

4TH YEAR B.P.T

COURSE CODE: B.P.T -401

Course Title: Neurology Including Psychiatry and Neurosurgery: (NPNS) Theory (L)

NPNS 1.0. Subject Description

This subject follows the basic science subjects to provide the knowledge about relevant aspects of neurology & psychiatry. The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that after lectures and demonstration the student will be able to list the etiology, pathology, clinical features and treatment methods for various neurological and psychiatric conditions and appreciate the role of Physiotherapy in overall management of patient.

NPNS 1.0.1. Course Outcomes: Neurology Including Psychiatry and Neurosurgery

After completion of this course the student shall be able to

1. Describe the aetiology, pathophysiology, clinical manifestations, diagnostic measures and management of patients with disorders of Central Nervous system Peripheral Nervous system and Neuro-Muscular system
2. Demonstrate competencies in identifying common clinical signs of various neurological disorders
3. Demonstrate knowledge in common diagnostic procedures used in differential diagnosis of neurological and psychiatric disorders (Blood investigations, Radiologic procedures)
4. Appreciate the role of different specialist in diagnosing and managing the neurological and psychiatric disorders.

Course Contents: B.P.T Neurology Including Psychiatry and Neurosurgery 401 NPNS Theory (L)

SECTION -A

Unit 1

NPNS 1.1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping. Classification of neurological involvement depending on level of lesion.

NPNS 1.2. Reviews in brief the neurophysiologic basis of tone and Disorders of tone and Posture, Bladder control, Muscle conduction, Movement and Pain, Management of Pain, Electrical Stimulation of Brain and Spinal cord.

NPNS 1.3. Trauma - Broad localization, first aid and management.

NPNS 1.4. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.

1. Basic history taking to determine whether the brain, spinal cord or peripheral nerve is involved.
2. Assessment of higher mental function such as Orientation, Memory, Attention, Speech and Language.
3. Assessment of Cranial nerves.
4. Assessment of Motor system.
5. Assessment of Sensory function, Touch, Pain and Position.
6. Assessment of Tone-Spasticity, Rigidity and Hypotonia.
7. Assessment of Cerebral function.
8. Assessment of Higher cortical function - Apraxia.
9. Assessment of Gait Abnormalities.

NPNS 1.5. Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures- skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV.

NPNS 1.6. Deafness, vertigo, and imbalance: Physiology, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo.

NPNS 1.7. Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct. Classification of stroke – Ischemic, hemorrhagic, venous infarcts. Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke. Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management.

NPNS 1.8. Spinal cord disorders: Functions of tracts, definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Brain injury, Compression by Space occupying lesion, infections of brain, etc.

NPNS 1.9. IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcoidosis

NPNS 1.10. Motor neuron diseases: - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy.

Unit 2

NPNS 2.1. Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management.

NPNS 2.2. Movement disorders: Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athetosis, Tics, Myoclonus and Wilson's disease.

NPNS 2.3. Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications

NPNS 2.4. Cerebellar and coordination disorders: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia telangiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis.

NPNS 2.5. Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical & surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizures, and Epilepsy syndromes in adult. Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive-compulsive disorders. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of Brain death. Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders. Alzheimer disease

Unit 3

NPNS 3.1. Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism.

NPNS 3.2. Muscle diseases: Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counseling. Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia.

NPNS 3.3. Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, acute idiopathic Polyneuropathies. Guillain-Barre syndrome – Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy.

- NPNS 3.4. Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia. Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostal nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudendal nerve palsy.
- NPNS 3.5. Paediatric neurology: Neural development, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplasia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome.
- NPNS 3.6. Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Pant & Fungal poisoning, Animal poisons, & Complications of organ transplantation.
- NPNS 3.7. Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.
- NPNS 3.8. Introduction, Indications and Complications of following Neuro surgeries: Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery – Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation

Unit 4

- NPNS 4.1. Psychiatric Disorders: Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry. Modalities of psychiatric treatment, Psychiatric illness and physiotherapy, Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses -. Anxiety neurosis, Depression, Obsessive compulsive neurosis, Psychosis, Maniac-depressive psychosis, Post-traumatic stress disorder, Psychosomatic reactions: Stress and Health, theories of Stress – Illness.
- NPNS 4.2. Etio-pathogenesis, manifestations, and management of psychiatric illness
- NPNS 4.3. Drug dependence and alcoholism, Somatoform and Dissociate Disorders – conversion reactions, Somatization, Dissociate Amnesia, and Dissociate Fugue, Personality disorders
- NPNS 4.4. Child psychiatry - manifestations, and management of childhood disorders - **Intellectual Disability** attention deficit syndrome and behavioral disorders.

PRACTICAL / CLINICAL

LONG CASE SHORT CASE examination of neurological patients history taking, motor sensory reflex examination, interpretation of investigative findings, diagnosis differential diagnosis

Recommended Text Books for NPNS

1. Davidson's Principles and practices of medicine - Edward – Churchill Livingstone.
2. API- Text book of Medicine, 5th edition
3. Medicine and Neurology by Golewala.

Recommended Reference Books for NPNS

1. Brain's Diseases of the Nervous System - Nalton – ELBS.
2. Guided to clinical Neurology - Mohn & Gaectier - Churchill Livingstone. 3. Principles of Neurology - Victor – McGraw Hill International edition.
3. Neurological Rehabilitation - Darcy Umphred.

Course Title: Physiotherapy in Adult and Paediatric Neurological and Neurosurgical Conditions: (PTN) Theory (L) Practical (P)**PTN 1.0. Subject Description and instruction to teacher**

This course follows the courses in exercise therapy and electrotherapy and intends to impart the knowledge and skill in using Physiotherapy techniques for the management of common medical and surgical conditions affecting nervous system encountered in clinical Physiotherapy practice. The course is designed to provide knowledge in assessing and planning Physiotherapy interventions for various conditions affecting nervous system. The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs, student must know emergency drugs indication and contra-indication, care in intensive care unit (ICU) and to provide appropriate interventions to the patient. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function. Besides Lecture and Bed-side demonstration, case discussion and tutorial should be preferred teaching methods. The use of virtual reality-based training and simulation to facilitate skill acquisition should be encouraged.

