

NATIONAL INSTITUTE OF AYURVEDA

Deemed-to-be-University(de-novo)
(Ministry of AYUSH, Govt. of India)



Syllabus



Master of Science in Marmalogy and Sports Medicine (Marma Chikitsa Evam Kreedha Bhesaja)

Course Code : NIA/M.Sc./MSM

Department of Marmalogy and Sports Medicine

National Institute of Ayurveda

Jorawar Singh Gate, Amber Road, Jaipur 302002

Website: nia.nic.in E-mail: nia-rj@nic.in

Phone: 0141-2635816

C O N T E N T S

Sl.No.	Title	Page No.
1.	Preface	1
2.	Names of the Members of the Committee	2
3.	Aims and Objectives of the Course	2
4.	Outcome of the Course	3
5.	Career Opportunities	3
6.	Scheme of Academic Program	3
7.	Course Structure	4
8.	Syllabus	5
9.	Assessment	17
10.	Distribution of Marks	18
11.	Recommended Books	19
12.	Recommendations	20

: P R E F A C E :

With the awareness of fitness among the youth in our country, indulgence in various sporting activities is on the rise. Also participation of Indian sportsmen and athletes in various sporting events at the national and international levels has increased in the last decade. Sports, whether competitive or recreational, have become fitness oriented and have led to an increase in the number of resultant injuries as well. The field of Sports Medicine inhabits a multidisciplinary approach as it involves healthcare providers, researchers and academicians from a wide variety of disciplines to help the sports persons to achieve their maximum level of performance. Ayurveda, an ancient medical discipline has been serving humanity since antiquity as the discipline of 'Original Medicine' rather than an alternative medicine.

Ayurveda inhabits an eternal stream of knowledge with the aim to protect health and to alleviate diseases. Ayurveda has wide dimensions and applicability in the field of sports medicine. The inherent potential of Ayurveda accords with the demands of modern sport medicines and if an integrated approach is adopted, better outcomes are anticipated.

Not only to foster the preventive aspect but holistic and time tested treatment methods are the strength and beauty of Ayurveda. This is the reason why Ayurveda is being adopted worldwide and its scope is reaching the horizon. Health has been rendered as an ultimate bliss and source to achieve other things in the life. The definition of health by World Health Organization (WHO) accords with that of Ayurveda as described by Acharya Sushruta. The one whose *Doshas*, *Agni* and functions of *Dhatus* and *Mala* are in the state of equilibrium and who has a cheerful mind, intellect and sense organs is termed as *Swastha* (healthy). This is the state of perfect health and Ayurveda aims at attaining and maintaining all the individual components of health. A sports person has to be perfectly healthy for achieving desired goals. Physical, mental, social, spiritual and ethical, all these aspects are to be dealt with in the arena of sports medicine. The need for facilities of sports medicine have increased manifold in the recent years with an ultimate vision to improve performance of sports persons. Ayurveda is enriched with the knowledge of Ahara, Vihara, Ritucharya, Dinacharya, Sadvritta, Yoga along with special management modalities of Panchakarma, Marmachikitsa and Rasayana Chikitsa in addition to general and specific lines of treatment for different sports injuries. It is incredibly important in present day scenario to inculcate the knowledge of Ayurveda to cultivate the field of Sports Medicine.

The need today is to start a Sports Medicine Specialty course having an integrated approach. Sports Medicine is a recognized specialty in most advanced countries. These countries appoint a sports medicine consultant for most of their sports teams and Olympic contingents. This new course designed to provide the best of Ayurveda and contemporary sciences to serve the needs of sport persons to help them hone their skills to perform better at national and international levels. This course intends to provide an integrated curriculum to deliver the best of both Ayurveda and modern sciences, to serve the needs of present day sports medicine in a better way.

Date:

Place:

Prof. P. Hemantha Kumar
Chairman
Syllabus Drafting Committee
Department of Marmalogy and Sports Medicine
National Institute of Ayurveda, Jaipur

Members of the Course Committee: Marma Chikitsa and Sports Medicine

M.Sc. Degree in Marmalogy and Sports Medicine (Marma Chikitsa Evam Kreedha Bhashaja)

Title: M.Sc. Marmalogy and Sports Medicine (Marma Chikitsa Evam Kreedha Bhashaja)

Course Code: NIA/M.Sc/MSM

Names of the Members of the Course Drafting Committee

1. Prof. P. Hemantha Kumar (Professor & HOD of Shalya Tantra, NIA, Jaipur) : Chairman
2. Dr. Suman Sharma (Associate Professor, Deptt. of Shalya Tantra, NIA, Jaipur) : Member
3. Dr. B. Swapna (Assistant Professor, Deptt. of Shalya Tantra, NIA, Jaipur) : Member
4. Dr. Manorma Singh (Lecturer, Deptt. of Shalya Tantra, NIA, Jaipur) : Member

Internal Draft Reviewing Committee

1. Prof. Sanjeev Sharma (Director, NIA, Jaipur)
2. Dr. Ashok Kumar (Associate Professor, Deptt. of Shalya Tantra, NIA, Jaipur)
3. Dr. Narinder Singh (Associate Professor, Deptt. Of Shalya Tantra, NIA, Jaipur)

Names of Inter Departmental Experts

1. Dr. Chhaju Ram Yadav (Associate Professor, Deptt. of Sharira Kriya Vigyana)
2. Dr. Sunil Yadav (Associate Professor, Deptt. of Sharira Rachana Vigyana)
3. Dr. Gopesh Mangal (Associate Professor, Deptt. of Panchakarma)
4. Dr. Kashinath (Assistant Professor, Deptt. of Swasthavritta and Yoga)

Names of External Experts Committee

1. Dr. N.V. Sreevaths (Honorary Director, Swasthyakshetram Ayurvedic Health Care Centre, Nallepilly, Palakkad, Kerala-678553)
2. Dr. Arshad Daisman (Managing Director, Daisman Ayurveda Treatment Hospital, Kondotty, Kerala-673638)
3. Dr. Arun Garg, Medical Specialist, IPL Committee Member, Rajasthan

Aims and Objectives

- To optimize the use of Ayurvedic principles and modalities of Marmalogy in the field of Sports Medicine.
- To impart exclusive and extensive integrated knowledge and understanding of Marmalogy and Sports Medicine and relevant applied sciences to achieve and maintain standards of best practice in prevention and treatment of sports related injuries.

