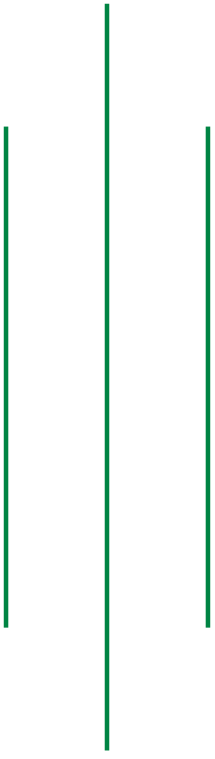
Syllabus for Licensing Examination of Master of Physiotherapy 2021



Nepal Health Professional Council

Basbari, Kathmandu

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1) BASIC SCIENCES

i) Medical Anatomy (bones ,muscles, joints nerves , lymphatics , surface anatomy) Upper limb, lower limb, thorax , head , neck, spine

ii) Medical Physiology following system

Muscle , CVS, Respiratory ,Nervous, Blood , Skin

iii) Biomechanics and kinesiology

a) Basics principles of mechanics including Centre of gravity, line of gravity, force, newton's law, friction, stability, equilibrium, levers etch

b) Biomechanics and pathomechanics of spine, upper extremity and lower extremity, thora

c) Biomechanics of posture and its deviations

d) Biomechanics of gait and its deviations

e) Biomechanics of bones ,joint , muscles , nerve and tendon etc

2) Basic physiotherapy

A) Exercise therapy (its application, evidenced based practice and recent advances)

i) Principle of Exercise Physiology(Aerobic, anaerobic)

ii) General concept and techniques of therapeutic exercises , range of motion , resistive exercise, stretching , pheripheral joint mobilization , aquatic exercise,PNF TECHNIQUE.

B) Electro therapy (its application, evidenced based practice and recent advances in electrotherapy)

i) Electrotherapeutic physiological effect in various system

ii) Electrical stimulation of muscle plasticity and neuro plasticity
iii) Cryotherapy, moist heat,UVR, IRR
iv) UST,SWD,MWD, Shock wave, TENS, IFT,Muscle stimulator
v) EMG, , Bio feedback

3) Research and methodology, Ethics , management , Reaserch and Evidence Based Practice (EVP)

- Introduction to biostatistics, its application on physiotherapy
- Research – Definition, concept, purpose, approaches
- Research Ethics
- Critical appraisal tools and reporting guidelines - CONSORT, PEDro, PRISMA, STROBE, CARE, TIDieR
- Writing a Research Proposal: Steps on the research process
- Hypothesis Testing
- Probability and Sampling: probability, population and sample, sampling distribution, sampling methods, survey in research, sample size determination and calculation
- Research Design - Qualitative and Quantitative research designs
- Epidemiological studies: calculation of incidence and prevalence, odd ratio, relative risk, Iceberg phenomenon
- Ethical issues in practice of physiotherapy- clinical, research, academics and administration, Ethics and professionalism
- Development and implementation of policies and procedures 9.7 Job descriptions, roles and responsibilities
- Evidence based practice: Introduction, components, steps of evidence-based practice, implication of EBP in physiotherapy clinical practice and research
- roles and responsibilities in physiotherapy practice

4) Subject Specific (ortho and sports, neurology,cardio-pulmonary, peadiatric, , Geriatrics, etc)

A) <u>Orthopeadics and sports physiotherapy rehabilitation</u> (different exercises regimes, therapeutic modalities and equipments, diagnostic tests ,prosthetics and orthotics used for the management of the various Clinical condition of evidenced based practice(EVP) ,recent advances, clinical decision making)

- Principles of investigations and imaging techniques in Musculoskeletal conditions
- Pain - Pain concepts and history
- Pain assessment measurements , Psychological, social and economic aspects of acute and chronic pain
- Neuro pathophysiology of pain
- Pain modulation, pain gate theory

- Pain management: pharmacology aspect, manual therapy, electrotherapy modalities, cognitive behavioral therapy
- Assessment, evidence based approach management and recent advances
- Soft tissue injury: muscle contusion /strain/ ligament sprain / tear / weakness; tendinopathy, tendon tear / rupture/ tendinosis
- Chronic pain conditions - fibromyalgia, CRPS
- Fracture, dislocation, subluxation
- Degenerative joint diseases - osteoarthritis, adhesive capsulitis, spondylosis
- Arthropathies - rheumatoid arthritis, ankylosing spondylitis
- Infectious conditions - Disorders and deformities: upper limb, lower limb and spine
- Nerve compression/radiculopath/peripheral nerve injuries - PIVD, sciatica, carpal tunnel syndrome
- Pre and post operative surgical conditions, rehabilitation protocol - ACL, PCL, MCL, hip/knee replacement, amputation, spinal fixation, tendon transfer, skin graft etc
- Sports
- Principle of sports injuries, management and prevention
- Sports psychology , Sports training including nutrition
- Drugs and Ergogenic aids in sports
- Assistive aids and devices used in orthopedic conditions
- Common outcome measure used in musculoskeletal conditions: Oswestry disability index,
- International and national guidelines for physiotherapy management of musculoskeletal conditions
- Manual therapy: different school of thoughts - Mc Kenzie, Mulligan, Kaltenborn, Maitland, Cyriax, Butler's neural mobilization
- Basic treatment techniques in musculoskeletal physiotherapy - taping, MET, MFR, trigger point release, positional release technique, mirror therapy, lymphatic drainage, manipulation, mobilization
- Recent advances in musculoskeletal physiotherapy