PTN 1.0.1. Course Outcomes: Physiotherapy in Adult and Paediatric Neurological and Neurosurgical Conditions

After completion of this course the student shall be able to

1. Describe the aetiology, pathophysiology, clinical manifestations, diagnostic measures and management of patients with disorders of Central Nervous System Peripheral Nervous system Neuro-Muscular system
2. Demonstrate competencies in identifying common clinical signs of various neurological disorders
3. Demonstrate knowledge in common diagnostic procedures used in differential diagnosis of neurological and psychiatric disorders (Blood investigations, Radiologic procedures)
4. Appreciate the role of different specialist in diagnosing and managing the neurological and psychiatric disorders.

Course Contents: B.P.T PTN 402 (L)

SECTION-A

UNIT 1

- PTN 1.1. Neurological Assessment: Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination – Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes – Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination – Superficial, Deep and Cortical sensations, Special tests – Romberg's, Kernig's sign, Brudzki sign, Tinel's sign, Slum test, Lehermitte's sign, Bells Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, Gait analysis – Kinetics & Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading. Differential diagnosis.
- PTN 1.2. Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy.

UNIT 2

- PTN 2.1. Evaluation and Management of Brain and Spinal Cord Disorders : History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis, and Multiple sclerosis
- PTN 2.2. Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches& Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia Gravis, Eaton-Lambert Syn- drome, Spinal tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post-Polio Syndrome.

UNIT 3

- PTN 3.1. Paediatric Neurology: Paediatric Examination, Developmental milestones, developmental reflexes, Neuro developmental screening tests. Evaluation & Management - History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia
- PTN 3.2. Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short- & Long-Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Chorea form Gait, Diplegic Gait, and Myopathic Gait.

SECTION-B

UNIT 4

- PTN 4.1. Evaluation and Management of Peripheral Nerve Injuries and Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudendal nerve palsy.
- PTN 4.2. Pre and post-surgical assessment and treatment following conditions - Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballismus, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis, Arteriovenous malformations, and Spina bifida.
- PTN 4.3. Applied Yoga in Neurological conditions.

UNIT 5

- PTN 5.1. Problems and management of LBW infants, Perinatal problems and management, Respiratory conditions of childhood, Epilepsies – types, diagnosis and treatment; Sensory disorders – problems resulting from loss of vision and hearing; Learning and behavioural problems – Hyperactivity, Autism, Challenging behaviours, educational delay, The Clumsy Child.
- PTN 5.2. Cerebral palsy: Definition, etiology, classification, clinical features, complications, deformities, medical management
- PTN 5.3. Developmental assessment scales (Motor, sensory, cognitive, neurological, functional scales used for neonates like Brazelton, TIMP, MAI, NBA, AIMS etc.). Overview of speech, cognition and social development
- PTN 5.4. PT assessment and management of Developmental delay and High-risk babies
- PTN 5.5. Exercise testing protocols/ tests – Common protocols used in pediatric in Obesity and Juvenile Diabetes
- PTN 5.6. Pre and post-surgical PT assessment and management of Traumatic brain injury, spinal cord disorders (Traumatic and nontraumatic spinal cord injuries, Spina Bifida), Brachial Plexus Injury, peripheral nerves (Chemical Neuritis of Upper and Lower extremities) and cranial nerves (Bell's Palsy), Hydrocephalus
- PTN 5.7. Physiotherapy management for disorders of the muscles – Myopathies – congenital and acquired. Muscular dystrophy (Duchenne's, Becker's, Spinal Muscle atrophy)
- PTN 5.8. Paediatric neurology – Developmental disorders, Learning disabilities, Meningitis and encephalitis, Guillain Barre syndrome, Autism, Down's syndrome, ADHD, Poliomyelitis, Bell's palsy, congenital facial palsy
- PTN 5.9. Physiotherapy management of Neuropsychiatric disorders, Cerebral & Craniovertebral anomalies & metabolic disorders of nervous system
- PTN 5.10. Poliomyelitis - Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management.
- PTN 5.11. Neural Tube defects
- PTN 5.12. Introduction and Classification of Metabolic and Genetic disorders and Genetic Counselling – Down's Syndrome, West's syndrome, Wilson's syndrome, Leigh's disease, Angelman's syndrome

PRACTICAL: B.P.T PTN 402 (P)

PTN (P) 6. Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consisting of evaluation and assessment methods on student models, treatment techniques and practice sessions Student should be able to execute independently the following procedures on self / human model / patient
3. History taking: examination observation palpation tests, investigation, diagnosis, functional diagnosis [impairment, functional restriction, activity limitation] documentation
4. Planning and execution of management protocol for commonly encountered neurological condition in clinical practice of Physiotherapy with respect to Active exercise regimen
5. Inhibitory and facilitator techniques
6. Passive mobilization and stretching procedures Selection of electrotherapeutic modalities
7. Patient and caregiver education and training Functional training programme
8. Bladder bowel training Integumentary care
9. Prescription and training of suitable aids appliances and Orthotic Devices Ergonomic advice

Recommended Text Books for PTN

1. Patricia A D. Cash's Text book for Physio Therapist in Neurological disorders. Jaypee bros;
2. Adler B. PNF in practice. Springer.
3. Hollis M. Practical Physical Therapy
4. O'Sullivan S. Physical Rehabilitation
5. Johnstone M. Therapy for stroke. Edinburgh: Churchill Livingstone;
6. Bromley I. Tetraplegia and Paraplegia: A guide for physiotherapists
7. Carr and shepherd neurological rehabilitation

Recommended Reference Books for PTN

1. Umphred D. Neurological rehabilitation. Saint Louis: Mosby/Elsevier;
2. Donaghy M. Brain's diseases of the nervous system. Oxford: Oxford University Press; 2009
3. Bobath B. Adult hemiplegia. Oxford (England): Heinemann Medical Books. Patricia M D. Right in the middle. Springer-Verlag

Course Title - CARDIO THORACIC DISEASES AND SURGERIES : (CTD) Theory (L)

Course Content: B.P.T CTD 403 (L)

SECTION -A

CTD 1.1 Brief idea of Anatomy and Physiology of Cardio- respiratory systems,

CTD 1.2 Outline Aetiopathogenesis of Cardio -Vascular System disorders, Investigations, Diagnostic, Differential diagnosis and principles of management.

