



MALWANCHAL UNIVERSITY, INDORE

**Curriculum implemented by statutory body (M.P. PARAMEDICAL COUNCIL) for
MPT**

Programme name: - (MPT)Master of Physiotherapy

Programme name	Programme code
MPT (ORTHOPAEDICS)	MUPP-10OR
MPT (NEUROLOGY)	MUPP-10NE
MPT (CARDIOTHORASIC)	MUPP-10CA
MPT (SPORTS)	MUPP-10SP

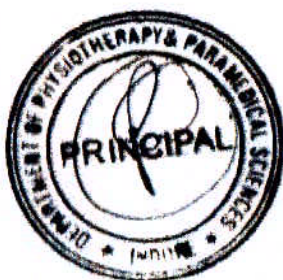
MPT-1

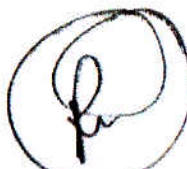
**MALWANCHAL UNIVERSITY,
INDORE-M.P.**


SYLLABUS & SCHEME OF EXAMINATION FOR

MPT- 1st YEAR

**(ALL BRANCHES)
SPORTS/ORTHOPAEDICS/NEUROLOGY/
CARDIOTHORACIC, OBS. & GYNECOLOGY**




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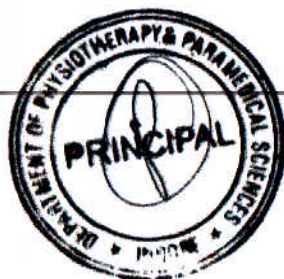

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SYLLABUS & SCHEME OF EXAMINATION FOR MPT 1st Year
SPORTS/ORTHOPAEDICS/NEUROLOGY/CARDIOTHORACIC,
OBS.&GYNECOLOGY

SCHEME OF EXAMINATION

MPT 1st : Internal Exam (Institutional Exam)					
S.No.	SUBJECT	Written	Practical	Viva	Total
1.	Basic Medical Sciences & Principals of Physiotherapy Practice	100	--	--	100
2.	Biomechanics & Kinesiology	100	--	--	100
3.	Research Methodology & Biostatistics and educational Methodology	100	--	--	100




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SYLLABUS FOR MPT-1ST YEAR

SPORTS/ORTHOPAEDICS/NEUROLOGY/CARDIOTHORACIC, OBS.& GYNECOLOGY

PAPER-I: BASIC MEDICAL SCIENCES & PRINCIPLES OF PHYSIOTHERAPY PRACTICE

SCHEME OF EXAMINATION

Time: 3.00 Hrs

Max. Marks: 100

Subject	Max. Marks	Minimum Passing Marks
Basic Medical Sciences & Principles of Physiotherapy Practice	100	50

INSTRUCTION FOR THE PAPER SETTER

The pattern of theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

Section-A: This will consist of 10 very short answer type questions with answer to each question upto five lines (Fifty to sixty words) in length . All questions will be compulsory to answer. Each question will carry two marks. Total weightage of the section shall be 20 marks.

Section-B: This will consist of short answer questions with answer to each question upto 2 pages (250-300 words) in length. Eight questions will be set by the examiner and five have to be answered by the candidate. Each question will carry 10 marks. Total weightage of the section shall be 50 marks.

Section-C: This will consist of essay type questions with answer to each question upto 5 pages (approx 500 words) in length. Four questions will be set by the examiner and two have to be answered by the candidate. Each question will carry 15 marks. Total weightage of the section shall be 30 marks.

INSTRUCTIONS FOR THE CANDIDATES: Answer all questions only in required word.



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PAPER-I

BASIC MEDICAL SCIENCES & PRINCIPLES OF PHYSIOTHERAPY PRACTICE

SYLLABUS CONTENTS

Anatomy and Applied Anatomy:

I. A review of organization and regulation of motor system.

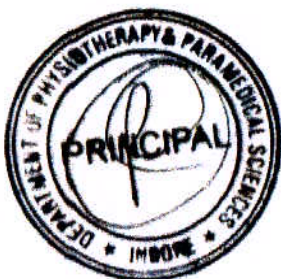
- A. Types of movement and factors affecting contact and range of motion at synovial joints
- B. Skeletal muscle tissue
- C. Muscle metabolism
- D. Contraction and relaxation of muscle
- E. Control of muscle tension

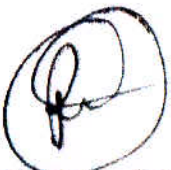
II. A review of control system of body (Motor and sensory).


- A. Structure function and organization of nervous tissue
- B. Electrical signals in neurons and its transmission
- C. Regeneration and repair of nervous tissue
- D. Functional organization of cerebral cortex
- E. Sensory motor and integrative system (Sensation, somatic sensation, Sensory pathways, motor pathways).
- F. Reflexes and reflex arcs

III. Physiology & Applied Physiology:

- A. Structure and function of cardio vascular system.
- B. Structure and function of respiratory system.
- C. Structure and function of endocrinal system.




