

## FELLOWSHIP PROGRAM IN SPORTS MEDICINE

### PREAMBLE :

Sports medicine is designed for students interested in fields such as athletic training, physical therapy, medicine, fitness physiology of exercise, kinesiology, nutrition and other sports medicine related fields, mountaineering ground training, acclimatization at high altitude.

### OBJECTIVES:

To identify the essential components of an effective sports medicine program and personal characteristics of sports medicine practitioners along with basic athletic injury and taping procedures.

### ELIGIBILITY CRITERIA:

MS Orthopaedics (Recognised by MCI) / DNB in Orthopaedics / Diploma in Orthopaedics / M.PTh.

Selection of candidates will be as per the rules and regulations of Krishna Institute of Medical Sciences University, Karad.

### DURATION OF COURSE:

One year.

Fellowship Programme – Two Surgeons

MEDIUM OF INSTRUCTION: English

ATTENDANCE: 80% Attendance

### DEPARTMENTS REQUIRED:

- Orthopaedics
- Medicine
- Psychiatry
- Physiotherapy
- Physiology
- Physical Education
- Nutrition

### COURSE CONTENT:

#### Orthopaedics Syllabus

- Pathophysiology of different injuries
- Identifying risk factors and implementing interventional processes to modify them.
- Basic sciences of the joints, bones, ligaments and muscles.
- Clinical examination of Back, Shoulder, Elbow, Wrist, Knee, Hip and Ankle.

- Prevention, Early diagnosis, Treatment and Rehabilitation of following injuries:
  - Spinal injuries
  - Shoulder injuries
  - Elbow injuries
  - Wrist injuries
  - Knee injuries
  - Hip injuries
  - Ankle injuries
- Intra-articular injections
- Out patient examination and diagnosis of the injury
- Pre-op assessment in the wards
- Assisting the surgeries
- Carrying out minor procedures
- Follow up of the cases
- Attending sports meet and practice sessions
- Guiding the physiotherapists
- Participating in the on going research work

### **Medicine Syllabus**

- Electrolyte imbalance
- Cardio-Pulmonary resuscitation
- Heat stroke
- Lipid abnormalities
- Hazards of Doping
- Sudden death
- Effect of altitude on health

## **SPORTS PHYSIOLOGY**

10 Classes and 5 Practical

### **Theory Classes**

1. Introduction to sports physiology. Structure & function of skeletal muscle. Various types of muscles. Normal mechanism of muscle contraction. Types of muscle contractions.
2. Muscles in Exercise, Strength, Power and Endurance of Measures.
3. Muscle Metabolic Systems in Exercise (ATP Production)
4. Energy System used in sports
  - Phosphogen system:-
    - 100 mtrs dash each
    - Jumping
    - Weight lifting
    - Diving
    - Foot ball dashes

- Phosphogen and Glycogen Lactic acid system
    - 200 mtrs dash
    - Basket Ball
    - Base Ball Home Run
    - RCE Hockey Dashes
  
  - Glycogen – Lactic Acid System Mainly
    - 400 mtrs dash
    - 100 mtrs swim
    - Tennis
  
  - Glycogen Lactic acid and Aerobic system
    - 800 mtrs dash
    - 200 mtrs swim
    - 1500 mtrs skating
    - 1 mile run
    - Boxing
    - 400 mtrs swim
  
  - Aerobic System
    - 10000 mtrs skating
    - Cross country skiing
    - Marathon run
    - Jogging
5. Effect of Athletic training on muscles and muscle performance
- Respiration in exercise
  - Cardio-vascular system in exercise
  - Body heat in exercise
  - Body fluids and salts in exercise

Physiology Practicals:

1. Pulmonary function tests.
2. Cardiorespiratory efficiency tests
3. Clinical examination of cardiorespiratory system to assess fitness and effects of short term and long term exercise training in sports persons.
4. Study of normal ECG in sports person and to study effects of short term and long term exercise training.
5. Respiratory gas analysis, study of  $VO_2$  max (maximum  $O_2$  carrying capacity).
6. Treadmill and Ergography Assessments.