Vision & Mission:

- To produce experts who will have full knowledge of sports medicine and applications of principles of Ayurveda in sports medicine.
- Course has been specially designed for graduates of AYUSH System of medicines viz. Ayurveda, Yoga, Unani, Sidhha, Homeopathy and other systems of medicine viz. M.B.B.S, B.PT, B.Sc (Sports Medicine) to have an integrated knowledge on Marmalogy and Sports medicine. This course will help them broaden their spectrum of professional competence to serve the society in a better way.

Outcome of the Course:

- This course will help the learners to cultivate a better understanding of various aspects of Marmalogy and Sports Medicine through an integrated approach as in addition to Ayurvedic paradigm, the modern scientific principles and methods have been incorporated in the curriculum.
- This is a novel course designed mainly to encourage the practitioners of AYUSH and other systems of medicines to improve their skills to attain and maintain the standards of best practices in Marmalogy and Sports Medicine (Marma Chikitsa Evam Kreedha Bhashaja).

Career Opportunities

This course has the possibilities of offering job opportunities in colleges or universities or sports academies/institutions as it tends to inculcate and enhance the professional skills related to Kreedha Bhashaja (Sports Medicine) among AYUSH and other practitioners. This course will help them broaden their spectrum of professional competence to serve the society in a better way.

SCHEME OF ACADEMIC PROGRAMME**Department:**

Department of Marma Chikitsa and Sports Medicine

Course Name:

M.Sc. in Marmalogy and Sports Medicine (Marma Chikitsa Evam Kreedha Bhashaja)

Course Code:

NIA/MSc/MSM

Eligibility:

BAMS/BHMS/BUMS/BSMS/BNYS/MBBS/B.Sc (Sports Medicine)/B.PT from a recognized college affiliated with the recognized University.

Admission Procedure:

Admission will be made on the basis of merit secured in the screening test to be conducted by NIA.

Course Duration:

Duration of the course will be of 2 years.

Working Days:

As per UGC guidelines, the effective teaching days in an institution should not be less than 30 weeks. The syllabus for the present course of M.Sc. in **Marmalogy and Sports Medicine (Marma Chikitsa Evam Kreedha Bhashaja)** has been framed with an assumption of six working days in a week and total duration of the course will be as follows:

Distribution of Teaching Hours

Sl. No.	Subject	Theory	Practical	Total Hrs.
1	M.Sc. 1 st Year	24 Hrs/Week	12 Hrs/Week	36 Hrs/ Week
		720 Hrs/Year	360 Hrs/Year	1080 Hrs/ Year
2	M.Sc. 2 nd Year	24 Hrs/Week	12 Hrs/Week	36 Hrs/ Week
		720 Hrs/Year	360 Hrs/Year	1080 Hrs/ Year

Course Structure:**1st Year**

Sl. No.	Paper	Course No.	Course	Hours
1.	Paper 1		Basics of Ayurveda	180
2.	Paper 2		Basics of Anatomy (Sharira Rachana Vigyan) and Lifestyle and Personal Hygiene (Swasthavritta)	180
3.	Paper 3		Basics of Physiology (Sharira Kriya Vigyan) & Marma Vigyana	180
4.	Paper 4		Fundamental Principles of Sports Medicine (Kreedha Bshhaja)	180

Practical: 1st Year

1	Paper 1-4		360 Hrs
---	-----------	--	---------

2nd Year

Sl.No.	Paper	Course No.	Course	Hours
1	Paper 1		Applied Aspects of Sports Medicine (Kreedha Bshhaja)	180
2	Paper 2		Applied Sports Sciences(Kreedha Vigyana)	180
3	Paper 3		Clinical Sports Medicine(Kreedha Bshhaja)	180
4	Paper 4		Marma Chikitsa and Sports Physical Therapy	180

Practical:2nd Year

1	Paper 1-4		360 Hrs
---	-----------	--	---------

Syllabus: 1st Year**Paper 1: Basics of Ayurveda**

Teaching Hours: 180 (Theory)

