier.
17. **Clinics in Physical Therapy Assessment in Early Infancy**, Edited by Irmaj. Wilhelm, 1993, Churchill Livingstone.
18. **Motor Assessment of the Developing Infant** , Martha Copier, 1994, Saunders.

Specialty V Sports Physiotherapy

Part I Advanced Physiotherapy Intervention Techniques used in the Management of Sports Specific Injuries.

Mobilization and manipulation (peripheral and spinal)
Deep dynamic myofascial techniques
Trigger point release
Soft tissue & sports massage
Neural tissue mobilization
Muscle energy technique
Sports taping and wrapping
Proprioceptive neuromuscular techniques (PNF)
Core Exercises - pilates, swiss ball exercises,
stabilization exercises Therapeutic exercise prescription

Therapeutic modalities and procedures in sports

Prevention of Athletic Injuries
Warm – up period
Fitness training related to specific sports
Well balanced diet, pre event nutrition, increasing weight, decreasing weight in wrestlers, carbohydrate loading diet, sugar before and after competition.
Proprioception training
Plyometric training
Eccentric muscle training
Muscle training and conditioning programme
Stretching
Athletic emergency care and first-aid
Principles of injury prevention
Protective and supportive equipments
Individualized treatment programmes, protocols, preventive exercises, conditioning exercises, taping and wrapping techniques used for sports specific injuries

PART – II Individualized treatment programmes, protocols, preventive exercises, conditioning exercises, taping and wrapping techniques used for following sports injuries such as

- Head, face and neck
- Shoulder
- Elbow, forearm, wrist and hand
- Trunk (Hip, Spine and Ribs)
- Internal (Abdominal/Thoracic)
- Knee, Patella and thigh.
- Lower leg, ankle and foot
- Epiphysis
- Skeletally immature athletes, female athletes and differently baled
- Injuries Related to Specific Sports - E.g. Foot Ball, Volley Ball, Basket Ball, Swimming, Running athlete etc.

Part III Special Topics

- Medico legal issues in sports
- Analysis of fitness and exercise prescription for special population – CP, Downs syndrome, polio, MD, Obesity.
- Effects of exercise on various hormones in the body.
- Exercise and Menstrual cycle.
- Effects of exercise on temperature regulation.
- High altitude training.
- Exercises for mood enhancement and anxiety.
- Sports and fitness in paediatrics.
- CPR and shock management during off and on field.
- Nutrition, pharmacology and psychology in sports
- Sports specific fitness training
- Ergonomics for sports
- Fitness testing and evaluation
- Fitness programming for healthy adults and special population

Recommended Books

- 1) Orthopedic Sports Medicine, Delee Drez Miller, 3rd edition: 2009, Saunders Elsevier
- 2) Sports Physiotherapy, Maria Zuluaga, Christopher Briggs, John Carlisle.
- 3) Sports Injury Assessment and Management, David C Reid.
- 4) Orthopedic and sports physical therapy, Terry R. Macone: 3rd edition, 1997: Mosby.
- 5) Post surgical orthopedic sports rehabilitation knee and shoulder , Robert C. Maske: 2006: Mosby Elsevier.
- 6) Sports injuries diagnosis and management , Christopher N. Norris: 2nd & 3rd edition: 1998: BH.
- 7) Sports medicine secrets, Hanley and beltors, 2nd edition: 2001: jaypee.
- 8) Sports injuries prevention and their treatment, Lass Peterson: 1st edition: 2001: Martin dunitz.
- 9) Sports medicine problem and practical management, Eugene sherry, 1st edition: 1997: GMM.
- 10) Exercise and sports science, Garrett, Kirkendall: 2000: Lippincott Williams And Wilkins.
- 11) ACSM'S essentials of sports medicine, Robert E. salhi, fredy massimino: 1997: Mosby.
- 12) Sports medicine in primary care , Rob jonson M.D: 2000: saunders company.

Specialty VI Physiotherapy in Obstetrics and Gynaecology

Part I Foundations of Physiotherapy in Women's Health

Unit

1. Historical perspective of women's health care
2. Patient education in women's health
3. Psychological issues associated with women's health

Part II the Adolescence Female

Unit

1. Adolescence and musculoskeletal system
2. Exercise for adolescence.

Part III Physiotherapy in Childbearing Year

Unit

1. Importance of prenatal exercise and benefits of exercise in pregnancy.
2. Exercise class structure.
3. Indications, contraindications and precautions.
4. Various exercises during pregnancy – flexibility, strengthening and Conditioning Exercises.
5. Pregnancy discomforts and its physiotherapy management
6. Relaxation technique in prenatal education
7. Physiologic basis for relaxation training
8. Various relaxation techniques
9. Psycho analgesic methods of pain control
10. Ergonomics
11. Physiotherapy management of musculoskeletal dysfunction during pregnancy
12. Physiotherapy management of high risk pregnancy, GDM, Hypertension
13. Edema management
14. Weight training in pregnancy.