B) <u>Neurology rehabilitation</u> (different exercises regimes, therapeutic modalities and equipments, diagnostic tests ,prosthetics and orthotics used for the management of the various Clinical condition of evidenced based practice(EVP) recent advances, clinical decision etc)

- Theories of motor learning, motor control.
- Neuroplasticity and clinical implications
- Assessment, evidence based approach management and recent advances
- Cerebral vascular accident/ stroke
- Acquired brain injury/Traumatic brain injury

- Spinal cord injury
- Degenerative neurological
- Motor neuron diseases
- Demyelinating disorders
- CNS conditions
- Cerebellar disorders
- Neuropathies/polyneuropathies/myopathies
- Dementia and other cognitive disorder
- Vestibular disorders
- Neurogenic bladders and its rehabilitation
- Movement disorders - chorea, athetosis
- Tumors: Intracranial, spinal cord
- neuromuscular junction disorder
- Peripheral nerve injury brachial plexus injury
- Disease of cranial nerves
- Neuro-surgical procedures – assessment and its interventions
- Basic knowledge of pharmacological drugs used for neurological conditions (antiseizure, antihypertensive, ICP- intra cranial pressure monitoring drugs, antiparkinson's drugs, anti spasticity drugs (baclofen, botox))
- Oromotor rehabilitation
- Biofeedback mechanism
- Prescription and use of assistive/adaptive devices and equipment for persons with neurological disorders: foot drop splint, KAFO
- Wheel Chair prescription in various neurological conditions
- Application of technology for retraining of movement (robotics, virtual reality, targeted motor control, FES, biofeedback)
- Radiological investigations in neurology - CT, MRI
- Electro-Diagnosis- EMG, NCV, Evoked Potentials, Strength Duration Curve, Brain Stem-Evoked Potential studies
- Basic treatment techniques in neurology physiotherapy - Facilitatory and Inhibitory, PNF, Management of tone (spasticity and flaccidity), Core stability exercises, basic techniques to improve balance and coordination
- International and national guidelines for physiotherapy management in neurological conditions
- Different neurological approaches in management - Bobath, Brunnstorm, PNF

C) <u>Cardio-Respiratory - critical care</u> (different exercises regimes, therapeutic modalities and equipments, diagnostic tests ,prosthetics and orthotics used for the management of the various Clinical condition of

evidenced based practice (EVP) , recent advances, clinical decision etc)

- Assessment, evidence based approach management and recent advances
- Respiratory condition - COPD, pneumonia and more
- Cardiac diseases - myocardial infarction, hypertension
- Arterial and venous diseases, wounds/ ulcers ,dvt and more
- Pre and post cardiac, respiratory and general surgical management \
- ICU management
- Poisoning
- Exercise prescription ,Cardio pulmonary resuscitation
- Principles of pathological investigations and imaging techniques in cardiorespiratory - chest X ray, ECG
- Common outcome measure used in cardiorespiratory conditions - ABG, spirometry, stress test, 6 minutes walk test
- International and national guidelines for physiotherapy management in cardiorespiratory conditions
- Basic and advanced respiratory management skills : breathe stacking, manual assisted coughing, ACBT
- Recent advances in cardio respiratory physiotherapy

D) Pediatrics (different exercises regimes, therapeutic modalities and equipments, diagnostic tests ,prosthetics and orthotics used for the management of the various Clinical condition of evidenced based practice(EVP) , recent advances, clinical dicision)

- Current situation of pediatric disability in Nepal
- Assessment, evidence based approach management and recent advances
- Congenital and acquired musculoskeletal disorders 4.2.2 Congenital and acquired neurological disorders
- Congenital and acquired cardiovascular disease
- Congenital and acquired pulmonary disorders
- Pediatric orthopedic condition - CTEV, torticollis, perthes disease, leggcalve perthes Disease
- Pediatric burns
- Developmental disorder, learning disorders, sensory integration
- Neonatal care, high risk babies
- Pediatric oncology and palliative care
- Pre and post pediatric surgical management
- Role of physiotherapy in NICU and PICU
- Vitamins deficiency diseases

- Fitness and exercise prescription for special pediatric population
- Basic knowledge of pharmacological drugs used for pediatric neurological conditions eg: epilepsy, anti spasticity drugs (baclofen, botox)
- Neuropediatric approaches eg: Bobath, M-CIMT etc
- Basic treatment technique, handling used in pediatric physiotherapy: positioning, NDT, sensory integration etc.
- Principles of pathological investigations and imaging techniques in pediatric
- Prescription and use of assistive/adaptive devices and equipment in pediatric conditions : hip spica, AFO, KAFO, knight tailor brace, semi brace etc.
- Common outcome /goal setting measure used in pediatric physiotherapy -Pediatrics Berg Balance Scale, Manual Ability Classification System, Communication Function Classification system, Gross Motor Functional Classification System, INFANIB, GAS, COMP