Max. Marks: 100

Paper 1	Basics of Ayurveda	180 Hrs
1.	Definition and components of Ayu, definition and aim of Ayurveda, Brief introduction of Ayurveda Samhitas.	4
2.	Definition of Swastha Purush, Introduction of parameters of Swasthya and Tray-upastambha.	6
3.	Introduction of concept of Panchmahabhuta theory, Tridosha theory and Loka Samya Purush.	6
4.	Introduction of concept of Saptadhatu, Mala and Ojus.	4
5.	Introduction of concept of Srotas.	3
6.	Introduction of concept of Prakriti, Mana and Atma.	5
7.	Introduction of concept of Raspanchaka.	7
8.	Introduction of Panchvidha Kashaya Kalpana.	2
9.	The concept of Roga, main etiological factors, Chikitsa and its types.	4
10.	Introduction of various sections/departments of Ayurveda and their specific activities.	14
11.	Description of Chikitsa Chatushpada and their importance in Sports Medicine	5
12.	Types of Vega- Dharniya and Adharniya Vega, diseases related to Vega-dharna and their Management.	5
13.	Pramana of Anga-Pratyanaga, Dhatu, Mala, Importance of Pramana Sharira, Calculation of Body Mass Index etc.	5
14.	Agni, classification of Agni, Types of Koshta, Description of Nirmana of Various Dhatus and Updhatus in the body.	5
15.	Trividha Pareeksha, Panchavidha Pareeksha, Shadavidha Pareeksha, Ashtavidha Pareeksha, Dashavidha Pareeksha and Pareekshya Bhava etc. in special relevance to Sports Medicine.	12
16.	Description of Roga Marga, Nija Roga and Agantuja Roga in relevance to Sports Medicine.	10
17.	General description of Pathya & Apathya and its importance in Sports Medicine. Virudhh Ahara - Concept, Types and Importance in Sports Medicine.	7
18.	Basic concept of Marma, etymological derivation, definition, number and Pramana, importance.	6
19.	Purva Karma, Pradhana Karma and Pashchat Karma.	6
20.	Principles of Sterilization, Asepsis, Antisepsis, Disinfection and Disposal of Biomedical waste	6
21.	Knowledge of handling of medico-legal cases and issuing MLCs and other certificates.	6
	Fundamental Ethical Principles in Sports Medicine, Confidentiality, Conflicts of Interest, Ethical consideration for use of Analgesics, Ethics of Sports Medicine Research.	12
22.	Definition and Classification of Research - (pure/applied; qualitative/quantitative; observational and interventional)	5
23.	Historical background of research in Ayurveda	2
24.	Introduction to Classical methods of research- Aptopdesh, Pratyaksha Anuman and Yukti	6
25.	Research process- Brief introduction of Selection of topic, Review of literature, Formulation of hypothesis, Aims and objectives, Materials and methods, Observation and Results.	4
26.	Concept of ethics in research.	2

27.	Publication of research, Structuring of article (IMRAD).	4
28.	Brief introduction of Medical Statistics.	2
29.	Collection and presentation of data.	4
30.	Definition of Average, Percentile, Arithmetic Mean, Median, Mode, Range, Standard Deviation and Standard Error.	5
31.	Parametric and Non-parametric tests.	6

Paper 2: Basics of Anatomy (Sharira Rachana Vigyana) and Lifestyle and Personal Hygiene (Swasthavritta)

Teaching Hours: 180 (Theory)

Max. Marks: 100

Paper 2	Basics of Anatomy (Sharira Rachana Vigyana) and Lifestyle and Personal Hygiene (Swasthavritta)	180 Hrs
Anatomy of Bones & Joints (Asthi Sandhi Sharira)	Classification and description of Asthi, Sandhi, Tarunasthi, Peshi, Dhamani, Sira, Kurcha, Kandra, Jala, Asthisanghata, Seemanta, Seevani, Rajju, Lasika, Snayu according to Ayurveda and Modern.	15
Musculoskeletal System	Physical Properties of bone, cartilage, muscle and functional adaptation under pathological conditions.	15
Applied Osteology (Asthi Vigyana)	General features of the following bones: Bones of skull, Vertebrae, Clavicle, Scapula, Ribs, Sternum, Humerus, Radius, Ulna, Hip bone, Femur, Tibia and Fibula, Bones of hands and feet.	15
Applied Syndesmology (Sandhi Vigyana)	Joints: Definition and Classification of joints: Shoulder, Elbow, Knee, Ankle, Inter-vertebral joints, Wrist joint, Small joints of hand and foot.	15
Applied Myology	Origin, insertion, nerve supply and action of all the important muscles related to human movement.	15
Anatomical Angles and Joints Biomechanics	Anatomical Angles and stiff joints - Anatomical Angles, Optimal attitude for stiff joints and Snapping joints.	10
Lifestyle, Dietetics and Personal Hygiene (Swasthavritta and Sadvritta)	Aahara and Vihara, Rasayana, Dincharya, Ritucharya in context of Marma Vigyana and Kreedha Bhashaja.	15

Paper 3: Basics of Physiology(Sharira Kriya Vigyan) and Marma Vigyana

Teaching Hours: 180 (Theory)

Max. Marks: 100

Paper 3	Basics of Physiology(Sharira Kriya Vigyan) and Marma Vigyana	180 Hrs
Physiology (Sharira Kriya Vigyana)	Introduction to Exercise Physiology.	2
	Factors affecting Physiological Function, Energy Transfer and Exercise Performance.	8
	Blood: The various components of blood, Viscosity correlation, Oxyhemoglobin Dissociation curves, Interrelationship between pressure flow and resistance,	20

	Pressure volume curves, Stress relaxation of vessels	
	Cardiovascular System: Physical characteristics of systemic circulation, Pressure pulses, Oxygen demand theory of local blood flow circulation, Nervous control of blood circulation, Humorous control of blood circulation, Mechanisms of arterial pulse regulation, Hypertension, Cardiac output and its regulation, Cardiac output in normal stress conditions, Methods of measuring cardiac output, Normal coronary blood flow along with variations, Physiological basis of ischemic heart disease, The cardiac reserve, Physiological causes of shock.	25
	Pulmonary system: Review of mechanics of respiration, Pulmonary volumes and capacities, Composition of Alveolar air, Transport of oxygen in blood, Carbon dioxide in blood, Regulation of respiration, Methods of studying respiratory abnormalities.	20
	Endocrinology related to sports medicine: Pituitary hormones and their functions, Thyroid hormones, Adrenocortical hormones, Insulin Glucagon hormones, Parathyroid hormones.	25
	Body temperature regulation: Knowledge of Body temperature in hot and cold environment, general aspects of haemostatic balance in different environments, regulation of blood volume, osmolality and pH during exercise.	10
Marma Vigyana	Applied aspect of individual Marma. Concept of Prana, Naadi, Srotas, Chakra and Anguli Pramana to locate Marma. Classification of Marma according to Structure, Region, Prognosis, Constitution, Dimension.	35
	Interpretation of each Marma in present context (Regional surgical anatomy). Detailed description of Tri-Marma	35