Part IV Management of Labor, Physiotherapy Interventions during Labor and

Postpartum Care

Unit

1. Pain during labor and various coping techniques
 - Relaxation
 - Positioning
 - Breathing during various stages of labor
 - Electrical modalities for pain reduction
 - Massage, Perineal massage.
 - Other techniques
2. Immediate post natal complications and its management
3. Late post natal complications and its management
4. Ergonomics
5. Breast feeding positions

Part V Musculoskeletal Lifespan Issues in Women's Health

Unit

1. Musculoskeletal disorders during the middle years and beyond
2. Women and heart disease
3. Post menopausal problems and its management
4. Osteoporosis: Physiotherapy, prevention and intervention

Part VI Physiotherapy Management for Gynecological Disorders

Unit

1. Physiotherapy care of patients undergoing gynecological surgery
 - Psychological aspects of gynecological surgery
 - Preoperative physiotherapy, assessment and treatment
 - Post operative physiotherapy, assessment and treatment
 - Post operative complications and its management
 - Discharge advice
2. Treatment and management of urinary incontinence
 - Ethical principles in pelvic floor physiotherapy
 - Historic perspective of pelvic floor muscle training
 - Evidence based physiotherapy for UI in during pregnancy and childbirth
 - Pelvic floor muscle exercise in the treatment of UI / Pelvic floor and Exercise science
 - Advanced manual therapy for the pelvic floor
 - Pelvic floor stability and trunk muscle co –activation
 - Biofeedback
 - Ultrasound
 - The use of exercise balls
 - Therapeutic electrical stimulation
 - Bladder training and behavioral training
 - Pelvic floor dysfunction and evidence based physiotherapy
 - Physiotherapy management for fetal incontinence and bowel dysfunction
 - Evidence based physiotherapy for neurological diseases
 - Evidence based physiotherapy for the elderly
 - Evidence based physiotherapy in men

Part V Oncologic Issues with Women's Health

Unit

1. Physiotherapy Management of breast cancer sequel
2. Lymphodema management

Part VI Special Topics within Women's Health

Unit

1. The female athlete
The athletic women / women and exercise
Pelvic floor physiotherapy for elite athletes

2. Exercise issues and aging
3. Aquatic therapy services in women's Health
4. Physiotherapy management of women with long term physical disabilities

Part VII Electrical Modalities in OBG

TENS, IFT, Ultra Sound, Electrical Stimulation, Biofeedback, SWD.

Recommended Books

1. Ruth Sapsford, Joanne Bullock Saxton, Sue Markwell, "Women's Health: A Textbook for Physiotherapists, 1998, Bailliere Tindall.
2. Physiotherapy in Obstetrics and Gynecology, Margaret Polden and Jill Mantle, Butterworth-Heinemann Publishers, Stoneham, MA, 1990
3. Obstetrics and Gynecologic Physiotherapy , Elaine Wilder, Churchill Hill Livingstone.
4. Rebecca G. Stephenson, Linda J. O' Connor, "Obstetric and Gynecologic Care in Physical Therapy", 2000, Slack Incorporated 2 edition.
5. Carolyn Kisner, Colby Allen Lynn, "Therapeutic Exercise Foundations and Techniques, 5th Edition.
6. Bo, Kari; Berghmans, Bary, "Evidence-based Physical Therapy for the Pelvic Floor: Bridging Science and Clinical Practice", 2007, Churchill Livingstone (London)
7. Irion, Jean M.; Irion, Glenn, " Women's Health in Physical Therapy: Principle and Practices for Rehabilitation Professional", 2009, Lippincott Williams and Wilkins (Philadelphia).
8. David Wise, Rodney U. Anderson, J. Laycock, "Therapeutic Management of Incontinence and Pelvic Pain: Pelvic Organ Disorders", 2007, Springer; 2nd Ed. Edition.
9. Matthew Parsons, Linda Cardozo, "Female Urinary Incontinence in Practice", 2004, Royal Society of Medicine Press.
10. John Cox and Jeni Holden, "Perinatal Mental Health - a guide to the Edinburgh Postnatal Depression Scale", 2003, Gaskell Publisher.
11. Carrie Hall and Lori Thein Brody, "Therapeutic Exercise: Moving Towards Function, 2005, Lippincott Williams & Wilkins.
12. Padubidri Vg Shirish N Daftary, Shaw's Textbook Of Gynecology, Elsevier India P Ltd 2008.
13. Gary Cunningham et al, Williams Obstetrics, McGraw Hill Professional, 2001
13. Kevin P Hanretty, et al, Obstetrics Illustrated, Churchill Livingstone; 6 edition (May 15, 2003) 2003.
14. David MaKay Hart, et al Gynaecology Illustrated, Churchill Livingstone 2000.