1. Cardiac failure - Definition, Causes, Symptoms and Signs and Brief management of Cardiac failure.
2. Rheumatic Fever - Definition, Brief description of Aetiology, Clinical features, Complication and Treatment.
3. Congenital Heart Diseases: Classification and brief outline of diseases like ASD, VSD, PDA, Fallot's Tetralogy with complication.
4. Ischemic Heart Disease - Aetiopathogenesis, Classification. Symptoms, Diagnosis and Medical and Surgical treatment.
5. Hypertension - Definition, Classification, Symptomatology, Complications and Treatment,
6. Infective Endocarditis - Brief aetiopathogenesis, clinical features, Diagnosis and Treatment.
7. Brief description of Deep Vein Thrombosis and Pulmonary embolism.
8. Vascular Disease: Atherosclerosis, Burger's disease, Phlebitis etc.

CTD 1.3 Respiratory System: Respiratory diseases including diseases of chest wall

1. Chronic Bronchitis and Emphysema, Definition. Clinical features, and investigation, complication and treatment.
2. Bronchial asthma - Definition, Aetio pathogenesis, clinical features, Diagnosis and Treatment.
3. Pneumonia - Definition, Classification, clinical features, Complications and Treatment.
4. Tuberculosis - Aetiopathogenesis, clinical test of pulmonary tuberculosis, Diagnosis Complication & Treatment.
5. Lung abscess and Bronchiectasis - Definition, clinical features, Diagnosis and Treatment.

6. Chest wall deformities- Describe various deformities of chest wall, its effect and Pulmonary diseases associated with it.
7. Occupational Lung Diseases - Clinical features, Diagnosis and Treatment.
8. Respiratory failure - Classification, Causes and Treatment.

SECTION -B

CTD 1.4 Cardio thoracic surgery Theory

1. Introduction-types of incision, pre and post operative assessment, management and complications of cardio thoracic surgery and their management.
2. Describe in detail the following procedure: management of endotracheal tubes, tracheal Suction, Weaning the patient from ventilator, Extubation and Post-extubation care.
3. Describe the principles of cardio-pulmonary Resuscitation, cardiac Massage, Artificial respiration, defibrillators and their use.
4. Cardiac Surgery-Outline indication, contra indication, site of incision, pre and post Operative management and complications of the following:
 - i. Valvotomy and Valve Replacement
 - ii. Open heart surgery/ cardiac bypass surgery, Surgery of pericardium Heart transplantation
 - iii. Pacemaker
 - iv. Coronary angioplasty and Balloon angioplasty and
5. Vascular surgery (Outline surgery and artery and veins)
6. Thoracic Surgery
 - i. Outline clinical features and management of the following; fracture of ribs, Flail chest, stove in chest, Pneumothorax, Haemothorax, Lung contusion and Laceration and injury to vessels and bronchus.
 - ii. Outline indications, contradiction, site of incision, pre and post operative management and complication of following-Lobectomy, Pneumonectomy, segmentectomy, pleuro-pneumonectomy, Thoracoplasty, decortication, Tracheostomy.
 - iii. Outline clinical features and management of carcinoma of lung.

Book References for CTD

1. Cardiothoracic Surgery: Recent Advances and Techniques- by Daniel Willson
2. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine - By Douglas P. Zipes , Peter Libby
3. Textbook of Interventional Cardiology Hardcover – by Eric J. Topol MD and Paul S. Teirstein MD
4. Textbook of Pulmonary and Critical Care Medicine (vol 1&vol 2)by SK Jindal
5. Principles of Respiratory Medicine - by Farokh Erach, Zarir Farokh Udwadia, Anirudh Kohli Udwadia
6. Davidson's Principles and Practice of Medicine, International Edition
7. Murray & Nadel's Textbook of Respiratory Medicine – by Robert J. Mason MD
8. Bailey & Love's Short Practice of Surgery text book
9. Oxford Textbook of Fundamentals of Surgery- by William E. G. Thomas, Malcolm W. R. Reed, Michael G. Wya
10. Surgery by Nan.
11. Short Practice of Surgery by Rain & Ritelife.
12. Russell, R.C.G. Short practice In Surgery Arnold, London
13. Gupta, R. L. Text Book of Surgery Jaypee, New Delhi

Course Title: Physiotherapy in Adult and Paediatric Cardiothoracic Conditions and Surgical Conditions: (PTCT) Theory (L) Practical (P)**PTCT 1.0. Subject Description and instruction to teacher**

This course follows the courses in exercise therapy and electrotherapy and intends to impart the knowledge and skill in using Physiotherapy techniques for the management of common medical and surgical conditions affecting cardio respiratory system. The course is designed to provide knowledge in assessing and planning Physiotherapy interventions for various conditions affecting cardiorespiratory system. The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs, student must know emergency drugs indication and contraindication, care in intensive care unit (ICU) and to provide appropriate interventions to the patient. Besides Lecture and Bed-side demonstration, case discussion and tutorial should be preferred teaching methods. The use of virtual-reality based training and simulation to facilitate skill acquisition should be encouraged.

PTCT 1.0.1 Course Outcomes: Physiotherapy in Adult and Paediatric Cardio-thoracic disease and Surgical Conditions

After completion of this course the student shall be able to

1. Demonstrate competencies in assessing and identifying physiotherapy related problems due to Respiratory diseases (Acute and chronic) Cardiac diseases (Acquired, Congenital and infective) Lung surgeries Open and closed heart surgeries Vascular surgeries Lung and cardiac transplantation
2. Demonstrate competencies in developing and implementing evidence-based physiotherapy protocol in managing respiratory diseases (Acute and chronic) Cardiac diseases (Acquired, Congenital and infective) Lung surgeries Open and closed heart surgeries Vascular surgeries Lung and cardiac transplantation
3. Demonstrate competencies in performing clinical exercise testing as part of clinical decision making
4. Demonstrate competencies in selecting and using appropriate outcome measures in managing clients with cardio-respiratory disorders)
5. Document assessment findings, clinical decision making, PT protocol and prognosis as per the prescribe format.
6. Demonstrate competencies in communicating effectively to the stakeholders including Healthcare providers.