Paper 4: Fundamental Principles of Sports Medicine (Kreedha Bhashaja)

Teaching Hours: 180 (Theory)

Max. Marks: 100

Paper 4	Fundamental Principles of Sports Medicine (Kreedha Bhashaja)	180 Hrs
Introduction to Sports Medicine	Etymology and Definition of Sports Medicine (Kreedha Bhashaja)	2
	Aim, Tasks and Characteristics of sports training.	8
	Scope and Importance of Kreedha Bhashaja / Sports Medicine.	5
	History of Sports Medicine.	5
Wounds and Ulcer (Vrana Vigyana)	Vrana – Aetiology, classification, symptomatology, prognosis, complications and management principles of Nija and SadyoVrana. Knowledge of Shashti Upakrama, Seevana and Vrana Bandhana.	25
	Wounds and Ulcers – Etiology, classification, symptomatology, complications, prognosis, management	25

	principles of wounds and ulcers, mechanism of wound healing. Knowledge of suture materials, Suturing techniques, dressing / bandaging materials and techniques, advanced wound closure techniques.	
	Vranitopasniya - Management of Vranita /Wounded person.	15
	Knowledge of Sandhaniya and Ropaniya drugs.	15
Musculoskeletal Injuries (Bhagna Vigyan)	Bhagna - Aetiology, classification, symptomatology and investigations.	20
	Factors influencing the fracture healing according to Ayurvedic and Modern concept.	10
	Knowledge of Splints and Orthotics.	15
Radiological Techniques and their use in Sports Medicine	Basics of radiology and radiological imaging techniques (X-ray, CT scan, MRI, USG, Radioisotope scanning etc). Imaging of the head and neck, chest and abdomen, imaging of spine, imaging of pelvis, hip and thigh, imaging of knee joint, imaging of the lower leg, foot and ankle.	20
Concept of Pain	Concept of Pain in Ayurveda and Contemporary Health Science	15

Practical - First Year

Teaching Hours: 360 Hrs.

Max. Marks: 100

Sl. No	Topic	360 Hrs.
1.	Cadaveric Dissection for Practical Osteology	50 Hours
2.	Cadaveric Study of Marma points.	20 Hours
3.	Measurement of Anatomical Angles	20 Hours
4.	Assessment of Vitals- Pulse, Blood Pressure, Temperature, Respiration etc.	40 Hours
5.	Practical Demonstration of Individual Marma	50 Hours
6.	Assessment of Wounds & Ulcers	20 Hours
7.	Bandaging	25 Hours
8.	Suturing Techniques and Suture Materials	25 Hours
9.	Assessment of Radiographs	30 Hours
10.	Assessment of Prakriti	15 Hours
11.	Assessment of Pramana Sharira	15 Hours
12.	Poorva Karma and Pashchata Karma	15 Hours
13.	Practical Knowledge of Sterilization and Disinfection.	15 Hours
14.	Principles of First Aid	20 Hours

Syllabus - 2nd Year

Paper 1: Applied Aspects of Sports Medicine (Kreedha Bhashaja)

Teaching Hours: 180 (Theory)

Max. Marks: 100

Paper 1	Applied Aspects of Sports Medicine (Kreedha Bhashaja)	180 Hrs	
Applied Prakruti Pariksha (Body Constitution Examination) in Sports Medicine	Sharira Prakruti, Manas Prakruti and assessment of Prakruti, Importance of Knowledge of Prakruti in Sports Medicine	15	
	Kinesiology	Definition, aims, objectives and role of Kinesiology in sports medicine.	7
		Review of fundamental concepts (applied aspect), Centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.	20
		Review of fundamental concepts (applied aspect), Centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.	20
		Motion, type of motion, Distance and speed, Displacement and velocity, Acceleration, Angular distance and Angular displacement, Angular Speed, Angular Velocity, Angular Acceleration, Inertia, Mass, Weight, Newton's Laws of motion, Units in linear and angular motion.	25
Force and its characteristics, internal and external forces, Classification of force system, Composition and resolution of forces, Friction, Impact, Elasticity, Principles of spin and rebound, Eccentric forces. Couple, Moment, Principles of Lever, Rotatory force, Gravity, Methods of finding center of gravity, Principles of Equilibrium, Fluid mechanics, Principles of projectile.	25		
Assessment and Evaluation of Sports Medicine	Importance of assessment and evaluation, Methods of evaluation – Interview, Clinical Examination, Reliability and Validity of the tests, Investigative Procedures, Field Tests.	15	
	Evaluation of Physical Fitness: Principles of assessment and prescription of exercise programs, Evaluation of Physical Fitness, Preliminary Health Screening and Classification of Risk Factors, Assessment of Body Composition, Assessment of Flexibility and designing stretching programs, Assessment of cardio-respiratory fitness, Assessing and Managing Stress, Assessing strength and muscular endurance.	20	
	Assessment of Upper and lower limb complex.	5	
	Assessment of spinal column and Tests of neural tension.	5	
	EMG evaluation, diagnostic and kinesiological.	5	
	Pre- participation Evaluation of Participants in Sports.	5	
Kinanthro-pometry	Introduction and Significance of Kinanthropometric knowledge in sports medicine.	5	

	Age determination - Skeletal age and Dental age.	5
	Body measurements - Gross size and mass, Lengths or heights of body parts, Circumstances of body parts and Skinfold thickness.	4
	Kinanthropometric study group measurements.	5
	Body proportions - Body mass index, The phantom stratagem, The Z - scores, The O - scale system.	3
	Body composition - Different Body composition and various methods to estimate body composition.	3
	Somatotyping: Methods of Somatotyping and Somatotype distribution.	3
	Growth, maturation and physical performance.	5

Paper 2: Applied Sports Sciences (Kreedha Vigyana)

Teaching Hours: 180 (Theory)