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IV. Pathology :

- A. Inflammation
- B. Edema
- C. Healing responses & Repair of soft tissue injuries
- D. Failed healing responses

V. Pharmacology :

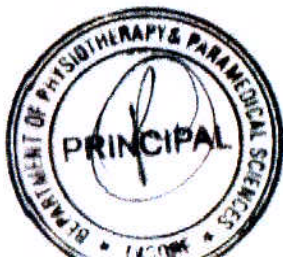
- A. Principles of drug action
- B. Basic Pharmacokinetics
- C. Use of drug in musculoskeletal medicine only


VI. Radiology :


- A. Basic of Radiology
- B. Imaging of Head and neck
- C. Imaging of spine
- D. Imaging of pelvis, hip and thigh
- E. Imaging of Patellofemoral joint and knee joint
- F. Imaging of lower leg ,foot and ankle
- G. Diagnostic ultrasonography as applied in Neuromusculoskeletal condition

VII. Geriatrics :

- A. Ageing population for Physiotherapy, Physiological Changes with ageing, Evaluation of aging , arthrokinesiological and sensorimotor changes
- B. Functional assessment of elderly, Geriatric pharmacology, functional training, Balance and fall in elderly, orthotics in geriatric rehabilitation, older person with developmental disabilities
- C. Urinary incontinence and impairment of pelvic floor, Conservative pain management in elderly.
- D. Osteoarthritis, dementia and other geriatric problems




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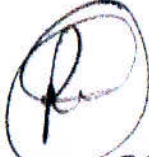
PRINCIPLES OF PHYSIOTHERAPY PRACTICE

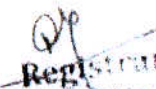
1. Development of Physiotherapy Profession
2. Ethical issues in practice of physiotherapy-Clinical, Research and Academics. Administration, Legislation, rules and regulations governing physiotherapy practice-and National & International (WCPT IAP) . Scope of Physiotherapy in Hospital , Community & Industry.
3. History taking, assessment, tests, Patient communication, documentation of findings, treatment organization and planning/execution for intervention.
4. Documentation of rehabilitation assessment and management using International Classification of Functioning Disability and Health (ICF)
5. Standardized tests and scales used in various types of cases for assessment and interpretation in Physiotherapy practice.
6. Principle of therapeutic exercises: Dynamic Exercises, Plyometric Exercises, Aerobic Exercises, Isokinetic Exercises, Kinetic chain exercises PRE, Stretching, Balance and coordination exercises
7. Principles and application of neuromuscular facilitation techniques including PNF

Books Suggested:-

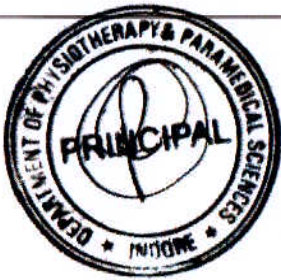
1. Gray's Anatomy - Williams & Warwick - Churchill Livingstone.
2. Grants – Methods of Anatomy - Basmajian & Sloncker - Williams & Wilkins.
3. Clinical Anatomy for Medical Students - Snells – Li ppincott.
4. Synopsis of Surgical Anatomy – John Wright & Sons, Bristol
5. Snell's Neuroanatomy: Richard Snell
6. Netter's Atlas of human Neurosciences: Feltan, David L
7. Shepherd, Gordon- Synaptic Organization of the brain, 4th Edition
8. Textbook of Human anatomy: Inderbir Singh
9. Human Neuroanatomy by Carpenter M. B, Williams & Wilkins, Baltimore, 1983
10. Atlas of Neuroanatomy: Warner, Joseph J.
11. The neural basis of motor control by Black I., Churchill , Living stone 1987
12. Abnormal postural reflex activity caused by Brain Lesions Bobath B., Aspen publications, Rockville, 1897





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13. Clinical kinesiology by Brunstrom
14. Anatomy of the Central Nervous System: Poddar S.
15. Basic Neurological Life Support: Corbett, James J.
16. Human Anatomy: Regional and Applied: Chaurasia B.D.
17. Textbook of Pain: Wall P.D.
18. Bonica's Management of pain: Losser J.D.
19. Central nervous System: Brodal, Per
20. Textbook of Clinical Neuroanatomy: Singh Vishram
21. Clinical neurophysiology: Balon Robert W.
22. Textbook of Medical Physiology - Guyton - Mosby.
23. Pathologic Basis of Diseases - Robbins Kotran and Kumar – W.B. Saunders.
24. The Pharmacological basis of Therapeutics – Goodman and Gilman – MacMillan
25. Pharmacology and Pharmacotherapeutics – Satoskar & Bhandarkar – Popular Publications – Bombay.
26. Pathology implications for Physical Therapists – Goodman & Boissonnault– W. B. Saunders
27. Davidsons – Principles and Practice of Medicine– Edward – Churchill Livingstone
28. Hutchinsons – Clinical Methods of Medicine –Swash – Bailliere Tindall
29. Hutchinson's – Clinical Methods of Medicine
30. Text Book of Radiology - Sutton D. - Churchill Livingstone.
31. Orthopaedic Physiotherapy, Robert A Donatelli, Churchill Livingstone.
32. Physical Rehabilitation Assessment and Treatment, Susan Sullivan, Jaypee brothers
33. Physical therapy of shoulder, Robert A Donatelli, Churchill Livingston
34. Orthopaedic Physical Assessment , David J Magee, Saunders
35. Manual Examination and Treatment of the Spine and Extremities, Carolyn Wadsworth, Williams and Wilkins.
36. Illustrated Orthopaedic physical Assessment, Ronald C Evans, Mosby.
37. Physical Examination of the Spine and Extrimities , Stenley, Lipenfield.
38. Clinical Orthopaedic Examination, Mc Rae, Churchill Livingstone.
39. Exercise Therapy by Colby and Kisner, 6th Edition




