Curriculum

FNB Fellowship

Sports Medicine

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I PREAMBLE:

Awareness of fitness among the youth in our country and participation of Indian sportsmen and athletes in various sporting events at a national and International level has increased in the last few decades. Sports, whether competitive or recreational, has become more competitive and physically demanding. This has led to an increase in the number of sports injuries.

Orthopaedic Sports Medicine is a growing Orthopaedic surgical sub-specialty overlapping the domains of Orthopaedic Surgery and Sports Medicine. The Fellowship in Sports Medicine programme (FNB Sports Medicine) shall enable the medical professional to be multi-skilled making them experts in sports related injuries and wide range of interrelated disciplines with synchronization of skills.

II OBJECTIVES:

At the end of the course, the Fellow in Sports Medicine should:

1. Acquire in-depth knowledge of structure and function of human body related to the respective branch of specialty of Sports Orthopaedics.
2. Demonstrate skill in medical, physical and functional diagnosis pertaining to athletes under care.
3. Be able to independently perform Arthroscopy procedures of all commonly involved joints including the Knee, Shoulder, Hip, Ankle, Elbow and Wrist
4. Be able to independently perform Open / mini open ligament reconstruction procedures and image guided intra articular injections
5. Be able to understand the sports medicine principles of Physical Fitness assessment, Kinanthroprometry, Age verification methods, Psychological analysis for relaxation and peeking, Biomechanics, Rehabilitation of sporting injuries, Ergogenic procedures and Sports Nutrition for performance enhancement.
6. Be able to demonstrate ability to critically appraise recent and related medical literature

III. TEACHING AND LEARNING METHODS:

1. **Teaching methodology:** General Principles Learning in fellowship programme would be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are meant to supplement this core effort.
2. **Formal teaching sessions:** At least 5-hrs of formal teaching per week per subject is necessary. The departments may select a mix of the following sessions:

Journal club	Once a week
Seminar; lecture	Once a week
Case discussions	Twice a week
Interdepartmental case or seminar	Once a week

Note: These sessions maybe organized as an institutional activity along with other postgraduates.

3. **Rotations:** The fellow should rotate through all the laboratories in the department. On-field assessment and attachments with sports teams in on and off-season camps etc. is preferable. Training in Kinanthropometry, Gait Lab, Sports Psychology, Isokinetic, Human Performance evaluation, Fitness assessment, Exercise Physiology, Biomechanics and Rehabilitation Units are strongly encouraged.
4. **Optional:** Attachment with sporting teams off and on season and during tournaments and competitions is desirable.
5. **Logbook:** During his/her training, the candidate should maintain a Logbook indicating the duration of the postings/work done in sports surgery, sports science laboratories and sports medicine field work. This should indicate the procedures assisted and performed, and the teaching sessions attended.

   The purpose of the Logbook is to:

   i) Help maintain a record of the work done during training
   ii) Enable Consultants to have direct information about the work; intervene if necessary.
   iii) Use it to assess the experience gained periodically

   The logbook shall be used to aid the internal evaluation of the fellow and must be signed by the Faculty-in charge.
6. **Teaching skills:** The fellows shall be required to participate in the teaching and training programme of residents.

7. The fellow would be required to present one oral / poster presentation at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the fellowship period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.
8. The fellow should attend courses, conferences and seminars relevant to the specialty
9. **Department should encourage e-learning activities:** During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models or cadavers, later to be performed under

supervision followed by performing independently; for this purpose, provision of / attachment to skills laboratories is mandatory.

IV. SYLLABUS:

THEORY:

1. Basic sciences

i) Anatomy of musculoskeletal system
ii) Physiology of muscle, nerve, ligaments, joints
iii) Clinical examination of musculoskeletal system
iv) Principles of healing of musculoskeletal tissues
v) MSK Imaging (MRI, CT, X ray, USG)
vi) Basic concepts in biomechanics
vii) Exercise physiology
viii) Overview of sports specific injuries
ix) Commonly encountered fractures in sports medicine
x) Medications and athletes
xi) Female athlete, para athlete
xii) Facial, eye, nasal and dental injuries

2. Rehabilitation & Injury Prevention

i) Principles of Rehabilitation
ii) Rehabilitation protocols
iii) Proprioception and joint dysfunction
iv) Basics of taping and orthotics
v) Injury prevention