PT in Cardio- Respiratory conditions

7. Demonstrate competencies in assessing and identifying physiotherapy related problems due to
 1. Respiratory diseases (Acute and chronic)
 2. Cardiac diseases (Acquired, Congenital and infective)
 3. Lung surgeries
 4. Open and closed heart surgeries
 5. Vascular surgeries
 6. Lung and cardiac transplantation
8. Demonstrate competencies in developing and implementing evidence-based Physiotherapy protocol in managing
 1. Bed-side demonstration
 2. Respiratory diseases (Acute and chronic)
 3. Cardiac diseases (Acquired, Congenital and infective)
 4. Lung surgeries
 5. Open and closed heart surgeries
 6. Vascular surgeries
 7. Lung and cardiac transplantation
9. Demonstrate competencies in performing clinical exercise testing as part of clinical decision making. (SH)
10. Demonstrate competencies in selecting and using appropriate outcome measures in managing clients with cardio-respiratory disorders (SH)
11. Document assessment findings, clinical decision making, PT protocol and prognosis as per the prescribe format. (SH)
12. Demonstrate competencies in communicating effectively to the stakeholders including Healthcare providers. (SH)

PTCT 1.0.2 Teaching Learning Methods:

1. Lecture
2. Tutorial
3. Case discussion
4. Virtual reality-based training
5. Simulation

PTCT 1.0.3 Assessment Methods:

1. MCQs
2. OSCE, OSPE, OSLER
3. DOPS
4. Portfolio

Course Contents: B.P.T PTCT 404 Theory (L) and Practical (P)

SECTION-A

Unit 1: Basics of Respiratory System

- PTCT 1.1. Discuss the process of gaseous exchange
- PTCT 1.2. Explain the possible factors which affects gaseous exchange
- PTCT 1.3. Discuss the effect of impaired gaseous exchange on function

Unit 2: Cardio Respiratory Evaluation assessment

- PTCT 2.1. Demonstrate skills to interpret the common investigations to identify problems that can be managed by Physiotherapy
- PTCT 2.2. Discuss the principles of cardio respiratory assessment pertaining to Physiotherapy clinical decision making
- PTCT 2.3. Demonstrate skills in reading medical records to formulate Physiotherapy related hypothesis
- PTCT 2.4. Demonstrate skills in conducting subjective assessment
- PTCT 2.5. Demonstrate skills in performing physical examination to identify the problems
- i. Palpation
 - ii. Chest expansion measurements
 - iii. Percussion note
 - iv. Tactile and vocal fremitus
 - v. Auscultation
 - vi. Six minute walk test
 - vii. Blood investigations
 - viii. ABG
 - ix. Chest X ray

- x. PFT
- xi. ECG
- xii. Exercise testing report

PTCT 2.6. Demonstrate skills in selecting and applying appropriate outcome measures used cardio-respiratory care.

PTCT 2.7. Demonstrate skills in identifying impairments, activity limitations and participatory restrictions caused by cardio respiratory disorders with appropriate rationale

PTCT 2.8. Prioritise and formulate Physiotherapy goals

Unit 3: Physiotherapy techniques in cardiorespiratory dysfunction

PTCT 3.1. Physiotherapy techniques used for airway secretions

1. Explain the physiological mechanism, Indications, Contra indications, precautions and evidence pertaining to physiotherapy techniques used for airway secretions and
2. Demonstrate physiotherapy techniques used to clear airway secretions for
 - i. Positioning
 - ii. Postural Drainage
 - iii. Chest wall manipulation
 - iv. Forced Expiratory techniques
 - v. Active Cycle of breathing techniques
 - vi. Autogenic drainage
 - vii. Positive Expiratory Pressure
 - viii. IPPB

PTCT 3.2. Physiotherapy techniques used for improving lung volume

1. Explain the physiological mechanism, Indications, Contra indications, precautions and evidence pertaining to Physiotherapy techniques used for improving lung volume and
2. Demonstrate Physiotherapy techniques used to improve lung volume for
 - i. Deep Breathing Exercise
 - ii. Thoracic expansion exercise
 - iii. Sustained maximal Inspiration
 - iv. IPPB
 - v. CPAP

PTCT 3.3. Physiotherapy techniques used for reducing breathlessness

1. Explain the Physiological mechanism, Indications, Contra indications, precautions and evidence pertaining to physiotherapy techniques used for reducing breathlessness
and
2. Demonstrate Physiotherapy techniques used to reduce breathlessness
 - i. Relaxation positions
 - ii. Breathing control techniques
 - iii. Pacing techniques

PTCT 3.4. Adjuncts used in respiratory physiotherapy care

1. Explain the Physiological mechanism, Indications, Contra indications, precautions and evidence pertaining to adjuncts used in respiratory physiotherapy care
and
2. Demonstrate skills in selecting and administering
 - i. Humidification therapy
 - ii. Aerosol therapy
 - iii. Oxygen therapy

PTCT 3.5. Demonstrate skills in assessing and identifying impairments, activity limitations and participatory restrictions in clients with respiratory disorders (Acute exacerbations and chronic)

1. Asthma
2. COPD
3. Interstitial lung disease Bronchiectasis
4. Pneumonia
5. Pleural disorders

PTCT 3.6. Prioritise Physiotherapy related problems based on the assessment in providing respiratory care

PTCT 3.7. Plan Physiotherapy care with rationale for the identified problems in respiratory care

PTCT 3.8. Demonstrate skills in providing Physiotherapy care for the identified problems in clients with respiratory disorders

PTCT 3.9. Pulmonary Surgeries:

1. Demonstrate skills in assessing and identifying impairments, activity limitations and participatory restrictions in clients undergone pulmonary surgeries and
2. Demonstrate skills in providing Physiotherapy care for the identified problems in clients undergone pulmonary surgeries for
 1. Lung volume reduction
 2. Lung transplantation
 3. Pleural surgeries

PTCT 3.10. Pulmonary Rehabilitation

1. Define Pulmonary Rehabilitation
2. Discuss the need for pulmonary rehabilitation
3. Explain the components of Pulmonary Rehabilitation
4. Demonstrate skills in performing Physiotherapy assessment in clients referred for pulmonary rehabilitation
 - i. Subjective assessment
 - ii. Physical examination
 - iii. Exercise testing
 - iv. Respiratory muscle testing
5. Prescribe exercise based on the assessment for the clients in pulmonary rehabilitation programme