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SYLLABUS FOR MPT-1ST YEAR
SPORTS/ORTHOPAEDICS/NEUROLOGY/CARDIOTHORACIC, OBS. & GYNECOLOGY

PAPER II: BIOMECHANICS & KINESIOLOGY

SCHEME OF EXAMINATION

Time: 3 Hrs

Max. Marks: 100

Subject	Max. Marks	Minimum Passing Marks
Biomechanics & Kinesiology	100	50

INSTRUCTION FOR THE PAPER SETTER

The pattern of theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions (<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

Section-A: This will consist of 10 very short answer type questions with answer to each question upto five lines (Fifty to sixty words) in length. All questions will be compulsory to answer. Each question will carry two marks. Total weightage of the section shall be 20 marks.

Section-B: This will consist of short answer questions with answer to each question upto 2 pages (250-300 words) in length. Eight questions will be set by the examiner and five have to be answered by the candidate. Each question will carry 10 marks. Total weightage of the section shall be 50 marks.

Section-C: This will consist of essay type questions with answer to each question upto 5 pages (approx 500 words) in length. Four questions will be set by the examiner and two have to be answered by the candidate. Each question will carry 15 marks. Total weightage of the section shall be 30 marks.

INSTRUCTIONS FOR THE CANDIDATES: Answer all questions only in required words




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PAPER- II

BIOMECHANICS & KINESIOLOGY

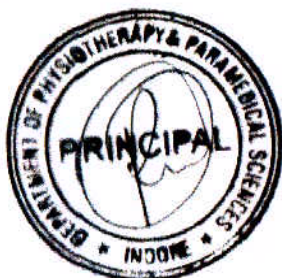
SYLLABUS CONTENTS:-

Concepts of Biomechanics and Kinesiology:

1. Introduction to Kinesiology and Biomechanics.
2. Nature and importance of Biomechanics in Physiotherapy.
3. Review of fundamental concepts and Principle of Biomechanics
4. Biomechanics of Tissues and structures of the musculoskeletal system.
5. Muscle and its properties, changes in contraction, conditions affecting muscle contraction, nervous control of muscular activity, reciprocal innervations and inhibition.
6. Force and force system, classification of force system, composition and resolution of forces, friction, Impact, elasticity, Couple end moment, linear and angular motion etc.
7. Principles of equilibrium , projectile, Principles of spin and rebound , principle of fluid mechanics
8. Advanced Biomechanics and kinesiology
 - a. Introduction to biomechanical analysis of humane motion.
 - b. Analytical tools and techniques –Isokinetic Dynamometer, Kinesiological EMG, Electronic Goniometer, Force Platform, Videography.
9. Ergonomic approach to lifting and handling, workspace and environment.
10. Patient positioning, body mechanics and Transfer techniques.

Applied Biomechanics and Kinesiology:

1. Methods of kinetics and kinematics investigation
2. Normal and applied Biomechanics of :-



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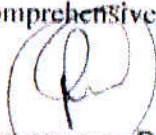
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- A. Upper Extremity: Shoulder and Shoulder girdle, Elbow joint, Wrist joint and Hand.
 - B. Lower Extremity: Pelvic Girdle including Lumbosacral region , Hip joint , Knee joint, Ankle & Foot
 - C. Spine
3. Biomechanics of posture
 4. Biomechanics of respiration, circulation, hand function.
 5. Biomechanics of Gait
 - A. Gait Analysis: Kinetic & Kinematic Analysis.
 - B. Pathological Gait: Kinetic & Kinematic Analysis
 6. Biomechanical analysis and therapeutic application:-
 - A. Squatting
 - B. Running
 - C. Jumping and landing
 - D. Throwing
 - E. Swimming
 - F. Rowing
 7. Biophysics of contractile and non contractile tissues, Response to mechanical loading, Factors affecting the joint range of motion prevention of stiffness, methods of Joint mobilization.

Books Suggested

1. James G. Hay – The Biomechanics of Sports Technique s, Prentice Hall.
2. Brunnstrom - Clinical Kinesiology, F.A. Davis.
3. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi, 1997, Brown & Benchmark.
4. Biomechanics – A Qualitative approach for studying Human Motion
5. Joint Structure and Function - A Comprehensive Analysis –




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6. Analysis of Sports Motion: Anatomic and Biomechanics perspectives
7. Kreighbaum E., Barthels K.: Biomechanics – A Qualitative approach for studying Human Motion, 2nd edi. 1985, MacMillan.
8. Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
9. White and Punjabi - Biomechanics of Spine - Lippincott.
10. Norkin & Levangie: Joint Structure and Function - A Comprehensive Analysis - F.A. Davis.
11. Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
9. Northrip et al: Analysis of Sports Motion: Anatomic and Biomechanics perspectives, W.C. Brown Co., IOWA.
10. Leveac B.F.: Basic Biomechanics in Sports and Orthopedic Therapy, C.V. Mosby.
11. De Boer & Groot: Biomechanics of Sports, CRL Press, Florida.
12. Basmajian - Muscle alive - Williams & Wilkins.
13. Nordin & Frankel - Basic Biomechanics of Muscular Skeletal System - Williams & Wilkins.
14. Bartlett - Introduction to Sports biomechanics - F & FN Spon Madras.
15. Mishra: Clinical Neurophysiology, B.I. Churchill Livingstone.