Max. Marks: 100

Paper 2	Applied Sports Sciences (Kreedha Vigyana)	180 Hrs
Biomechanics	Nature and importance of Biomechanics in Sports Physiotherapy.	5
	Principles of Biomechanics.	5
	Introduction to biomechanical analysis. Recruitment & techniques - Isokinetic dynamometer, kinesiological EMG, electronic goniometer, force platform, videography.	5
	Biomechanics of shoulder and shoulder girdle motion, elbow motion, wrist and hand motion, pelvic motion, hip motion, knee motion, ankle and foot motion, spinal motion.	5
	Gait analysis.	5
	Biomechanics of rowing, throwing, swimming, jumping and landing, running and other sports.	5
Exercise Physiology	Energy Transfer for Physical activity: Energy transfer in Body, Energy transfer in exercise, Energy expenditure during various activities, Fatigue, Biochemical responses to endurance training.	10
	Cardio Vascular System and Exercise: Athletes Heart, Cardio Vascular adaptations to sustained aerobic exercises, Lipids and sports, protection from coronary heart disease, exercise and optimization of lipid profile, Sudden cardiac death in sports, Regulation of circulation during exercise.	20
	Respiratory System and Exercise: Air Conditioning, Second Wind, Oxygen Debt, Breathe Holding, High Pressure Ventilation, Scuba Diving, Athletes Lung, Regulation of Respiration during exercise.	20
	Skeletal System and Exercise: Growth and Exercise, Repair and adaptation during exercise, Pathophysiology of Back, raining for Muscular Strength and Endurance.	20

	Gastrointestinal Tract and Endocrine system and Exercise: Effect of Sports on GIT and Liver, Hormone regulation of fluid and electrolytes during exercise, Exercise and Menstrual Cycle, Stress Hormones in Exercise, Effects of exercise on various Hormones in the body, Opioids, Runners High.	20
Sports Psychology	Importance and current status of Sports Psychology, Personality Assessment and sports personality, Cognitive Process, Concentration training in sports, Motivational orientation in sports, Pre-competitive anxiety, Relaxation Training, Aggression in sports, Role of Psychology in Dealing with injuries, Eating disorders, Goal setting - Psychological aspect of doping, Psychological preparation of elite athletes, Concept of psychological preparation, Biofeedback training, Mental imagery and Stress, Team Behaviour and leadership, Emotion.	40

Paper 3: Clinical Sports Medicine (Kreedha Bhashaja)

Teaching Hours: 180 (Theory)

Max. Marks: 100

Paper 3	Clinical Sports Medicine (Kreedha Bhashaja)	180 Hrs
Ayurvedic Principles of Treatment	Shamana Chikitsa- Langhan, Deepan, Paachan, Oushadh and Upanah Chikitsa. (5)	5
Panchakarma and its application in Sports medicine	Abhyang, Swedan, Shashtikashalipindaswed, Kaya seka, Patrapottalipindaswed, Janu vasti, Kati vasti, Anuvasan and Niruh vasti in various chronic ailments such as Post traumatic stiffness, Musculoskeletal and Neurological conditions, Shirodhar and Shiropichu in sports related anxiety.	20
Para surgical procedures (Anu Shalya Karma)	Para surgical procedures and their application in sports medicine- Role of Agni Karma and Raktavsechana.	10
Yoga and its application in Sports Medicine	Meaning and definition of Yoga. Ashtanga Yoga - Yama, Niyama, Asana, Pranayama, Pratyahar, Dharana, Dhyana, Samadhi.	5
	Concept of Yoga Asanas, Pranayama - Types, methods and benefits and Shatchakras.	5
	Relaxation training through Yognidra and Meditation.	5
	Role of Yoga in enhancing core strength, balance and coordination for improving exercise performance and prevention of injuries, flexibility and mental strength and concentration.	8
	The role of Specific Asanas in improving performance and rehabilitation.	8
Sports Nutrition	Introduction to Nutrition, Macronutrients, Micronutrients, Fluids and Electrolytes, Acid- Base Balance in special reference to sports nutrition.	5
	Role of Ayurveda in meeting specific nutrition need, instant energy, sustained energy etc.	5

	Nutritional supplements, macronutrient supplements, metabolites and botanical ergogenic supplements. Role of Ayurveda in nutrition supplementation.	10
	Sports specific nutrition – nutrition for popular team sports, Racket sports, Endurance sports, Weight- dependent balance sports, water sports etc.	10
	Clinical sports nutrition- Athletes with nutrition related disorders- osteoporosis, sports anaemia etc.	5
	Athletes with gastrointestinal disorders, food allergies and food intolerance food related adverse reactions etc.	6
	Food psychology- effect of psychology on eating behavior and food choices, biological and learning influences and social influence on food choice.	5
	Nutrition for special groups- Paralympic athlete, sport injury and rehabilitation, nutrition for athletes with special dietary needs.	8
Management Principles of Tissue Injuries (Bones, Muscles, Ligaments, Tendons and Joints)	Bhagna - General management principles and Prognosis.	5
	Modern concept of Bone and Joint injuries - General management principles.	10
	Individual Bone and Joint injuries – General management principles.	20
	External immobilization techniques - Classical and traditional Kusha - splints, Plaster of Paris Technique, Knowledge of different splints and Plasters.	15
	Rehabilitation of trauma patient and Principles of Sukhchestaprachara - Physiotherapy and its use in skeletal injuries.	10

Paper 4: Marma Chikitsa and Sports Physical Therapy

Teaching Hours: 180 (Theory)