UNIT 4: Neonatal and Pediatric Cardiopulmonary Physiotherapy assessment and Care:

- PTCT 4.1. Anatomical and Physiological differences between the Adult and Pediatric lung
- PTCT 4.2. Neonatal and Pediatric Physiotherapy – Chest physiotherapy for children, The neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders
- PTCT 4.3. Postural Drainage for pediatric population and modifications at home
- PTCT 4.4. Therapeutic tools, Equipment's, Aids and appliances in Pediatric Physiotherapy rehabilitation
- PTCT 4.5. Intensive care unit and Physiotherapy – Equipments, instruments, Common Physiotherapy procedures in Neonatal and pediatric intensive care
- PTCT 4.6. Cardio-Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. Lung surgeries: Pneumonectomy, Lobectomy segmentectomy – Indications, Physiological changes and Complications; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung. An overview of cardiac surgeries in paediatrics

- PTCT 4.7. Disorders of the Cardiovascular System – Definition, Clinical features, diagnosis and choice of management for the following disorders: Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease: Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetralogy of Fallot, Transposition of Great Vessels
- PTCT 4.8. Physiotherapy assessment and management in Pediatrics Cardiac conditions
- PTCT 4.9. Physiotherapy assessment and management in Respiratory conditions in Pediatrics - Childhood asthma, Respiratory distress syndrome, Hyaline membrane disease/Bronchopulmonary dysplasia, Meconium aspiration syndrome, Pneumonia, Cystic fibrosis, Bronchiectasis, Congenital diaphragmatic hernia

SECTION -B

Unit 5: Physiotherapy Techniques in Cardiac Disorders and Surgeries

PTCT 5.1. Cardiac Surgeries:

1. Demonstrate skills in assessing and identifying impairments, activity limitations and participatory restrictions in clients' undergone cardiac surgeries and
2. Demonstrate skills in providing physiotherapy care for the identified problems in clients undergone cardiac surgeries like
 1. CABG
 2. Valve repair and replacement surgeries
 3. Cardiac pacemaker insertion
 4. Surgeries to correct congenital heart disease

PTCT 5.2. Cardiac Disorders:

1. Demonstrate skills in assessing and identifying impairments, activity limitations and participatory restrictions in clients with cardiac disorders and
2. Demonstrate skills in providing physiotherapy care for the identified problems in clients with cardiac disorders
 1. IHD
 2. Cardiac Failure
 3. Rheumatic heart disease

PTCT 5.3. Prioritise Physiotherapy related problems based on the assessment in providing cardiac care

PTCT 5.4. Plan physiotherapy care with rationale for the identified problems in clients with cardiac disorders

PTCT 5.5. Cardiac Rehabilitation

1. Define cardiac rehabilitation
2. Discuss the need for cardiac rehabilitation
3. Appreciate the roles of other health care providers in cardiac rehabilitation
4. Demonstrate skills in performing Physiotherapy assessment in clients referred for cardiac rehabilitation
 - i. Subjective assessment
 - ii. Physical examination
 - iii. Exercise testing
5. Prescribe exercise based on the assessment for the clients in cardiac rehabilitation programme

Unit 6: Critical care Physiotherapy

- PTCT 6.1. Identify the common lines and tubes used in critical care units
- PTCT 6.2. Interpret the ICU monitor and incorporate the findings in clinical decision making
- PTCT 6.3. Analyse and Interpret the investigation procedures required to make physiotherapy diagnosis
- PTCT 6.4. Identify and prioritize the problems which could be addressed by Physiotherapists
- PTCT 6.5. Discuss the Indications, Precautions to be taken, advantages and disadvantages of commonly used Physiotherapy techniques based on available evidence.
- PTCT 6.6. Design and discuss evidence informed physiotherapy protocol

Recommended Text Books for PTCT

1. Cash's Textbook for Physiotherapists in Chest, Heart & Vascular diseases
2. Cash's text book in General Medicine & Surgical conditions for Physiotherapists
3. Chest Physical therapy & pulmonary rehabilitation -- Donna Frown Filter
4. Brompton's hospital guide
5. Physiotherapy in respiratory and cardiac problem - Pryor and Prasad
6. Physiotherapy in Cardio – Vascular rehabilitation –Webber
7. Chest physiotherapy in intensive care Colin Mackenzie
8. Mechanical ventilation – Ashfaq Hasan
9. Management of Mechanical ventilation –Pierce

RECOMMENDED REFERENCE BOOKS for PTCT

1. Exercise & the Heart –Wenger
2. ECG – P.J. Mehta
3. Cardiopulmonary Physical Therapy -- IrwinScott
4. Essential of cardio pulmonary physical therapy –Hillgass and Sodosky
5. Exercise physiology, energy, nutrition and human performance –M'cardle
6. Exercise testing and prescription - Skinner 8. Exercise in health and disease-Pollock



Course Title: Sports Physiotherapy and Exercise Prescription: (PTS) Theory (L) Practical (P)**PTS 1.0. Subject Description and instruction to teacher:**

Involvement of Physiotherapist in sports is a recent phenomenon. The purpose of this course is to sensitize the students on the importance of sports and physical activities in health promotion, and provides skills to ensure safe participation in sports. It prepares the students to offer primary and secondary care to the sports persons. Health risks, screening, and assessment considering epidemiological principles are emphasized. Risk reduction strategies for primary and secondary prevention, including programs for special populations are covered. Besides lectures and demonstration exposure of students to the real sports situation in sports fields should be arranged. Use of simulation and dummies to acquire basic skills should be encouraged.