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SYLLABUS FOR MPT-1ST YEAR

SPORTS/ORTHOPAEDICS/NEUROLOGY/CARDIOTHORACIC, OBS. &GYNECOLOGY

**PAPER III: RESEARCH METHODOLOGY & BIostatISTICS AND EDUCATIONAL
METHODOLOGY**

SCHEME OF EXAMINATION

Time: 3:00Hrs

Max. Marks: 100

Subject	Max. Marks	Minimum Passing Marks
Research Methodology & Biostatics and Educational Methodology	100	50

INSTRUCTION FOR THE PAPER SETTER

The pattern of theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marks for each question	Total Max. Marks
10 Very Short Answer Questions(<i>Answer to be given in 50-60 words</i>)	02	20
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		100


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INSTRUCTIONS FOR THE CANDIDATES: Answer all questions only in required words




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PAPER- III

RESEARCH METHODOLOGY & BIostatISTICS AND EDUCATIONAL METHODOLOGY

SYLLABUS CONTENTS

Research Methodology: Basics concepts

1. Research –Introduction, scope, characteristics, types, clinical trials and ethics.
2. Research methods—various methods, Basic probability and sampling distributions
3. Census and survey methods of investigation.
4. Hypothesis—Advantages and types.
5. Sample - Introduction and types of sampling.
6. Sample size determination (according to study design)
7. Methods of Data Collection: Processing and analysis of data
 - Schedule –Introduction, types, procedure of forming schedule and limitations.
 - Questionnaire – Introduction, types, reliability and limitations.
 - Interview -- Introduction, types, technique and limitations.
 - Observation – Introduction, organization of field observations and limitations.
 - Preparation of report – Introduction, developing outline, writing, references and bibliography.
 - Format of scientific documents. (structure of protocols, formats reporting in scientific journals, systematic reviews and meta analysis)




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Concepts of Biostatistics:

1. Biostatistics –Introduction, origin & development, scope, functions and limitations
2. Presentation of data—Classification, tabulation, diagrammatic and graphical presentation of data
3. Central tendencies – Mean, Mode and Median
4. Measures of dispersion – Standard deviation and standard errors.
5. Skewness and kurtosis.
6. Odds Ratios, Receiver Operating Curve (ROC)
7. Probability
8. Statistical Tools- Correlation and regression , Parametric tests , Non-parametric tests

Educational Methodology

1. Concept of Morality, Ethics and Legality
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, Status of physiotherapist in health care
3. **Communication skills:** Process of Communication, Barriers to Communication , Types of Communication, Written vs. Oral Communication, Elements of good communication
4. **Management** – Principles and applications of Management and Administration to Physiotherapy practice: Planning, organizing, staffing, finance, marketing, controlling, directing, setting of a physiotherapy service unit
5. **Education:** Definition, Aims and objectives of education, Agencies of education, Formal and informal education, Brief introduction to philosophies of education, Taxonomy of educational objectives, Essential of physiotherapy education.




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6. Concept of teaching – learning

Nature of learning, type and stages of learning , Factors affecting learning, Laws of learning , Learning style teaching learning process, Role of teacher in teaching learning process, Adult learning, Teaching skills, Teaching Methods in Classroom Setting, Clinical teaching methods, Planning of teaching: lesson planning and unit planning

7. Teaching aids and educational technology

8. Curriculum:

- Meaning and Concept of curriculum, Factors affecting curriculum, Types of curriculum
- Basic principles of curriculum construction, Steps of curriculum development

9. Assessment and Evaluation:

- A. Meaning and Concepts of assessment
- B. Measurement Evaluation and examination
- C. Purpose of Evaluation
- D. Types of evaluation
- E. Principles of evaluation
- F. Techniques of evaluation
- G. Methods and tools used in testing of knowledge, skill, clinical performance and attitude

10. Faculty development, continuing professional education

Books Suggested

1. Bailey, N.T.J. -Statistical methods in Biology. The English universities press, London
2. Bajpai, S.R.- Methods of Social Survey and Research, Kitab Ghar, Kanpur.
3. Colton - Statistics in medicine, Little Brown Company, Boston
4. Gupta, S.P -Statistical methods. Sultan Chand and Sons Publishers , New Delhi.
5. Goulden C.H.- Methods of Statistical Analysis. Asia Publishing House , New Delhi.
6. Mohsin S.M.- Research Methods in Behavioral Sciences: Orient Publications. New Delhi.
7. Mahajan - Methods in Biostatistics, Jay Pee Brothers.Medical Publishers (P) Ltd. N. Delhi.
8. Hicks- Research for Physiotherapists, Churchill Livingstone, London.
9. Meenakshi. - First Course in Methodology of Research. Kalia Prakashan, Patiala.
10. Kumar , R.- Research Methodology. Pearson Education , Australia.
11. Snedecor,G.W -Statistical Methods, Allied Pacific Pvt. Ltd., London
12. Singh, I.- Elementary Statistics for Medical Workers. Jaypee Brothers Medical Publishers (P) Ltd. New Delhi.