3. Regional

i) Shoulder

a) Anatomy, biomechanics, diagnosis, decision making
b) Imaging
c) Shoulder arthroscopy
d) Shoulder instability
e) SLAP tears
f) Thrower's shoulder
g) Proximal biceps tendon pathology
h) Rotator cuff and impingement lesions
i) Subscapularis injury
j) Stiff shoulder

k) Glenohumeral arthritis
l) Scapulothoracic disorders
m) Nerve entrapment
n) Vascular problems and thoracic outlet syndrome
o) Injury to acromioclavicular and sternoclavicular joints

ii) Elbow, wrist and hand

a) Elbow anatomy and biomechanics
b) Diagnosis, decision making, imaging
c) Elbow arthroscopy
d) Elbow tendinopathies and bursitis
e) Distal biceps and triceps tendon ruptures
f) Entrapment neuropathies of arm, elbow and forearm
g) Elbow throwing injuries
h) Loss of elbow motion
i) Anatomy, biomechanics, decision making, imaging of hand and wrist
j) Wrist arthroscopy
k) Carpal injuries
l) Wrist tendinopathies
m) TFCC injuries
n) Hand injuries
o) Neuropathies of wrist and hand

iii) Pelvis, hip and thigh

a) Hip anatomy and biomechanics
b) Diagnosis, decision making and imaging
c) Hip arthroscopy
d) Athletic pubalgia
e) Femoroacrtabular impingement in athletes
f) Hip and pelvis overuse syndromes
g) Snapping hip syndromes
h) Hip and thigh contusions and strains
i) Hamstring injuries
j) Nerve entrapment lesions of hip
k) Hip arthritis

iv) Knee

a) Knee anatomy and biomechanics
b) Knee diagnosis, decision making, imaging
c) Knee arthroscopy

d) Arthroscopic synovectomy of knee
e) Meniscal injuries
f) Articular cartilage lesions
g) ACL, PCL injuries
h) Posteromedial corner, MCL, lateral corner and posterolateral corner injuries
i) Multiligament knee injuries
j) Knee arthritis
k) Patellar instability
l) Patellofemoral pain
m) Extensor mechanism injuries
n) Stiff knee
o) Vascular problems of knee

v) Leg, ankle and foot

a) Foot and ankle biomechanics
b) Diagnosis and decision making, imaging
c) Leg pain and exertional compartment syndromes
d) Peripheral nerve entrapment around the foot and ankle
e) Ankle arthroscopy
f) Sports shoes and orthoses
g) Ligamentous injuries of foot and ankle
h) Tendon injuries of foot and ankle
i) Tendoachilles insertional tendinopathy
j) Articular cartilage injuries
k) Heel pain and plantar fasciitis
l) Forefoot problem in sport

vi) Spine and head

a) Head and spine anatomy and biomechanics
b) Diagnosis and decision making, imaging
c) Concussion and brain injury
d) Cervical spine injury
e) Stingers
f) Thoracolumbar spine disorders in athletes

vii) Paediatric athlete

a) The young athlete
b) Imaging considerations
c) Shoulder injuries in young athlete

d) Elbow injuries in young athlete
e) Wrist and hand injuries in young athletes
f) Paediatric and adolescent hip injuries
g) Knee injuries in young athletes
h) Foot and ankle injuries
i) Head injuries
j) Spine injuries

HANDS ON SKILLS

1. Sports Surgery:

i) Basic and advanced Arthroscopic procedures: Shoulder

a) Arthroscopic bankart repair
b) Latarjet procedure
c) Arthroscopic remplissage
d) Arthroscopic SLAP repair
e) Arthroscopic Sub acromial decompression
f) Arthroscopic rotator cuff repair
g) Biceps tendon repair
h) Arthroscopic Capsular release
i) Arthroscopic calcific tendinitis excision
j) Arthroscopic capsular placation
k) Arthroscopic posterior labral repair
l) Arthroscopic biceps tenodesis
m) Arthroscopic supra scapular nerve release
n) Arthroscopic Spino-glenoid cyst decompression.
o) Hemi replacement arthroplasty
p) Total shoulder arthroplasty
q) Reverse total shoulder arthroplasty

ii) Elbow, wrist and hand

a) Arthroscopic debridement
b) Arthroscopic Release for Lateral Epicondylitis
c) Arthroscopic Loose Body Removal
d) Elbow Collateral ligament reconstruction
e) Arthroscopic TFCC repair
f) DRUJ ligament repair
g) Arthroscopic Ganglion Removal

iii) Hip

a) Arthroscopic debridement

b) Arthroscopic Chondroplasty
c) Arthroscopic Loose Body Removal
d) Arthroscopic Synovectomy/ Synovial Biopsy
e) Arthroscopic CAM Impingement osteoplasty
f) Arthroscopic PINCER Labral Repair
g) Core decompression of femoral head

iv) Knee

a) Arthroscopic partial meniscectomy
b) Arthroscopic Meniscal repair
c) ArthroscopicAC reconstruction (SB, DB)
d) Arthroscopic PCL reconstruction
e) Arthroscopic Fixation of ACL & PCL Avulsion fractures
f) Arthroscopic revision ACL / PCL reconstruction
g) MCL reconstruction
h) PLC reconstruction
i) Popliteus repair
j) Arthroscopic chondroplasty including Microfracture
k) OATS
l) ACI
m) Arthroscopic MPFL reconstruction
n) Tibial tubercle transfer
o) Trochleoplasty

v) Ankle and foot

a) Arthroscopic debridement
b) Removal of synovial chondromatosis
c) Arthroscopic Impingement Release
d) Posterior ankle arthroscopy- Haglund deformity excision
e) Achilles tendon repair