PTS 1.0.1. Course Outcomes: Sports Physiotherapy and Exercise Prescription: After completion of this course the student shall be able to

1. Understand the importance of sports and physical activities in health promotion
2. Describe the methods for safe participation in sports and physical activities
3. Identify, evaluate, analyse and discuss the common acute and overuse injuries encountered in sports and plan initial management
4. Demonstrate the techniques used in the area of sports Physiotherapy
5. Execute physical fitness testing of healthy population
6. Apply theoretical basis of physiological effects and best available evidence on effectiveness, efficacy and safe application of management guide- lines
7. Understand the needs of specific population participating in sports

Course Contents: B.P.T PTS 405 (L)**SECTION -A****Unit I**

- PTS 1.1. Introduction to Sports:** importance of sports in health promotion, types of sports-contact, non-contact, team sports, individual sports, social economic importance of sports role of Physiotherapist in sports
- PTS 1.2. Sports injuries:** types acute overuse, soft tissue injury Stages of healing principles of Treatment for soft tissue injuries- Acute, Sub acute and chronic stages.
- PTS 1.3. Safe participation:** causes, risk factors of sports injuries, principles of Prevention of injuries in sports and physical activities, levels of prevention, methods of prevention- active measures passive measures, protective equipment

- PTS 1.4. **Management of Common sports injuries:** sprain, strain, contusion, laceration Lateral ligament sprain of ankle. Rotator cuff injuries. Col- lateral and Cruciate injuries of knee Meniscal injuries of knee Supraspinatus and Bicipital tendonitis Pre patellar and Sub-acromial bursitis Tennis and Golfer's elbow Hamstring strains, Quadriceps contusion, TA rupture Dequervain's tenosynovitis Trigger and Mallet finger Plantar fasciitis. Wrist sprains
- PTS 1.5. **Techniques of sports Physiotherapy:** Taping, bandaging, Moving the injured participant stretcher use Cardio Pulmonary Resuscitation; Causes of Collapse and Treatment of collapsed athlete, recovery methods
- PTS 1.6. **Rehabilitation in Sports**

SECTION -B

Unit 2

- PTS 2.1. Physical fitness definition – component of physical fitness (strength, endurance, flexibility power, aerobic and anerobic capacity agility, coordination, body composition) - description
- PTS 2.2. Assessment of physical fitness: Physical Activities Readiness Questionnaire, Fitness Screening for Mental and Physical Fitness tests of individual components of fitness, Body Mass Index
- PTS 2.3. Health, fitness, and wellness promotion: principles, methods cardiopulmonary endurance (continuous, intermittent, fartlek), anaerobic capacity, strength, flexibility, agility, coordination, health education, healthy nutrition, balance diet, relaxation
- PTS 2.4. Health, fitness, and wellness issues of specific population groups: childhood and adolescence, pregnancy, older adult's hypertension diabetes
- PTS 2.5. Special ability in sports : Paralympics sports, types, classification of athlete, specific problems
- PTS 2.6. Guidelines for Exercise Testing and Prescription Benefits and Risks Associated with Physical Activity.
- PTS 2.7. Pre participation Health Screening
- PTS 2.8. General Principles of Exercise Prescription
- PTS 2.9. Exercise Prescription for Healthy Populations with Special Considerations and
- PTS 2.10. Topics for Exercise Prescription for Populations with Other Chronic Diseases and Health Conditions, Overweight and Obesity

Practicals: B.P.T PTS 405 (P)

Students should be able to execute independently the following

PTS (P) 3.1. Pre-participation examination for risk factor identification

PTS (P) 3.2. Acute management of sports injuries

PTS (P) 3.3. Testing of various components of fitness

PTS (P) 3.4. Apply bandaging and taping for common sports injuries

PTS (P) 3.5. Plan exercise programme based on impairment and activity limitation

Recommended text books for PTS

1. Brukner and Khan: Clinical Sports Medicine, McGraw Hill.
2. Zulunga et al: Sports Physiotherapy, W.B. Saunders.
3. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
4. Norris: Sports Injuries – Diagnosis and Management for Physiotherapists, Heinmann

Recommended Reference Books for PTS

1. Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
2. Bartlett R. Introduction to sports biomechanics: Analysing human movement patterns. Routledge;2007 Oct25.
3. William D. McArdle, Frank I. Katch, Victor L. KatchAstrand, P.-O. and Rodahl, K. Text book of Work Physiology Physiological basis of exercise
4. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams andWilkins.
5. Kulund: The Injured Athlete, Lippincott.

Course Title: Physiotherapy Ethics, Medico Legal aspects, Management and Administration : (PTLM) Theory (L)**PTLM 1.0. Subject Description and instruction to teacher**

Legal and ethical and management considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice. Medical/ Physiotherapy ethics has developed into a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside. The goal is to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice. Clinicians are bound by, not just moral obligations, but also by laws and official regulations that form the legal framework to regulate medical practice. The use of management principles in Physiotherapy practice not only ensures quality of care but also provide insights into running a successful self-sustaining business model. The purpose of this course is to sensitize the students to various principles of ethics law and management in order to ascertain that they become a considerate, compassionate practitioner and successful entrepreneur.

PTLM 1.0.1. Course Outcomes: Physiotherapy Ethics, Medico Legal aspects, Management and Administration

After completion of this course the student shall be able to

1. Compare and contrast the concept of morality ethics and legality and discuss the ethical issues pertaining to Physiotherapy practice
2. Discuss the concept of professionalism and code of professional ethics and describe the salient features of national and international code of ethics related to health sciences as well as discuss the legal frame work of Physiotherapy practice
3. Discuss the principles, elements of management and its relevance to Physiotherapy practice
4. Discuss the principles and methods of quality control and skill necessary to run a physiotherapy clinic as entrepreneur

Course Contents: B.P.T PTLM 406 (L)**SECTION -A****Unit 1**

PTLM 1.1. Concept of Morality, Ethics and Legality Personal values- ethical or moral values

PTLM 1.2. ethical issues in Physiotherapy practice: Professionalism, informed consent, confidentiality, sexual and physical abuse, social characteristics, and personal relationships, professional issues, Client interest and Satisfaction, Confidence and Communication, malpractice, negligence, rights of patients, liability and obligations

- PTLM 1.3. Professional ethics in research, education and patient care delivery
- PTLM 1.4. Professionalism, Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values- Accountability, Altruism, Compassion/ caring, excellence, integrity, professional duties, social responsibility Attitude and behavior- professional behavior professional accountability and responsibility, misconduct
- PTLM 1.5. code of professional conduct = Differences between professions and importance of team efforts Relationship with patients Relationship with Healthcare institutions Relationship with colleagues and peers Relationship with medical and other professional Referral relationships
- PTLM 1.6. Salient features of Helsinki declaration, ICMR code of ethics of research involving human subjects Ethical principles of WCPT