E) Geriatrics (different exercises regimes, therapeutic modalities and equipments, diagnostic tests ,prosthetics and orthotics used for the management of the various Clinical condition of evidenced based practice(EVP) ,recent advances, clinical dicision)

- Normal aging and well elderly
- Assessment, evidence based approach management (Promotion, Prevention and Cure) rehabilitation and recent advances
- Cardiovascular diseases
- Respiratory diseases
- Neurological diseases
- Musculo-skeletal diseases
- Metabolic syndrome
- Communicable and non communicable diseases
- Pain and fatigue management in elderly
- Balance and falls in elderly
- Social and physical changes with ageing
- Mental health and ageing (Dementia, depression)
- Basic treatment technique used in geriatric population - gait and balance training, muscle strengthening, circuit training, relaxation
- International and national guidelines for physiotherapy management in geriatric population/conditions
- Common outcome measure used in geriatric physiotherapy - Berg balance scale

F) CBR (different exercises regimes, therapeutic modalities and equipments, diagnostic tests, orthotic & prosthetics used for the management of the various Clinical condition and evidenced based practice(EVP) and recent advances in community rehabilitation)

- Scope of community physiotherapy in nepal.
- Legislation, health policy, health system in Nepal
- Basic Concepts of rehabilitation and foundations of rehabilitation
- Institute based rehabilitation services and multi-disciplinary approach
- Persons with disability; Act in nepal Government infrastructure.
- Role of Non-Government organizations in CBR
- Physiotherapist as a Master Trainer in CBR.
- Physiotherapy in Occupational Health, Occupational Hazards, Industrial Hygiene, Vulnerable workers group,Industrial therapy, Injury prevention
- Disability evaluation, National policies for rehabilitation of disabled
- Principles of fitness for health promotion in community, Nutrition and Diet. Physical fitness definition and evaluation.
- W.H.O.`s policies about rural health care, concept of primary, Secondary, tertiary health centers, District hospitals etc, Principles and Functions of a Rehabilitation team like Medical person, Physiotherapist, Occupational therapist, audiologist, speech therapist, Prosthetic & Orthotics, etc…, Vocational guide in C.B.R. of physically handicapped person.
- Institution based rehabilitation and community based rehabilitation:– its principles and differences, multi-disciplinary approach, role of national institutes, District rehabilitation centre and primary health centre.
- Population studies and epidemiological implications of impairment, handicap and disability.
- Evidence based practice in Community health.
- Evidence based approach management and recent advances in CBR of different approach-
  a) women health and child care
  b) Geriatric
  c) Communicable and non-communicable diseases
  d) Fitness and health promotion, developmental health ,industrial health
  e) Cardio respiratory condition
  f) orthopedics condition
  g) Neurology and neuropsychiatrist condition
- Physiological effects of aerobic exercise – clinical reasoning for advocating aerobic exercise¬ as preventive measure in obesity & its related conditions / in cardio-respiratory conditions, Aging, deconditioning effect after prolonged bed rest , Diabetes.

G) Sports Physiotherapy

Basics of sports science

a. Introduction to sports
   i. History and philosophy of sports
   ii. Classification of sports
   iii. National and international sports associations

iv. Roles and responsibilities of multidisciplinary team in sports
v. Scope of sports physiotherapy

b. Sports physiology

i. Response and adaptation of exercises on various systems
ii. Effects of various environment on exercises: heat, cold, altitude, deep sea, space
iii. Bioenergetics: energy system, energy transfer and fatigue
iv. Sports nutrition
v. Somatotyping and kinanthropometry

c. Sports biomechanics and kinesiology

i. Link segment model, musculoskeletal and fascial chain kinetics and kinematics
ii. Principles of motor learning and control in sports
iii. Biomechanics of running, sprinting, jumping and landing, rowing, throwing, swimming etc.

H) Assessment of sports injuries

a. Classification and pathomechanics of sports injuries
b. Evaluation of health and skill related physical fitness
c. Pre-participation physical evaluation
d. On and off field assessment: field test, laboratory test and various imaging techniques
e. Outcome measures used in sports

I) Management of sports injuries

a. Principles of injury prevention and periodization in sports
b. Management in emergency conditions: first aid, cardiopulmonary resuscitation and shock management
c. Management of acute and overuse injuries
d. Education, exercise, manual therapy and electro-modalities
e. Supportive management: taping, bracing, orthotics etc.
f. Clinical practice guidelines and clinical prediction rules used in sports

J) Special topics

a. Sports psychology
b. Sports pharmacology
c. Anti-doping
d. Medico-legal issues in sports
e. Ergogenic aids and performance enhancement
f. Ergonomics for sports
g. Special population: female, children, old age and person with disability
h. Recent advances in sports science