Max. Marks: 100

Paper 4	Marma Chikitsa and Sports Physical Therapy	180 Hrs
Sports Traumatology	Causes, Mechanism and Prevention of Sports injuries.	5
	Common acute and overuse injuries of - Shoulder, arm, elbow, forearm, wrist and hand, pelvis, hip, thigh, knee, leg, ankle and foot Spine, head, Sporting emergencies and first aid and pharmacological treatment of injuries in the athletes.	10
	Sports specific injuries, with special emphasis on the specific risk factor, nature of sports, kind of medical intervention anticipated and prevention with respect to individual sports - Individual events: Field and Track, Team events: Hockey, Cricket, Football, Contact and Non-contact sports, Water sports specific injuries.	15
Sports Injuries and their Management Principles	Vascular, Nerve, Head, Chest, Abdomen, Pelvis and Spine.	20

Marma Chikitsa in Sports Injury	Clinical features, prognosis of Marmaghata during sports and its Marma Chikitsa.		10
Varmology	Fundamentals, general and specific rules of Varmam treatment in various musculoskeletal and neurological conditions.		10
Physical Medicine in sports	Rehabilitation and Therapeutic Exercises	Goals and Objectives of Rehabilitation in Sports, Clinical Evaluation phases of rehabilitation. (multidisciplinary approach).	5
		Prehabilitation.	4
		Effects and uses of therapeutic exercises - Dynamic Exercises, Plyometric Exercises, Isokinetic Exercises, Manipulative Techniques and Kinetic chain exercises.	10
	Neuromuscular Training	Neuromuscular control, methods for improving neuromuscular control, proprioception and kinaesthetic sensation following different sport injuries.	5
		Principles and application of neuromuscular facilitation techniques including PNF in sports.	5
		Health club and fitness: Concept, group therapy.	5
		Physical Therapy and law: Medico legal aspects of physiotherapy, liability, negligence, malpractice, licensure, work man compensation.	5
		Morale and Ethics: Ethical Analysis of moral problem, ethical issues in physiotherapy.	5
Emergency Care	Cardiopulmonary resuscitation, Shock management, Internal and External bleeding, Splinting, Stretcher use - Handling and transfer, Management of Cardiac arrest, Acute asthma, Epilepsy, Drowning, Burn, Medical management of mass participation, Heat stroke and Heat illness.		10
Sports Physical Therapy	Massage – Classification, Physiological effects, Therapeutic applications and Contraindications.		5
	Heat Therapy - Classification, Physiological effects, Therapeutic applications and Contraindications and specific uses in sports of the following: Infrared rays, Parafin Wax Bath, Steam Bath, Sauna Bath, Moist Heat Pack, Fluid therapy, Mud Bath and Pelloids.		10

	Hydrotherapy - Effects of simple baths, raising temperature baths, baths with additives, Aromatic baths, Mineral baths, Physical baths, Hydroelectric baths, Stammer baths, Whirl pool bath, Showers and Steam showers.	5
	Electrotherapy - Classification, Physiological effects, Therapeutic applications and Contraindications and the specific uses in Sports Physiotherapy.	5
	Low Frequency Current: Direct Current, Modified Direct Current, Alternative Current, Diadynamic Current, Iontophoresis TENS, High Voltage, Pulsed Galvanic Stimulation.	4
	Medium Frequency Current: IFT, Russian Currents.	3
	High Frequency Currents: SWD, MWD, Ultrasound, Pulsed Electromagnetic Energy.	4
	Radiations: LASER, UVR. Recent Advancement in Electrotherapy, Electrodiagnosis and its implications to Sports Physiotherapy.	4
	Functional Bandages and Orthotic Aids - Uses of functional bandages, types of bandages, bandaging techniques and bandaging material, indications, contraindications athletic shoes and modifications, common orthotic aid and appliances in Sports.	5
	Cryotherapy - Physiological effects, use of cold therapy in acute phase, rehabilitative phase, preventive phase of athletic injury, methods of application, indications and contraindications.	5
	Manual Therapy - Introduction to manual therapy techniques, joint techniques, manual joint therapy, traction, basic principles of manipulation for various disorders of the spine and extremities.	6

Practical - Second Year

Teaching Hours: 360 Hrs.

Max. Marks: 100

Sl. No.	Practical	360 Hrs.
1	Assessment of Prakruti	20
2	Practical Kinesiology	20
3	Assessment and Evaluation of Physical Fitness	25
4	Practical Kinanthro-Pometry	25
5	Practical demonstration of Sports Physiotherapy	20
6	Practical Training of Physiotherapy in Trauma Patients	20
7	Gait Analysis	10
8	Demonstration of Biomechanical Techniques	20
9	Assessment of Sports Personality	20
10	Practical Demonstration of Panchakrama Procedures	20
11	Training of Anushalya Karma like Agni Karma , Rakta Mokshana	20
12	Practical Demonstration of Yoga Techniques	20
13	Assessment of Sports Nutrition	10

14	Demonstration of Management of Tissue Injuries	20
15	Practical Demonstration of Management of Sports Injuries	20
16	Practical Demonstration of Marma Chikitsa	20
17	Practical Demonstration of Varmam Treatment	20
18	Demonstration of Rehabilitation and Therapeutic Exercises	10
19	Demonstration of Various techniques of Sports Physical Therapy	20

Teaching Staff

TEACHING FACULTY					
Sl.No.	Name of Post	No. of Posts	Eligibility	Experience	Publications
1	Professor & Head of Department	One (1)	M.S. (Ay.) Shalya Tantra or M.Sc. Sports Medicine Desirable: i. Ph.D. (Ay.) Shalya Tantra ii. Ph.D.-Sports Medicine iii. Experience in traumatology and sports medicine Age Limit 55 Years	16 years of Teaching Experience in related branch	At least 5 articles related to Marma Chikitsa and Sports Medicine in a reputed Peer reviewed / Indexed Journals
2	Associate Professor	One (1)	M.S. (Ay.) Shalya Tantra or M.Sc. Sports Medicine Desirable: i. Ph.D. (Ay.) Shalya Tantra ii. Ph.D.-Sports Medicine iii. Experience in traumatology and sports medicine Age Limit 50 Years	10 years of Teaching Experience in related branch	At least 3 articles related to Marma Chikitsa and Sports Medicine in a reputed Peer reviewed / Indexed Journals
3	Assistant Professor	One (1)	M.S. (Ay.) Shalya Tantra or M.Sc. Sports Medicine Desirable: i. Ph.D. (Ay.) Shalya Tantra ii. Ph.D.-Sports Medicine	05 years of Teaching Experience in related or allied subject	At least 2 articles related to Marma Chikitsa and Sports Medicine in a reputed Peer reviewed / Indexed Journals