Unit 2

- PTLM 2.1. Laws governing Physiotherapy practice - AHPCPA. Consumer protection law, People with Disability Act Professional Indemnity insurance policy
- PTLM 2.2. direct access meaning and responsibilities The consulting process The skills of a good consultant Trust in the consultant/client relationship Ethical and legal issues in consultation
- PTLM 2.3. Development of Physiotherapy Profession

SECTION-B

Unit 3

- PTLM 3.1. Introduction to management and administration meaning definition scope, principles, elements of management relevance of management to physio- therapy practice
- PTLM 3.2. Planning: definition nature, principles of planning, advantage and disadvantages, component of planning [objectives, policy, procedure, rules, methods, project, budget strategy], types of plan process of planning, decision making
- PTLM 3.3. Organizing definition, steps in organizing, types of organization, organizational chart hierarchy, authority, power, responsibility, accountability, delegation of authority, centralization, decentralization
- PTLM 3.4. Staffing: definition functions Manpower planning: according to organizational structure and needs Recruitment Training and development Appraisal Remuneration
- PTLM 3.5. Controlling and monitoring, types of control steps in control process methods of control [management information system. Quality Management System (QMS), Quality Assurance (QA) and Quality Control (QC) inventory, store Record keeping

Unit 4

- PTLM 4.1. Directing: definition, nature significance, **principles of directing elements of directing function** [supervision communication, motivation, leader- ship
- PTLM 4.2. Finance: MEANING, NATURE AND SCOPE OF FINANCE, Financial Goals, Finance Functions [investment decisions, dividend decisions, financial decisions] budgeting
- PTLM 4.3. marketing, meaning, concept importance elements of marketing [product, price, promotion, physical distribution], branding, pricing, advertising publicity social marketing advocacy and sensitization
- PTLM 4.4. Quality assurance: establishment of standards, audit – financial audit clinical audit, total quality management
- PTLM 4.5. Setting of a Physiotherapy service unit Organization of physiotherapy department Entrepreneurship in Physiotherapy Practice: Need, Advantages and Opportunities, Challenges and Barriers

Recommended Text Books for PTLM

1. CM Francis Medical Ethics jay pee new Delhi
2. Raja K **Davis F** Ethical Issues: Perspectives for the Physiotherapists Jaypee brothers new delhi
3. Percival, T. (2014). *Medical ethics*. Cambridge University Press.
4. Dunn, M., & Hope, T. (2018). *Medical ethics: a very short introduction*. Oxford University Press.
5. Sakharkar BM Principles of hospital administration and planning jaypee brothers new delhi

Recommended Reference Books for PTLM

1. Hébert, P. C., & Rosen, W. (2009). Doing right: a practical guide to ethics for
2. medical trainees and physicians (p. 352). Don Mills, ON: Oxford University Press. American Medical Association, & New York Academy of Medicine. (1848).
3. Code of medical ethics. H. Ludwig &Company
4. Blackburn, S. (2003). Ethics: A very short introduction (Vol. 80). Oxford University Press.
5. Joydeep Das Gupta Hospital Administration and Management: A Comprehensive Guide jaypee brothers

Course Title: Community Physiotherapy and Rehabilitation : (CPTR) Theory (L) Practical (P)

CPTR 1.0. Subject Description and instruction to teacher

The subject serves to integrate the knowledge gained by the students in community medicine and other areas with skills to apply these in clinical situations of health and disease and its prevention. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease conditions and plan and set treatment goals and apply the skills gained in rehabilitating and restoring functions.

CPTR 1.0.1. Course Outcomes: Community Physiotherapy and Rehabilitation

After completion of this course the student shall be able to

1. Describe conceptual framework of rehabilitation with emphasis on roles of rehabilitation team members and various models of rehabilitation
2. Describe the concept and methods of epidemiology with emphasis on locomotor disability
3. Describe the concept of community-based rehabilitation and outreach programme to rehabilitate persons with disabilities living in rural areas
4. Explain the principles of orthotics along with region wise uses and fitting
5. Describe Principles of prosthetics along with region wise uses and fitting
6. Describe the identification, and explain the process of rehabilitation of speech and hearing disability, visual disability, intellectual disability
7. Explain the principles of vocational rehabilitation including evaluation & vocational goals for people with disability
8. Apply the concept of Health Education
9. Understand about occupational therapy and importance of Activities of Daily Living and training of wheel chair activities, bed activities, transfer activities, locomotor activities and self-care activities
10. Discuss about architectural barrier and possible modifications with reference to common disabling conditions
11. Outline the principles of disability evaluation
12. Discuss the principles of **Occupational health & Ergonomics**

Course Contents: B.P.T CPTR 407 (L)

SECTION -A

Unit -1

- CPTR 1.1. National District Level Community Program: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker.
- CPTR 1.2. Role of Physiotherapy in CBR: Screening for disabilities, prescribing exercise program, Prescribing and devising low cost locally available assistive aids, Modifications physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL, Rehabilitation program for various neuro-musculoskeletal and cardiothoracic disabilities.
- CPTR 1.3. Assessment of disability in rural & urban setups. Healthcare delivery system & preventive measures with specific reference to disabling conditions. Community education program.
- CPTR 1.4. Application of Physiotherapy skills at community level with special reference to the need at rural level.
- CPTR 1.5. Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies – National level and International NGO"s, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockefeller, Ford foundation, CARE, RED CROSS

Unit 2

- CPTR 2.1. Introduction of Rehabilitation & History
- CPTR 2.2. Epidemiology of disability (Impairment, disability, phases of disability process, etc.).
- CPTR 2.3. Principles of Rehabilitation & concept of team approach with rolls of each individual participant.
- CPTR 2.4. Organization of Rehabilitation unit.
- CPTR 2.5. Disability prevention evaluation & principles of Rehabilitation Management.
- CPTR 2.6. Role of Physiotherapy in Rehabilitation (Preventive, treatment & restoration)
- CPTR 2.7. Brief outline of Communication disorder & its implications on Rehabilitation process.
- CPTR 2.8. Brief outline of psychosocial & vocational aspects of Rehabilitation.
- CPTR 2.9. Introduction to Occupational therapy.
- CPTR 2.10. Activities of daily living, functional assessment & training for functional independence.
- CPTR 2.11. Brief outline of basic community medicine with special reference to community-based Rehabilitation, infrastructure and role of CBR