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SYLLABUS & SCHEME OF EXAMINATION FOR

MPT- 2nd YEAR

MPT-2nd
ALL BRANCH

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SPORTS/ORTHOPAEDICS/NEUROLOGY/
CARDIOTHORACIC, OBS. & GYNECOLOGY




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SYLLABUS & SCHEME OF EXAMINATION FOR MPT 2ND / FINAL YEAR SPORTS/ORTHOPAEDICS/NEUROLOGY/CARDIOTHORACIC , OBS.&GYNECOLOGY

SCHEME OF EXAMINATION

MPT 2 nd /Final Year: University Examination					
S.No.	SUBJECT	Written	Practical	Viva	Total
1.	Exercise Physiology & Nutrition	100	--	--	100
2.	Physical Diagnosis & Rehabilitation	100	100	50	250
3.	Elective-I *	100	100	50	250
4.	Elective-II ** (Advanced Physiotherapeutic)	100	--	--	100
5.	Dissertation ***	--	--	100	100
					800

N.B.- Viva marks will be added in practical marks; candidate have to get min.50% marks i.e. 75 marks in practical and viva collectively for passing the practical examination.

Elective-I*: Subjects

MPT Sports: Sports Physiotherapy

MPT Orthopaedics: Orthopaedic Physiotherapy

MPT Neurology: Neurologic Physiotherapy

MPT Cardiothoracic: Cardiopulmonary Physiotherapy

MPT Obstetrics & Gynecology: Physiotherapy in Obs. & Gynecological conditions

Elective-II: Subjects (Advanced Physiotherapeutic)**

MPT Orthopaedics: Advanced Physiotherapeutic in Orthopaedic Physiotherapy

MPT Sports: Advanced Physiotherapeutic in Sports Physiotherapy


MPT Neurology: Advanced Physiotherapeutic in Neurologic Physiotherapy


MPT Cardiothoracic: Advanced Physiotherapeutic in Cardiopulmonary Physiotherapy

MPT Obstetrics & Gynecology: Advanced Physiotherapeutic in Physiotherapy in Obs. & Gynecological conditions

Dissertation ***- Dissertation VIVA examination of 100 max. marks including its presentation and related viva questioning by the examiners; would be conducted separately .




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SYLLABUS & SCHEME OF EXAMINATION FOR MPT 2ND/ FINAL YEAR
SPORTS/ORTHOPAEDICS/NEUROLOGY/CARDIOTHORACIC , OBS.&GYNECOLOGY

PAPER I: EXERCISE PHYSIOLOGY & NUTRITION

SCHEME OF EXAMINATION

Theory Examination; Time: 3.00Hrs

Max. Marks: 100

SUBJECT	Written	Practical	Viva	Total
Exercise Physiology & Nutrition	100	--	--	100

INSTRUCTION FOR THE PAPER SETTER

The pattern of University theory examination will be as under for 100 Max. Marks.

No. & Type of Question	Marksfor each question	Total Max. Marks
10 Very Short Answer Questions(<i>Answer to be given in 50-60 words</i>)	02	20
5 Short Answer Questions (<i>Answer to be given in 250-300 words</i>)	10	50
2 Essay Type Questions (<i>Answer to be given in 450-500 words</i>)	15	30
		100

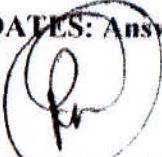
Section-A: This will consist of 10 very short answer type questions with answer to each question upto five lines (Fifty to sixty words) in length . All questions will be compulsory to answer. Each question will carry two marks. Total weightage of the section shall be 20 marks.

Section-B: This will consist of short answer questions with answer to each question upto 2 pages (250-300 words) in length. Eight questions will be set by the examiner and five have to be answered by the candidate. Each question will carry 10 marks. Total weightage of the section shall be 50 marks.

Section-C: This will consist of essay type questions with answer to each question upto 5 pages (approx 500 words) in length. Four questions will be set by the examiner and two have to be answered by the candidate. Each question will carry 15 marks. Total weightage of the section shall be 30 marks.

INSTRUCTIONS FOR THE CANDIDATES: Answer all questions only in required words




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PAPER -I

EXERCISE PHYSIOLOGY & NUTRITION

SYLLABUS CONTENTS

1. Sources of Energy, Energy Transfer and Energy Expenditure at rest and various physical activities.
2. **Bioenergetics of exercise** : High energy phosphates, Anaerobic and aerobic ATP synthesis, Bioenergetics Control, exercise intensity & substrate utilization, protecting CHO stores, muscle adaptation to endurance training, processes that potentially limit the rate of fat oxidation, regulation of substrate utilization, training - induced increase in FFA oxidization:
3. Basal metabolic and resting metabolic rates and factors affecting them, Classification of Physical Activities by energy expenditure. Concept of MET , measurement of energy cost of exercise
4. **Respiratory responses to exercise:** Ventilation at Rest and during Exercise. Ventilation and the Anaerobic Threshold, static and dynamic lung volume. Gas diffusion, Oxygen and carbon dioxide transport second wind, control of pulmonary ventilation during exercise, adaptive changes in the respiratory systems due to regular physical activities.
5. **Cardiovascular responses to exercise-** Cardiovascular system and exercise, acute vascular effects of exercise , Circulatory responses to various types of exercise regulation of cardiovascular system during exercise , Pattern of redistribution of blood flow during exercise, adaptive responses of cardiovascular system to aerobic and anaerobic training. Athlete heart
6. **Exercise and Acid Base Balance:** Acid and Bases, Buffers, pH, Respiratory Regulation of pH, Alkali Reserve, The kidneys and Acid base balance, Alkalosis and Acidosis, Acid base balance following heavy exercise.
7. **Hormonal responses to exercise with respect to** Growth Hormone (GH), Thyroid and Parathyroid Hormones. Anti diuretic Hormone (ADH) and Aldosterone, Insulin and Glucagon, The catecholamine; epinephrine and norepinephrine. The sex hormones. The glucocorticoids (Cortisol) and Adreno Corticotrophin Hormones (ACTH). Prostaglandins and Endorphins.