			iii. Experience in traumatology and sports medicine Age Limit 45 Years		
4.	Lecturer		M.S. (Ay.) Shalya Tantra or M.Sc. Sports Medicine Desirable: i. Ph.D. (Ay.) Shalya Tantra ii. Ph.D.-Sports Medicine iii. Experience in traumatology and sports medicine	-	-
5.	Physiotherapist	1	M. PT	-	-
NON TEACHING STAFF					
1.	MTS	1	10+2 any stream		
2	Data Entry Operator	1			

Visiting / Adjunct / Contractual Faculty

1. M.D. (Ay.) Sharira Rachna Vigyan
2. M.D. (Ay.) Sharira Kriya Vigyan
3. M.D. (Ay.) Swasthavritta and Yoga
4. M.D. (Ay.) Panchakarma
5. M.Sc. Nutrition and Dietetics
6. M.B.B.S., M.D. (Sports Medicine)
7. M.B.B.S., M.S. (Orthopaedics)
8. M.Sc., Ph.D.(Sports Medicine)
9. Medico-legal Expert
10. Biostatistician

- Every teacher shall participate in teaching, which may include all of the following: lectures, tutorials, practical sessions, seminars, fieldwork, projects and other such activities.
- Every teacher shall also give general assistance to students in removing their academic difficulties; and participate in the invigilation and evaluation work connected with tests/examinations; and take part in extra-curricular, co-curricular and institutional support activities as required.
- The workload of a teacher shall take into account activities such as teaching, research and extension, preparation of lessons, evaluation of assignments and term papers, supervision of fieldwork as also guidance of project work done by the students. The time spent on extension work, if it forms an integral part of the prescribed course, shall count towards the teaching load. The total workload and the distribution of hours of workload for the various components shall be in accordance with the guidelines issued by the UGC and the other statutory bodies concerned in this regard from time to time.

Syllabus:

Annual exams will be conducted at university level. 1st year annual exams will be scheduled at the end of the 1 year in the same way the 2nd year exams will be conducted. Half yearly midterm examination will be conducted at Departmental level.

Thesis / Dissertation:

Every Candidate pursuing M. Sc. Degree in **Marmalogy and Sports Medicine (Marma Chikitsa Evam Kreedha Bhashaja)** will be required to carry out the work on selected dissertation under the guidance of recognized post graduate teacher in their respective subject in final Year. The result of such work will be submitted in the form of a dissertation (not less than 100 Pages).

By carrying out a research project and presenting the work in the form of thesis, the student shall be able to:

- Identify a relevant research question
- Conduct a critical review of literature
- Formulate a hypothesis
- Determine the most suitable study design
- State the objectives of the study
- Prepare a study protocol
- Undertake a study according to the protocol
- Analyze and interpret research data, and draw conclusions
- Write a research paper

Guidelines

While selecting the topic, following should be kept in mind:

- The scope of study should be limited to enable its conduct within the resources and time available
- The study must be ethically appropriate
- The emphasis should be on the process of research rather than the results
- The protocol, interim progress and final presentation is made formally to the department
- There should be periodic department review of the thesis work

Assessment (Examination and Evaluation):

1. The university shall adopt the guidelines issued by the UGC and other statutory bodies concerned from time to time in respect of conduct of examinations.
2. The units of evaluation, namely, tests, seminars, presentations, class performance, field work, thesis and the like and the weightage assigned to each of such units in respect of course will be determined by the appropriate academic body of the university and will be made known to the students at the beginning of the course.
3. The nature of final examination, whether written or oral or both, in respect of each course will also be made known to the students at the beginning of the academic session.
4. The question papers for the examinations will be set to ensure that they cover the entire syllabus of the concerned subject.
5. The tests and examinations will aim at evaluating not only the student's ability to recall information, which he/she had memorized, but also his/her understanding of the subject and ability to synthesize scattered bits of information into a meaningful whole. Some of the questions will be analytical and invite original thinking or application of theory.

6. While the actual process of evaluation will be confidential, the system of evaluation will be sufficiently transparent, and a student may be given a photocopy of his/her answer paper, if requested as in writing to appropriate authority.
7. The minimum number of lectures, tutorials, seminars and practical's which a student shall be required to attend for eligibility to appear at the examination shall be not be less than 75% of the total number of lectures, tutorials, seminars, practical's, and any other prescribed requirements.

Scheme of Examination:

There will be eight papers in the whole duration of the course four in each year. Each Theory paper will be of 100 marks covering the questions from entire syllabus of the corresponding subject. Each paper will be set by the external experts and will cover very short questions, short essay and long essay questions. Practical examination will be conducted covering patient examination and viva voce on the project and the subject matter.

Distribution of Marks:

Theory – 100 Marks, 3 Hours Each Paper

Model of Questions	Marks Distribution
MCQ/One Word questions/ Fill up the blanks	10 Marks
Very Short Answer Question	20 Marks
Short Essay	30 Marks
Long Essay	40 Marks

Practical Examination – 100 Marks (Covering all Subjects)

1st Year: Covers all Paper

100 Marks

Kind of Work	Marks Distribution
Practical Records (Related to Anatomy & Physiology)	10 Marks
Identification of Specimen and Models	20 Marks
Identification of Radiographs	10 Marks
Identification of Marma Points	20 Marks
Bandaging Techniques	10 Marks
Viva-Voce	30 Marks

2nd Year: Covers all paper

100 Marks

Kind of Work	Marks Distribution
Case Record	10 Marks
Bed Side Examination :	
Short Case	10 Marks
Long Case	20 Marks
Identification of Instruments/Radiographs	10 Marks
Dissertation Presentation	20 Marks
Viva-Voce	30 Marks

Eligibility for Admission to the Examination

Students with a Minimum of 75% Attendance are eligible to write the examination.