Specialty VII Physiotherapy in Hand Conditions

Part I Foundational Concepts

Part II Part I Physiotherapy Management for Hand conditions & Dysfunctions Part III Special Techniques

- Edema control
- Splinting position & techniques
- De-sensitization
- Motor re-education
- Restoration of ROM
- Joint mobilization techniques
- Soft tissue techniques in hand
- Scar mobilization
- Sensory reeducation
- Pain management
- Hand protection & hand care
- Therapeutic exercises
- Muscle strengthening & endurance
- Roping
- Taping Technique
- Modalities in the PT management of hand conditions
- PNF
- Arthroplasty Physiotherapy protocols
- Physicaltherapy for Amputees and prosthetic hand training.

Part IV Evidence Based Physiotherapy Protocols in Hand Conditions

Various protocols for flexor & extensor tendon injury

Hand burns

Post operatory management of skin graft

Post op management after simple hand surgery

Arthroplasty protocol

Wound care

Short arc motion (Sam) protocol

Flexor tendon repair- kleinert protocol

Part V Special Considerations

Psychology of loss, self-image, self-esteem and recovery;

Social impact of upper limb trauma and disease

Disability Evaluation and compensation in hand injuries.

Recommended books

1. Rehabilitation of the Hand and Upper Limb 1st edition / Prossers Conolly
2. Examination of the Hand and Wrist 2nd edition / Tubiana, Thomine, Mackin
3. Hand Therapy Principles and Practice 1st edition / Salter, Cheshire
4. Common Hand problems in Primary Care 1st edition / Cancannon
5. Hand Pain and Impairment 3rd edition / Cailliet
6. Hand Rehabilitation 1st edition /Jalkenstein, Cessard

Specialty VIII Community Physiotherapy

Part I Foundational Concepts in Community Physiotherapy

Unit

1. Historical development of community health and community Physiotherapy-World and India, various health and family welfare committees
2. Principles of community based rehabilitation
3. Population studies and epidemiological implications of impairment, disability and handicap
4. Basic concepts of community based rehabilitation
5. Physiotherapist as a master trainer in CBR.
6. Bioethics ethico-moral codes of conduct physiotherapy ethics
7. Evidence based practice in community health.
8. Clinical decision-making skill in assessment & management of dysfunction related to community health.
9. Scope of Physiotherapy in community
10. Multicultural psychology and its influence on psychosocial rehabilitation

Part II Physiotherapy Interventions in Community

Unit

1. Physical fitness
2. Principles of fitness training for health promotion in community
3. Stress management through yoga and psychosomatic approaches.
4. Home exercise programs for various classifications of disabilities.
5. Physiotherapy in maternal and child health care.
6. Exercise prescription for the elderly
7. Psychosocial and safety issues in elderly
8. Geriatric rehabilitation
9. Holistic physiotherapy for the aged.
10. Community mental health

Part III Physiotherapy in Occupational and Industrial Health

Unit

1. Industrial hygiene
2. Vulnerable workers group and labor law
3. Industrial Physiotherapy
4. Injury prevention and returning the worker to productivity
5. Ergonomics: principles, issues related to hand tools, posture, material handling and lifting
6. Prevention of work related injuries and redesigning workspace, designing auditory and visual displays for workers; occupational stress; environmental pollution – noise, vibration etc.
7. Assistive technology used for stability & mobility to enhance function
8. Appropriate technology, skill transfer, sustainability, disability evaluation, concessions available to persons with disability.
9. Application of & environmental modification techniques to improve quality of life. information, education and communication