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8. Fatigue assessment and scientific organization of work-rest regimes to control fatigue
9. **Training and conditioning:-** Physiological basis of physical training , training principles , interval training , continues running concept of anaerobic threshold and vo2 max , physiological effects of various physical training methods,- aerobic and anaerobic training , strength training factors influencing training effects – intensity, frequency , duration , detraining , process of recovery , post exercise oxygen consumption factors affecting recovery process , overtraining
10. **Body temperature regulation during exercise:** Mechanism of regulation of body temperature , Body temperature responses during exercise, Physiological responses to exercise in the heat , Acclimatization to exercise in the heat , Effects of age and gender on body temperature regulation during exercise, Physical activity and heat illness[heat exhaustion, dehydration exhaustion heat cramps & heat stroke] Prevention of Heat Disorders
11. **Exercise in the Cold:** Effects of exposure to cold and severe cold , Wind chill, Temperature receptors., Role of hypothalamus , shivering , Frost Bite and other problems, Clothing and Environment
12. **Exercise at Altitude:-** Exercise at altitude immediate physiological responses at high altitude , physiological basis of altitude training , phases of altitude training and specific training effects , altitude acclimatization , oxygen dissociation curve at altitude , disorders associated with altitude training
13. **Exercise and body fluids:-** Measurement and regulation of body fluids, Body fluid responses and adaptations to exercise, Effects of dehydration and fluid replenishment on physiological responses to exercise and performance Fluid/carbohydrate replacement beverages
14. **Physical activity, body composition, energy balance and weight control :** Considerations of age and sex in exercise and training, Significance and measurement of body composition, Body composition during growth and aging, Body composition and physical performance, Effect of diet and exercise on body composition, Physical activity, energy balance, nutrient balance and weight control, Physical activity, fat distribution and the metabolic syndrome , Healthy weight loss, Ways and methods of weight reduction , fluid maintenance, disordered




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eating, nutritional ergogenic aids, diet supplements in athletes and others involved in physical activity.

15. Exercise prescription for health and fitness with special emphasis to cardiovascular disease, Obesity and Diabetes.
16. **Exercise and Diabetes Mellitus**: Exercise in insulin, requiring diabetes and non-insulin dependent diabetes mellitus, Effect of physical training on glucose tolerance and insulin sensitivity, Management of diabetes by diet and insulin
17. **Nutrition**; Metabolism of Carbohydrate , fats and proteins , vitamin, mineral and water
18. **Nutrition in exercise** : Optimum nutrition for exercise , nutrition for physical performance , pre game meal, Carbohydrate loading , food for various athletic events , fluid and energy replacement in prolonged exercise

Books suggested

1. Essentials of Exercise Physiology: Mc Ardle, WD, Katch, FI, and Katch, VL. 2nd edn, Lippincott Williams and Wilkins
2. Fundamentals of Exercise Physiology: For Fitness Performance and Health, Robergs RA, and Roberts, S.O. McGraw Hill
3. Exercise Physiology: Powers, SK and Howley ET. 4th edn; Mc Graw Hill
4. Physiology of Sport and Exercise: Wilmore, JH and Costil, DL. Human Kinetics
5. Exercise Physiology- Human Bioenergetics and its Application: Brooks, GA, Fahey, TD, White, TP. Mayfield Publishing Company
6. Komi, P. , Strength and power in sport. Blackwell Scientific Publications.
7. Levick, J.R., An introduction to Cardiovascular Physiology. 2nd ed. Butterworth Heinemann
8. McArdle, WD, Katch, FI & Katch, VL, Exercise Physiology. 5th ed. Lippincott, Williams & Wilkins.
9. Shephard and Astrand, Endurance in sport. Blackwell Scientific Publications.
10. Willmore, JH & Costill, DL, Physiology of Sport and Exercise. 2nd ed. Human Kinetics.
11. Guyton, A.C. Textbook of Medical Physiology (7th Ed.). Philadelphia: Saunders
12. Perspectives in Nutrition (6th ed.), Wardlaw
13. Nutrition for sport and exercise (2nd ed.), Berning and Steen




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SYLLABUS & SCHEME OF EXAMINATION FOR MPT 2ND/ FINAL YEAR
SPORTS/ORTHOPAEDICS/NEUROLOGY/CARDIOTHORACIC, OBS. & GYNECOLOGY

PAPER II: PHYSICAL DIAGNOSIS & REHABILITATION

SCHEME OF EXAMINATION

Theory Examination; Time: 3.00Hrs

Max. Marks: 100

SUBJECT	Written	Practical	Viva	Total
Physical Diagnosis & Rehabilitation	100	100	50	250

INSTRUCTION FOR THE PAPER SETTER

The pattern of University theory examination will be as under for 100 Max. Marks.

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PAPER -II

PHYSICAL DIAGNOSIS & REHABILITATION

Course objective

1. Make clinical decision and plan for effective treatment.
2. Evaluate and analyze the physiological aspects of physical rehabilitation.
3. Identify and recognize the importance of monitoring vital signs.
4. Plan strategies for management of various musculoskeletal enological, cardio pulmonary problems and in various medical surgical conditions.