2. Mini-open procedures

i) Mini open MCL / LCL repair of knee
ii) Posterolateral Complex Reconstruction/ Repair of knee
iii) MCL Reconstruction/Repair of knee
iv) Arthroscopy assisted Tibial Plateau Fracture Fixation of knee
v) Open MCL / LCL / PLC reconstruction of knee
vi) Latarjet procedure of shoulder
vii) Arthroscopic assisted SC joint reconstruction

3. Image guided injections & Orth biologics

USG guided steroid, PRP, Autologous Conditioned Serum (ACS), Visco-supplement, injections in Shoulder, Elbow, Wrist, Knee, Ankle joints

APPLIED SPORTS SCIENCES

1. Kinesiology

i) Biomechanics of all joints
ii) Anatomical Concepts in Kinesiology
iii) Kinanthropometry

2. Sports Nutrition

i) Nutritional requirements and assessment for sports & Exercise
ii) Supplements & Ergogenic aids

3. Applied Exercise Physiology

i) Body composition
ii) Aging and exercise
iii) Cardiovascular system, respiratory system effects and exercise

4. Physiological Basis and Principles of Training and Conditioning

i) Principles of endurance and strength training
ii) Fundamentals that aid training and performance

5. Sports Psychology

i) Personality assessment and sports personality
ii) Role of Psychology in dealing with injuries

6. Biomechanics

2D video & 3D Motion capture of sports Movements and analysis, Force plate & EMG Analysis

CLINICAL SPORTS MEDICINE

1. Non-Traumatic Medical Conditions

i) Female specific problems
ii) Rheumatology and geriatric disorder

2. Medical Aspects of Sports Medicine

i) Exercise and common pulmonary conditions
ii) Exercise and cardiac conditions

iii) Doping in sports

3. Emergency Care

Cardio-pulmonary Resuscitation

4. Sports Traumatology

i) Pre-participation examination
ii) Causes and mechanism of Sports Injuries, prevention of sports injuries
iii) Common acute and overuse injuries, sporting emergencies and first aid and pharmacological treatment of injuries in the athletes
iv) 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: Team events: Contact and Non-contact sports, Water sports specific injuries)
v) On-field Training – On-field sports injury management

5. Athlete Management

i) Periodic Athlete assessment
ii) Pre-Competition Medical Assessment
iii) Physical Fitness Assessment
iv) Fitness Training
v) Return to Sports Testing & Training including Isokinetic Testing
vi) Overtraining Syndrome

SPORTS REHABILITATION

1. Sports Physical Therapy

i) Massage
ii) Hydrotherapy
iii) Electrotherapy
iv) Cryotherapy
v) Manual therapy
vi) Therapeutic exercises
vii) Mobilization and strengthening techniques

2. Sports Rehabilitation

i) Rehabilitation – Post operative rehab protocols, Rehabilitation, Conservative injury management
ii) Taping
iii) Functional Bandages and Orthotic aids

iv) Recovery methods

V. COMPETENCIES:

By the end of the course, the fellow should have acquired theoretical knowledge (cognitive domain) and hands on skills (psychomotor domain) as given below:

1. Theoretical Knowledge - Cognitive domain:

i) Utilize knowledge of relevant aspects of musculoskeletal medicine in treatment and rehabilitation of sports related injuries.

ii) Integrate and apply thorough knowledge and understanding of applied anatomy, sports biomechanics and relevant kinesiology to clinical Sports Orthopaedics practice.

iii) Utilize advanced clinical competency and expertise, including clinical reasoning and imaging methods in assessment and treatment of sports related injuries.

iv) Develop an evidence-based approach. This will help to interpret and utilize published literature using analytical and critical approach.

2. Hands on Skills - Psychomotor domain:

i) Perform Clinical assessment leading to accurate diagnosis of sports injuries aided by appropriate Imaging and Lab investigations

ii) Perform in a highly skilful manner, arthroscopic and other procedures relevant to the sports injuries.

iii) Demonstrate oral and written communication skills and critical thinking at a high level of competency

Fellows will undergo practical training as follows:

a) Arthroscopy and other sports surgical procedures of all joints commonly involved in sports injuries

b) Orientation at various sports science labs including Exercise Physiology, Sports Nutrition and Kinanthropometry, Biomechanics, Isokinetic Dynamometry and Sports Psychology

c) Orientation training at Sports Rehabilitation including Sports Physiotherapy and Sports Strength & Conditioning

d) Undergo training in hospital and on field management for sports injuries

VI. LOG BOOK:

A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant.