Question Paper Design**PART-A (10x 1 = 10 Marks)**

MCQ/One Word questions/ Fill up the blanks

PART-A (10 x 2 = 20 Marks)

(Answer all questions)

PART-B (6x 5 = 30Marks)

(Answer all questions)

PART-C (4 x 10 = 40 Marks)

5 (Answer any four out of five questions)

Passing Minimum:

The candidate shall be declared to have passed the examination if the candidate secures not less than 50% marks in each theory and practical paper.

Award of Degrees:

1. No student shall be eligible for the award of the **M.Sc. Degree** unless he/she has successfully completed a minimum of two years
2. The degree to be awarded may be called the **M.Sc. Degree in Marmalogy and Sports Medicine (Marma Chikitsa Evam Kreedha Bhashaja)**.
3. Degree will be conferred to the passing students in the convocation held by the affiliating university.

Recommended Books

1. Sushruta Samhita – Relevant parts.
2. Sushruta Samhita – Ghanekar Commentary.
3. Sushruta Samhita – Dalhana Commentary.
4. Charaka Samhita– Relevant parts.
5. Astanga Hridaya – Relevant parts.
6. Astanga Sangraha – Relevant parts.
7. Agnikarma – Technological Innovations – Prof. P. D. Gupta.
8. Concept of Vrana – Dr. Lakshman Singh.
9. Marma Chikitsa – Dr. C. Suresh Kumar.
10. Joint Affections and their Ayurvedic prospective – Vaidya Vilas M.Nanal.
11. Marma Vimarsha - Vaidya Vilas M.Nanal.
12. Marma Science and Principles of Marma Therapy – Dr. Sunil Kumar Joshi.
13. Ayurveda and Marma Therapy – Dr. David Frawley, Dr. Subhash Ranade et al.
14. Medical Varmology – Dr. N. Shunmugom et al.
15. Siddha Varmology – T. Vasantha Kumar.
16. Fracture and Joint Injuries - Watsan and Jones.
17. Clinical Orthopaedic Examination – R.Mc.Rae.
18. Text Book of Orthopaedics and Trauma – Vol. I – IV – G.S.Kulkarni.
19. Oxford Text Book of Sports Medicine – William D.Stanish, Clyde Williams.
20. Therapeutic Modalities in Sports Medicine – Mosby - William E. Prentice.
21. Rehabilitation Techniques – Mosby - William E. Prentice.

22. Physical Rehabilitation – Assessment and Treatment - F.A. Davis - O' Sullivan, Schmitz.
23. Electrotherapy Explained, Butterworth - John Low & Reed.
24. Physical Rehabilitation of Injured Athlete - Harrelson and Andrews.
25. Current Therapy in Sports Medicine III – Mosby - Torg, Welsh & Shephard.
26. Sports Physiotherapy, W.B. Saunders - Zulunga et al.
27. Sports Injuries – Assessment and Rehabilitation, W.B. Saunders – Reed.
28. Handbook of Sports Medicine: A symptom – Oriente Approach, Butterworth & Heineman - Lillegard, Butcher & Rucker.
29. Research Methods in Behavioral Sciences - Mohsin S.M., Orient Publications.
30. Methods in Biostatistics, - Mahajan, Jay Pee Brothers.
31. Statistics in Kinesiology, Human Kinetics – Vincent.
32. Kinesiology – Scientific Basis of Human Motion - Luttgens K., Hamilton N, 9th Edi, 1997, Brown & Benchmark.
33. Kinesiology and Applied Anatomy, Lee and Fabiger - Rasch and Burk.
34. Basic Biomechanics of Muscular Skeletal System - Williams & Wilkins - Nordin & Frankel.
35. Kinanthropometry II - Ostym, Beunen and Simons, University Park Press, Baltimore.
36. Psychology in contemporary sports – Grafiti, Prentice Hall.
37. Nutrition and exercise in Sports - Era Volinski, CRC Press, New York.
38. Developmental Exercise Physiology - Human Kinetics - Rowland.
39. Sports Medicine for the primary care Physician - Richard B. Birrer, CRC Press.
40. Current Therapy in Sports Medicine III – Mosby - Torg, Welsh & Shephard.
41. Clinical Sports Medicine, McGraw Hill - Brukner and Khan.
42. Sports Medicine – Principles of Primary Care, Mosby - Scuderi, McCann, Bruno.
43. Sports Injuries – Their prevention and treatment, Dunitz, Lars Peterson and Per Renstron.
44. Drugs & Doping in sports by O'Leary 2001.
45. Orthopaedic Sports Physical Therapy, Mosby- Gould.
46. The Injured Athlete - D. Kulund, Lippincott.
47. Orthopaedic Sports Medicine - W.B Saunders, Lee & Dress.
48. E-book: Clinics in Sports Medicine Volume 35, Number 2, April 2016, ISSN 0278-5919, ISBN-13:978-0-323-417716, Editor-Jennifer Fylmm-Briggs, Elsevier Inc.

Recommendations:

The curriculum has been designed with an intent to focus on both the theoretical and applied aspects of Marmalogy and Sports medicine. To keep the students engaged in various academic activities and to help them develop better understanding about the subjects, adequate discussions, seminars, presentations, projects and visits to related institutions are strongly recommended. To endorse the professional skills in students active participation in various conferences, quiz programs, workshops and training programs that are conducted from time to time across the country is also a valuable recommendation for the pursuers.

.....