- CPTR 2.12. Disability and Rehabilitation: concept and Definition, models of disability international classification of functioning Definition and concept of Impairment, Persons with Disabilities and Disability activity limitation, participation restriction, environmental factors, contextual factors Types. Conceptual framework of rehabilitation, roles of rehabilitation team members, definitions and various models of rehabilitation, Role of family members in the rehabilitation of a physically Persons with Disabilities. PWD Act 1995 and Rights of person with Disability Act 2016, National Trust Act (Note wherever applicable: The Gazette of India is regularly updated, and its publications can change over time. Refer the recent Gazette publications issued by the Government of India, from the official website)
- CPTR 2.13. Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR Extension services and mobile units: Introduction, Need, Camp approach.
- CPTR 2.14. Disability Evaluation: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data, Uses of evaluation findings. GOI guidelines
- CPTR 2.15. Principles of Orthotics- types, indications, contra indications, assessment (check out), uses and fitting –region wise.
1. Orthotics for the Upper Limb
 2. Orthotics for the Lower Limb
 3. Orthotics for the Spine
- CPTR 2.16. Principles of Prosthetics –types, indications, contraindications, assessment check out, uses and fitting – region wise
- CPTR 2.17. Assistive devices and Technologies.
- CPTR 2.18. Introduction to Occupational therapy Definition, scope and importance of Activities of Daily Living (ADLs)self-care activities, such as toilet, eating, dressing etc

SECTION -B

Unit 3

- CPTR 3.1. Identification, assessment and classification of intellectual disabilities Etiogenesis and principles of management including prevention Rehabilitation of the Subnormality of Intelligence, including vocational training & home education programme
- CPTR 3.2. Principles & mechanisms of Communication including speech & hearing, Common disorders of speech & hearing – etiogenesis, clinical features, assessment & principles of management
- CPTR 3.3. Identification, assessment and classification of visual disabilities Etiogenesis and principles of management including prevention Rehabilitation of the Subnormality of Intelligence, including vocational training & home education programme

Unit 4

- CPTR 4.1. Vocational and social rehabilitation vocational and social aspects of disability, including evaluation & vocational goals for people with disability Role of social worker in rehabilitation
- CPTR 4.2. Architectural Barriers: Describe architectural barriers and possible modifications with reference to Rheumatoid Arthritis, CVA, Spinal Cord Injury and other disabling conditions. physical and architectural barriers for disabled,
- CPTR 4.3. Health Education: Concepts, aims and objectives, Approaches to health education, Models of health education, Contents of health education, Principles of health education, Practice of health education
- CPTR 4.4. **Occupational health & Ergonomics** - Occupational Hazards in the industrial area -- Accidents due to Physical agents-Chemical agents- Mechanical hazards-overuse/fatigue injuries due to ergonomic alteration & ergonomic evaluation of work place-mechanical stresses due to sedentary table work –executives, clerk, inappropriate seating arrangement- vehicle drivers constant standing- watchman- Defense forces, surgeons, Over-exertion in laborers,-common accidents –Role of P.T.-Stress management. Psychological hazards- e.g.-executives, monotonicity & dissatisfaction in job, anxiety of work completion with quality, Role of P.T. in Industrial setup & Stress management-relaxation modes

PRACTICAL demonstration: B.P.T CPTR 407 (P)

- CPTR (P) 5. This will consist of Field visits to urban and rural PHC's., Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio-respiratory, paediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials. And preparing and delivering community education program on various health and disability related issue for awareness, prevention and care

Recommended Text Books for CPTR

1. Handbook of Rehabilitation – Sunder
2. Orthotics in Rehabilitation : Mckee and Morgan – F. A. Davis
3. Orthotics and prosthetic and assistive devices for physiotherapists by sinha, sharma and tripathy jaypee brothers
4. Park's Textbook of Preventive & Social Medicine - K.Park
5. Physical Rehabilitation – Assessment and Treatment – Sullivan & Schmitz F. A. Davis.
6. Occupational Therapy and Physical Dysfunction. Principles, Skills and Practices – Hand Splinting - Tuner, Forster & Johnson – Churchill Living- stone
7. Piyush Gupta O.P.Ghai; T.B. of Preventive & social medicine 2nd edition CBS publishers & distributors 2007.

Recommended Reference Books for CPTR

1. Status of Disabled in India -2000-RCI publication
2. Legal Rights of disabled in India- Gautam Bannerjee
3. ICF –WHO Health Organisation 2001 publication
4. Training in the Community for the people with disability – Hallender Padmini
5. Mendes
6. Disabled Village Children—David Werner
7. Chorin C& M Desai, C Gonsalves, Women & the Law, Vol. I & II Socio - legal Information Centre Mumbai
8. Hand Splinting – Wilson – W. B. Saunders.
9. Atlas of Limb Orthotics and Limb Prosthetics American Academy of Orthopedic Surgeons – Mosby.
10. Krusens Handbook of Physical Medicine and Rehabilitation.

Course Title: Project Work: (PW)

PW 1.0. RESEARCH PROJECT-

1. The candidate shall submit a project under the supervision of a Physiotherapy faculty during internship. The project may be a case study or of recent technique or literature reviews and etc. to make the student to have research mind and to facilitate for higher studies.
2. The interns shall maintain the record of work which is to be verified and certified by the Physiotherapy faculty under whom he/she works. Based on the record of work and project, The Internship completion shall be reported in the form of grades by the HOD/ principle while issuing "Certificate of Satisfactory Completion" of internship following which University shall award the BPT degree.
3. All internees will be assessed based on their satisfactory attendance, performance in the postings/and the presentation of the logbook and project. The credits and hours of internship will be mentioned in transcript.
4. The internship assessment weightage will be based on following criteria:
Domains (% of the total marks)
 - a) Attendance (10%)
 - b) Log book (60%)
 - c) Project (30%)of the internship assessment

CRITIQUE ENQUIRY, CASE PRESENTATION AND CASE DISCUSSION: Should be the regular part of clinical education from third year onwards.

Course code: B.P.T 409 : CLINICAL Rotation (CLRo)

CLRo 1. Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physio-therapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU
7. Developmental Pediatrics & Child Guidance Clinic
8. OBG
9. Geriatric – Old Age Homes
10. Industrial Visits - Ergonomics