This log book shall be made available to the board of examiners for their perusal at the time of the final examination.
The log book should show evidence that the before mentioned subjects were covered (with dates and the name of teacher(s) The candidate will maintain the record of all academic activities undertaken by him/her in log book.

1. Personal profile of the candidate
2. Educational qualification/Professional data
3. Record of case histories
4. Procedures learnt
5. Record of case Demonstration/Presentations
6. Every candidate, at the time of practical examination, will be required to produce performance record (log book) containing details of the work done by him/her during the entire period of training as per requirements of the log book. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution.
7. In the absence of production of log book, the result will not be declared.

VII. RECOMMONDED READING:

Books (latest edition)

1. Mark Miller Brian Cole, Textbook of Arthroscopy
2. Strobel, Michael, Manual of Arthroscopic Surgery
3. Strobel, Michael, Eichhorn, Basic Principles of Knee Arthroscopy, Normal and Pathological Findings Tips and Tricks
4. Musahl, V., Karlsson, J.Rotatory Knee Instability, An Evidence Based Approach
5. LaPrade, R. The Menisci, A Comprehensive Review of their Anatomy, Biomechanical Function and Surgical Treatment
6. Torg, Welsh and Shephard: Current Therapy in Sports Medicine III - Mosby.
7. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
8. Nordinand Frankel: Basic Biomechanics of Muscular Skeletal System: Williams and Wilkins.
9. Mc Ardle, Katch, Katch: Exercise Physiology.
10. Brukner and Khan: Clinical Sports Medicine, McGraw Hill.
11. O'Leary: Drugs and Doping in sports.
12. Lee and Dress: Orthopaedic Sports Medicine - W.B Saunders

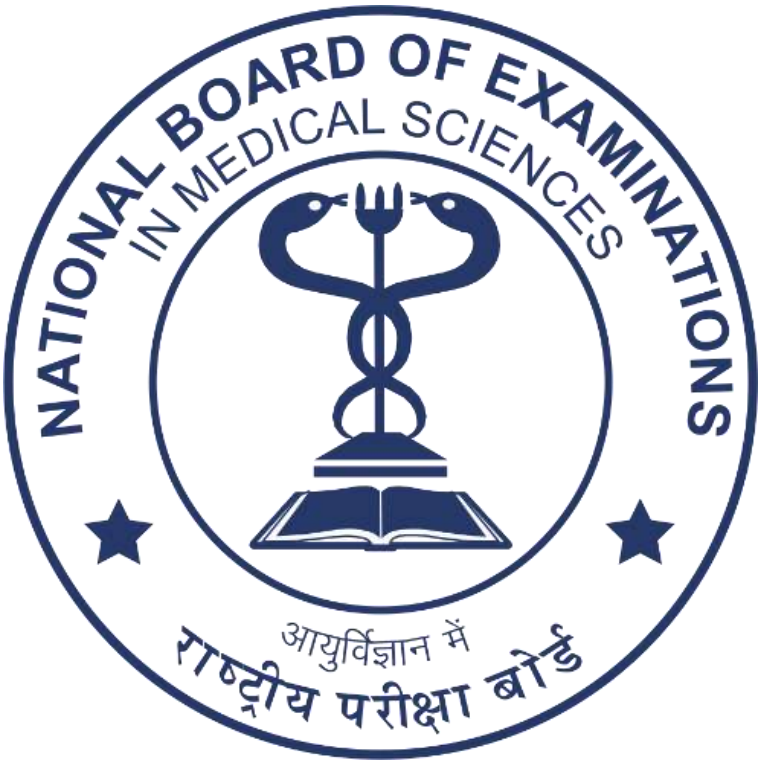
13. Kurt Dorr and Jonathan S. Rakich: Hospital Organization and Management: Spectrum Publication, New York.
14. Mahajan: Methods in Biostatistics, Jay Pee Brothers.

Journals

03-05 international Journals and 02 national (all indexed) Journals

Annexure I: Orientation sessions for

1. Management of Sports injuries
2. Orientation regarding field assessment on sports persons
3. Rehabilitation protocols in Sports Medicine
4. Orientation to the Sports Sciences laboratories
5. Interpretation and management of data generated by sports sciences lab
6. Communication skills: Sports scientists, coaches and sports persons
7. Universal precautions and appropriate disposal of lab waste
8. Awareness of anti-doping procedures and drugs



आयुर्विज्ञान में राष्ट्रीय परीक्षा बोर्ड

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