

PART-- A

EXERCISE THERAPY

Exercise intervention for women's health

Over view of pregnancy labor and related condition, physiological effects of aerobic exercises during pregnancy, exercise of uncomplicated pregnancy and post partum, significance of physical therapist caesarean child birth and activities suggested for patients following caesarean section

Breathing exercise and chest wall mobility exercise

Types of breathing exercise- diaphragmatic breathing exercise , Apical breathing , costal breathing, posterior basal, glosso- pharyngeal breathing, pursed lip breathing , inspiratory hold

Hydrotherapy

principles of hydrotherapy – buoyancy, hydrostatic pressure, hydrodynamic pressure , turbulence, indication, precautions and contraindications physiological & Therapeutic effects

Methods of joint mobilisations & Manipulation

Introduction, definition, joint range- outer range , middle range, inner range, causes of joint range limitation, effect of prolonged immobilization , indication & contraindication . Principle

Muscle strength & endurance training & re-education of Muscle

Definition of strength , power & work, endurance , muscle actions. Physiology of muscle performance : structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, Muscle fiber types, motor unit, force gradating, resistance training

Assessment of muscle shortness & stretching

Definition, Purpose of stretching, Physiological changes in muscle to stretch , Neurological changes in muscle to stretch , tissue response towards immobilization and elongation , determinants of stretching exercise, Inhibition and relaxation

Applied Bio- mechanics

Types of Kinematic chain – open and closed chain. Active and passive insufficiency. Parallelogram law of forces. Centre of gravity, line of gravity. Stable, Unstable, Neutral – Equilibrium . Fixed and Movable pulleys. Springs- series and parallel. Levers- 1 st order , 2nd order, and 3rd order

BIOMECHANICS

Gait

Determinants

Kinetics and kinematics

Analysis of common pathological gaits

Knee complex

Kinetics and kinematics of tibiofemoral & patellofemoral joint

Pathomechanics of common condition of knee complex.

Ankle & foot complex

Kinetics and kinematics of hind foot mid foot and fore foot joints

Arches of foot

Pathomechanics of common condition of ankle complex.

Hip complex

Stability of hip complex

Hip abduction mechanism

Pathomechanics of common condition of hip complex.

Vertebral Column

Arthrology of cervical, thoracic, lumbar and sacroiliac regions including kinetics, kinematics and their muscle actions.

Lumbo- pelvic, rhythm.

Rib cage mechanics during ventilation.

Spinal coupling of craniocervical, thoracic , lumber and sacroiliac regions.

Introduction of pathomechanics of common condition of vertebral column

Temporomandibular joint

Kinetics and kinematics of Mastication.

Introduction of pathomechanics of common condition of Temporomandibular joint.

Wrist and hand complex

Prehension and precision activities and Interaction of extrinsic and intrinsic muscles in various functions of hand.

Functional position of wrist and extensor mechanism of hand.

Architecture of hand

Introduction of pathomechanics of common condition of wrist and hand complex.

Shoulder complex

Stabilizers of shoulder

Force couples

Pathomechanics of common condition of shoulder complex

ELECTROTHERAPY

Basic electricity
TENS parameters
Principles of IFT
Parameters of ultrasound therapy
Electrodiagnosis
SD curve
NCV, EMG
Cryotherapy

EXERCISE PHYSIOLOGY

Hormonal and neural control during exercise
Energy expenditure and fatigue
Cardiovascular responses and adaptations to exercises
Exercise testing and training
Environmental influence on body and exercise performance

PART--B

PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS

Manual therapy approaches
Differential diagnoses
Pain science
Physical fitness
ICF model and rehabilitation
Mechanics and pathomechanics of common musculoskeletal and sports injuries

PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Growth and development of nervous system
Motor control and learning
Neurophysiology of balance and coordination
Neuroimaging
Electrodiagnosis

PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS

Anatomy, physiology, biomechanics, pathomechanics & applied anatomy related to Cardiovascular & Pulmonary System
Development of the Cardio Vascular, Pulmonary systems
Body positioning and various systemic changes respiratory muscle physiology, fatigue and training
Normal and abnormal responses of Cardiovascular & Pulmonary System during exercise
Breathing mechanism in normal and diseased individuals