## SPORTS PHYSIOTHERAPY

1. Briefly review the history of sports medicine, scope and philosophy, Medicolegal issues, sports physiology in sports rehabilitation
2. Definition, details of effects and uses of therapeutic exercises :  
Dynamic Exercises, Plyometric Exercises, Manipulative Technique, Isokinetic and Kinetic chain exercises
- 3 Sports and Nutrition
  - ✓ Significance of nutrition
  - ✓ Common food fads
  - ✓ Maximizing energy stores
  - ✓ Maintaining adequate hydration
  - ✓ Weight gain and loss
  - ✓ Optimizing pre competition meal
  - ✓ Ergogenic aids
  - ✓ Vegetarianism
4. Assessment and Evaluation of Sports Person
  1. Assessment of parameters related to exercise physical fitness including, functional; tests, muscle strength, flexibility, co-ordination, sensory deficits, cardio-pulmonary endurance and kinanthropometric evaluation in various athletic groups
  2. Sports-specific evaluation and criteria for return to sports
5. Mobilization and strengthening Techniques
  - I. Factors affecting the joint range of motion prevention of stiffness methods of joint mobilization.
    - 1 Testing for tightness and contracture of soft-tissue structures.
    - 2 Techniques of mobilizing the various joints of the body.
  - II. Types of Muscle Contractions and Muscle work, strength of Muscle contraction in terms of Motor units, Group action of Muscle and its implication in designing an exercise program.
    1. Causes of Muscle weakness, Prevention of disuse atrophy, Principles of treatment to increase muscle strength and function.
    2. Techniques of Strengthening with respect to regional consideration.
    3. Various methods of progressive resisted exercise.
    4. Aquatic therapy.

## 6. Exercise Prescription for Common Upper Extremity Conditions

- Surgical conditions for shoulder, elbow & wrist.
- Therapeutic Exercises for shoulder injuries.
- Therapeutic exercise for elbow injuries
- Therapeutic Exercises for wrist and hand injuries.

## 7. Exercise Prescription for Common lower Extremity Conditions

- Surgical conditions of the pelvis, hip and thigh.
- Surgical condition o the knee
- Therapeutic Exercises for hip and thigh injuries
- Therapeutic Exercises for nee injuries
- Therapeutic Exercises for foot and ankle injuries

## 8. Exercise Prescription for Common Spinal Conditions

- Surgical conditions of spine
- Therapeutic Exercises for spinal injuries
- Posture analysis and its correction

## 9. Specific taping and wrapping procedure for

- Foot/ankle/lower leg injuries
- Knee/thigh injuries
- Trunk injuries
- Shoulder injuries.
- Elbow/Wrist /hand injuries

## 10. Electrotherapy measures of Sports Injuries

- Outline of Electrotherapy
- Low frequency currents
- Medium Frequency currents
- High frequency currents

## 11. Cryotherapy

- Methods
- Various effects
- Indications
- Contra indications

12. Paediatric sports injuries
13. Sports medicine for handicapped mainly for paraplegics, MR, wheel chair athletes, etc
14. Sports medicine for women
  - ✓ Gender differences in sports participation
  - ✓ Common injuries in women
  - ✓ Breast care
15. Sports specific injuries
  - ✓ Basket ball
  - ✓ Hockey
  - ✓ Soccer
  - ✓ Track and field
  - ✓ Swimming and diving
  - ✓ Racket sports
  - ✓ Cycling
  - ✓ Volley ball
  - ✓ Cricket
  - ✓ Kapadi
  - ✓ Combat sports
  - ✓ Dance
  - ✓ Boxing

Adventures sports, Etc

## 16. ORTHOTIC APPLIANCES IN SPORTS PHYSIOTHERAPY

## STAFF

### PHYSIOLOGY

1. Dr. Mrs. N.M. Kantak, Professor & Head, Physiology Department
2. Dr. A.G. Joshi, Professor, Physiology Department

### MEDICINE

1. Dr. Makarand Mane, Assistant Professor, Medicine Department

### NUTRITION

1. Dr. P.M. Durgawale, Professor & Head, PSM Department
2. Dr. S.M. Kumbhar, Assistant Professor, PSM Department

### PHYSIOTHERAPY

1. Dr. G. Varadharajulu, Principal & Head, College of Physiotherapy
2. Dr. Sandeep Shinde, Assistant Professor
3. Dr. Sukhada Kulkarni, Assistant Professor

### ORTHOPAEDICS

1. Dr. P.N. Kulkarni, Professor & Head, Orthopaedics Department
2. Dr. Nitin S. Patil, Assistant Professor, Orthopaedics Department