Part IV Role of Physiotherapist in National Health Care Delivery System

Unit

1. Health care delivery programme in urban and rural areas
2. Disability survey
3. Epidemiological aspects and demands of Physiotherapy services
4. Concept of rural camps and integration of infrastructural service and voluntary agencies, extension services and mobile units.
5. Institute based rehabilitation services and multi-disciplinary approach.
6. Methodology of CBR with reference to national health delivery system.
7. Role of national institutes, district rehabilitation center and primary health center (with appropriate exposure).
8. Public awareness to the various disabilities.
9. Communications.
10. Message generation and dissipation.
11. Persons with disability; Act – 1995 and related Government infrastructure.
12. Role of Government in CBR
13. Implementation of the act, Role of non Governmental agencies in CBR

Part IV Special Considerations in Community

Unit

1. Advances in disaster management.
2. Role of Physiotherapist as a member in disaster management team.
3. Health care in the community – Principles & delivery systems
4. IEC/BCC: Principles and strategies communication skills management information and evaluation system: records and reports information technology tele-medicine and tele-physiotherapy journalism mass media
5. Regulatory agencies & legal issues
6. Legal issues: Legislation, labor unions, ILO and WHO recommendations, factories Act, ESI act
7. Recent advances in community physiotherapy
8. Research in community PHYSIOTHERAPY

Recommended Books

1. Developing cultural competence in physical therapy practice, Jill black lattanzi, Larry D. Purnell (2006 F.A. Davis).
2. Industrial therapy, Key.G.L. (1987 Mosby)
3. Physiotherapy in the community , Gibson, Ann. 1988, Woodhead-Faulkner (Cambridge, Wolfeboro, N.H., USA)
4. Community Rehabilitation in Neurology, Michael P. Barnes, Harriet Radermacher, Cambridge University Press 2009
5. Community Care for Health Professionals, Ann Crompton and Mary Ashwin, (Butterworth – Heinemann 2000)

Specialty IX Geriatric Physiotherapy

Part I Foundations of Geriatric Physiotherapy

Unit

1. Implications of an ageing population for rehabilitation
2. Communication values and quality of life
3. Physiological changes associated with ageing
4. Arthrokinesiologic consideration in the aged adult
5. Sensory motor changes and adaptations in the older adult
6. Ethical and legal issues in geriatric Physiotherapy
7. Patient education as intervention

Part II Intervention for Common Geriatric Clinical Manifestations

Unit

1. Impaired ventilation and respiration in the older adult
2. Muscle fatigue and impaired muscle endurance in the older adults
3. Endurance training of the older adult
4. Posture in the older adults
5. Balance and falls in the elderly: issues in evaluation and treatment
6. Urinary incontinence and impairment of the pelvic floor in the older adult
7. Conservative pain management for the older patient
8. Chronic dermal wounds in older adult

Part III Physiotherapy Procedures used in Geriatric population

Unit

1. Functional training
2. Ambulation: A framework of practice applied to a functional outcome
3. Lower extremity orthotics in geriatric rehabilitation
4. Lower limb prosthetic requirement in the older adults

Part IV Programs for Special Population

Unit

1. The frail and institutionalized elder
2. The well elderly
3. The older athlete
4. Older persons with developmental disabilities

Recommended Books

1. **Geriatric Physical Therapy** by Andrew A. Guccione, 2nd Edition (Mosby 2000)
2. **Developing cultural competence in Physical Therapy Practice** by Jill Black Lattanzi, Larry D. Purnell (F.A.Davis Company, Philadelphia 2006)
3. **Rehabilitation of the aging and elderly patient** by Gerald Felsenthal, Susan J. Garrison, Franz U. Steinberg (Williams & Wilkins 1994)
4. **Physical Therapy of the geriatric patient** by Jackson Osa. Churchill Livingstone. New York
5. **Geriatric Physical Therapy: A Clinical Approach** by Carole B. Lewis and Jennifer Bottomley (1993)
6. **Geriatric Rehabilitation Manual** by Timothy L. Kauffman (1999)
7. **Manual of Geriatric Rehabilitation** by David X. Cifu (2003)
8. **Functional Fitness for Older Adults** by Patricia A. Brill (2004)
9. **Epidemiology of Aging – An ecological approach** by William A. Satariano (Jones And Bartlett publishers, 2006).
10. **Little Black book of Geriatrics**, by Karen Gershman, McCullough Dennis 4th Edition (Jones and Bartlett publishers, 2008).
11. **Burnside's working with older adults, Group process and techniques** by Barbara Haight, Faith Gibson; 4th Edition (Jones and Bartlett publishers, 2005).