COURSE CONTENTS:-

1. Clinical decision making-planning effective treatment

Collection and documentation of data, Analysis of data and identifying the problems, setting of goals, Formulation and implementation of treatment plan including evaluation of treatment outcome, Clinical decision making models, Foundation for clinical decision making

2. Overview of psychological aspects in physical Diagnosis & Evaluation


Disability adjustment, Reaction to injury, subjectivity of disability and adjustment, stress in disease. Role theory, stages of adjustment, emotional complications and emotional functioning. Overview of psychological and social adjustment to illness


3. Vital signs

Identification of reasons for monitoring vital signs, Importance of monitoring vital signs, Common techniques of monitoring vital signs, identification and analysis of normal values with abnormal values.

4. Overview of epidemiology, pathology, pathogenesis, disease course and common clinical manifestations of degenerative, infective, inflammatory and non specific arthritis of all joints. Investigative procedures commonly used in the evaluation of all kinds of arthritis of all kinds of arthritis including laboratory tests. Medical management of the individual with different types of arthritis and emphasizing the effects of drugs and invasive procedures on the musculoskeletal




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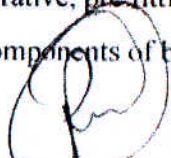
system, the implications of them in various physiotherapy modalities. Physiotherapy management of all above conditions.


- 5. Assessment and treatment planning strategies for musculoskeletal problems:** Principles of evaluation, evaluation methods, Special tests used in Musculoskeletal, Neurological and Cardiopulmonary disorders. Clinical manifestations, general and specific musculoskeletal clinical examination.
6. Activity analysis and incorporation of motor relearning strategies.
7. Principles of pathological investigations and imaging techniques related to neuromuscular, skeletal and cardiopulmonary disorders with interpretation.
6. Developmental screening, motor learning –motor control assessment.
7. Anthropometric measurements.
8. Methods of Kinetic and kinematic investigation for joints and gait. Gait analysis and diagnosis- Overview of normal gait analysis: kinetic and kinematic analysis; the reliability and validity of gait analysis; Description of some of the most commonly used types of observational gait analysis; Advantages and disadvantages of kinematic qualitative and kinematic quantitative gait analysis.
9. Physical disability evaluation and disability diagnosis.
10. Physical fitness assessment.
11. Pulmonary function tests.
12. Exercise ECG testing and monitoring.
13. Clinical Electro Physiological testing.
14. Aids and appliances, adaptive functional devices – assessment.
- 15. Treatment goals and Rehabilitation strategies**

Gait training; Pre ambulation programme ; assistive devices and gait patterns.

Evaluation and management of amputee; overview of amputation surgery which includes concepts pre operative , post operative, pre fitting ,post fitting physiotherapy. Prosthetic assessment and management , components of below knee, above knee prostheses,




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advantages and disadvantages of alternative component and materials , features of partial foot, symes , knee and hip disarticulation prostheses; principles and features of prosthetic assessment including dynamic and static check out of prostheses.

16. Orthotic evaluation and management

Types of orthosis ; footwear modification, lower limb orthosis, components, check out. Spinal orthosis; types and components, Physiotherapy management including orthotic gait analysis and gait training.

Wheelchair ; components of wheel chair measurement for wheel chair ,features of sports wheel chair.

Protective equipments design of shoe safety factors in equipment.

17. Bio-feed Back:-

Principles of bio-feed back in physiotherapy.

Electromyographic feed-back for motor relearning.

Equipment and technical specifications - Kinematic feed back ; standing feed back ; kinetic feed back ; new concepts of bio- feed back.

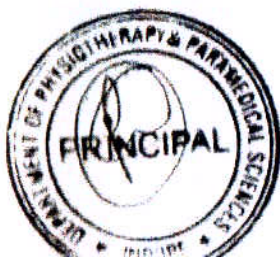
18. Overview of advances in surgical procedures.


Evaluation , assessment and treatment planning strategies for traumatic and surgical problems.

19. Sensory evaluation and assessment ; purpose of sensory evaluation and assessment , classification and function of receptor mechanism, involving the perception of sensation , identification of spinal pathways that mediate sensation ,guidelines for completing sensory evaluation, description for testing protocol for assessment of each sensory modality.

20. Coordination evaluation and assessment; Purpose, common coordination deficits associated with lesions of cerebellum, basal ganglia and dorsal columns. Testing procedure; non – equilibrium coordination test; equilibrium coordination tests.

21. Motor control assessment; purposes and components, identification and description of CNS controls mechanism associated with motor control mechanism ,description of Common motor control defects with specific procedures and tests used to assess motor Control defects , the factors which influence the result of motor control assessment.




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22. Electrodiagnosis :-

EMG studies and nerve conduction velocity test; instrument, methodology for performing EMG and NCV examination

The characteristics of normal muscle potential , typical EMG and NCV finding seen neuro muscular disorders , their treatment strategies in physiotherapy based on clinical EMG finding. Relation between EMG and force with different types of contraction .

Interpretations of EMG correlating the procedural, technical and physiological considerations; the uses of kinesiological EMG for clinical evaluation and treatment of patients with neuro muscular or musculoskeletal dysfunction.

23. Functional evaluation ; The concept of health status impairment; functional limitation; disability and handicap; definition of functional activity and the purposes and components of the functional assessment ; selection of activity and roles for an individual based on his or her capabilities and functional limitation, various forms of functional tests; physical function test and multi dimensional functional assessment instrument ,identification of instrument for testing function ; various scoring methods used in functional assessment ;reliability and validity of various functional assessment.

24. Stroke(Physical) Rehabilitation ;overview of etiology pathophysiology , symptomatology and sequelae of stroke ; various investigative procedures including MRI ,CT scan for diagnostic and evaluation of stroke medical management and effects of drugs on neuro muscular system .physical evaluation and assessment of stroke on the basis of various approaches –Neuro developmental ,Brunstrom ,Roods and Motor relearning programme ; strategies for effective physiotherapeutic management during acute and post acute phase.

25. Physical rehabilitation of multiple sclerosis ; overview of pathology ,epidemiology etiology ,course and clinical symptoms of multiple sclerosis, diagnostic evaluative procedures.

Rehabilitative management of patients with multiple sclerosis with emphasis on the role and contribution of physiotherapists in the long term management.




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26. Traumatic head injury; Pathophysiology of traumatic head injury; clinical rating scale and their usefulness, investigative procedures including CT scan and MRI, medical surgical management and the effects of various drugs on neuromuscular system; physiotherapy management during acute stage, physiotherapy evaluation and treatment planning with due consideration of patients cognitive status; components of physiotherapy assessment; the role of physiotherapy-intervention as inter/intra disciplinary team approach.

27. Pulmonary dysfunction and physiotherapy; Overview of chronic obstructive pulmonary diseases ,asthma, cystic fibrosis and restrictive lung diseases in terms of definition ,biology, pathophysiology ,epidemiology ,investigations including lung function test and x-ray ;medical/surgical management in various stages and effects of drugs used on various stages and effects of drugs used on patients with pulmonary disease; identification of problems ,potential benefits and goals of pulmonary physiotherapy; various physiotherapy management of a patients with pulmonary dysfunction.

28. Cardiac condition and physiotherapy ; overview of epidemiology ,pathophysiology , symptomatology and sequel of coronary artery disease and congenital and other acquired heart diseases; diagnostic and evaluative procedures commonly associated with above diseases; physiotherapy evaluation and management of above conditions


29. Vascular problems and physiotherapy; overview of vascular problems its interventions ,evaluation and medical management ; physiotherapy management in acute and chronic stages.

30. Burns and physical rehabilitation:- Overview of causes, percentage, types of burns , evaluation and medical management, physiotherapy management in acute and chronic stages.

Suggested Text book:-

1. Treatment Planning for Person-Centered Care: Shared Decision Making for Whole Health (Hardcover, Diane M Grieder Neal Adams MD Grieder Adams)- AP Publication
2. Psychiatric Care of the Medical Patient, Barry S. Fogel , Donna B. Greenberg
3. Occupational Therapy and Neurological Conditions, Jenny Preston, Judi Edmans
4. Psychological Co-morbidities of Physical Illness: A Behavioral Medicine Perspective- Sherry Pagoto, Springer
5. Vital Signs, Robin Cook-Latest edition
6. Contributions to the Physiology and Pathology of the Circulation of the Blood, George Robinson
7. Problem Solving in Musculoskeletal Imaging, William B. Morrison ,Timothy G. Sanders- Kindle




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8. Orthopedic Physical Assessment, 6e (Musculoskeletal Rehabilitation), David J. Magee PhD BPT
9. Therapeutic Exercise: Foundations and Techniques, Carolyn Kisner (Author), Lynn Allen Colby,
11. Physical Rehabilitation, 6th Edition- Susan B. O'Sullivan PT, EdD Thomas J. Schmitz PT, PhD
George Fulk PT, PhD – FA Davis
12. Improving Functional Outcomes in Physical Rehabilitation, Susan B O'Sullivan , Thomas J Schmitz.
13. Physical Agents in Rehabilitation: From Research to Practice, Cameron.
14. Neurologic Interventions for Physical Therapy, Martin.
15. Daniels and Worthingham's Muscle Testing: Techniques of Manual Examination and Performance Testing, 9e- Helen Hislop PhD ScD FAPTA, Dale Avers PT DPT PhD
16. Documentation for Physical Therapist Practice: A Clinical Decision Making Approach- Jacqueline A. Osborne
17. Pierson and Fairchild's Principles & Techniques of Patient Care, Fairchild
18. Measurement of Joint Motion: A Guide to Goniometry, Cynthia C. Norkin, Joyce White

20. Motor Control: Translating Research into Clinical Practice, Anne Shumway-Cook, Marjorie H. Woollacott
21. Physical Medicine and Rehabilitation Digest
22. Physiotherapy of the Shoulder- PP Mohanty, Monalisa Pattnaik, Jay Pee Publication, New Delhi- Latest edition
23. Physiotherapy in Neuroconditions- Gladys Samuel Raj, Jay Pee Publication, New Delhi- Latest edition
24. Clinical Kinesiology and Anatomy- Lynn S Lippert
25. Orthopaedic Manual Physical Therapy: From Art to Evidence- Christopher H Wise
26. Essentials of Cardiopulmonary Physical Therapy- Ellen Hillegass
27. Observational Gait Analysis-
28. Meeting the Physical Therapy Needs of Children, Susan K. Effgen
29. Total Burn Care (Fourth Edition)- Elsevier
30. Burn Care and Rehabilitation: Principles and Practice , Reginald Richard, Marlys Staley
F.A. Davis



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