



FIMM Education Committee

**Syllabus for the Basic Course
in Manual Medicine**

Modified in Puigcerda 1999 and Aalborg 2001

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FIMM Education Committee

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Basic knowledge
Basic sciences and functional anatomy
Examination and investigations
Therapeutics and prevention

CURRICULUM OF MANUAL MEDICINE (CORE OF MUSCULOSKELETAL MEDICINE)

Basic Knowledge

1. Essential knowledge of:
 - a) Functional anatomy and biomechanics of the musculoskeletal medicine.
 - b) Physiology and pathophysiology of the musculoskeletal system.
 - c) Anatomy, physiology and pathophysiology of the nervous system in relation to pain and dysfunction.
 - d) Postulated mechanisms of manual medicine techniques.
 - e) Clinical syndromes and differential diagnostics of the neuromusculoskeletal system (ICD-diagnostics).
 - f) Relevant ancillary diagnostics (e.g. laboratory, imaging, electrodiagnostics) to manual medicine/musculoskeletal medicine.
 - g) Other relevant therapeutic modalities.
 - h) Indications and contraindications for different therapeutic options.

2. Essential affective behaviour characterized by:
 - a) Conducting the interview, examination and subsequent treatment in a way that demonstrates a holistic understanding of the patient and his/her problem in an ethical, caring manner.
3. Essential skills in:
 - a) Applying the essential affective behaviour and knowledge to conduct effective anamnesis and physical examination.
 - b) Applying essential knowledge and behaviour to conduct effective, accurate palpatory diagnosis.
 - c) Applying essential knowledge and behaviour to deliver safe, effective manual medicine treatment.

BASIC SCIENCES: Anatomy, physiology and biomechanics of the neuromusculoskeletal system

Introduction

Musculoskeletal/manual medicine is a branch of medical science concerned with the functions and disorders of the musculoskeletal system, including the muscles, aponeuroses, joints and bones of the axial and appendicular skeleton and those parts of the nervous system associated with them.

The objective of this part of the syllabus is to outline the essential elements of anatomy, biomechanics, and pathophysiology on which the clinical disciplines depend.

Musculoskeletal/manual medicine physicians combine a core knowledge of musculoskeletal science with a practical ability to integrate this knowledge with particular clinical skills, and to orchestrate a comprehensive approach to the diagnosis and treatment of patients with disorders of the musculoskeletal system.

ANATOMY

A.1 General Objective

To attain a knowledge to satisfy specific objectives of the FIMM Basic Syllabus of anatomy appropriate and sufficient to:

- Comprehend and describe the normal functions of the muscles and joints of the axial and appendicular skeleton, and the function of the nervous system as it pertains to musculoskeletal function;
- Comprehend the aberrations of function of the musculoskeletal systems;
- Understand the anatomical basis of techniques used to investigate and manage musculoskeletal complaints;
- Evaluate critically the established and new theories on the pathogenesis, mechanisms and management of musculoskeletal complaints.

Specific Objectives

- A.1.1 Describe macrostructure, anatomical relations and surface anatomy of the elements of the Musculoskeletal system/locomotor system, including:
 - A.1.1.1 bones
 - A.1.1.2 joints
 - A.1.1.3 intra-articular inclusions
 - A.1.1.4 bursae
 - A.1.1.5 ligaments
 - A.1.1.6 muscles
 - A.1.1.7 tendons
 - A.1.1.8 entheses
 - A.1.1.9 fasciae
 - A.1.1.10 nerves
- A.1.2 Describe the attachments and actions of muscles related to the main musculoskeletal syndromes.
- A.1.3 State the peripheral and segmental nerve supply of muscles and joints related to the main musculoskeletal syndromes.
- A.1.4 Describe and demonstrate the course and distribution of the peripheral and autonomic nerves in a detail appropriate to:
 - A.1.4.1 the interpretation of musculoskeletal complaints;
 - A.1.4.2 the comprehension of investigations involving these nerves as they pertain to musculoskeletal complaints.
- A.1.5 Describe the course and relation of the peripheral arteries (especially the vertebral arteries) and the effects on these vessels of movements of the associated skeletal structures.
- A.1.6 Describe the disposition and attachments of all the structures within the vertebral canal, and the effects on these structures of movements of the vertebral column, head and limbs.
- A.1.7 Describe the basic neuroanatomy to explain the motor and sensory mechanisms involved in movements and musculoskeletal complaints.

PHYSIOLOGY

A.2 General Objective

To understand the physiological basis of the functions and disorders of the musculoskeletal system.

Specific Objectives

- A.2.1 Describe the basic metabolic principles of bone, muscle, connective tissue and nerves pertaining to the musculoskeletal system.

- A.2.2 Describe the molecular and cellular processes implicated in mechanisms of muscle contraction.
- A.2.3 Describe different types of muscular fibres.
- A.2.4 Describe muscle adaptability.
- A.2.5 Describe the effects of rest, exercise and ageing on skeletal muscle, in terms of histochemistry and molecular structure.
- A.2.6 Describe the molecular and cellular processes involved in:
 - A.2.6.1 the generation and propagation of action potentials in nerve and muscles
 - A.2.6.2 excitatory and inhibitory synapsis
- A.2.7 Describe the activity and function of reflexes involved in the musculoskeletal activities.
- A.2.8 Describe the basic motor and sensory neurophysiological mechanisms, in sufficient detail to interpret and explain the symptoms and signs of disorders of the locomotor system.

BIOMECHANICS

A.3 General Objective

To understand certain precepts of biomechanics and apply them to the musculoskeletal system.

Specific Objectives

- A.3.1 Demonstrate an ability to apply and interpret the following terms, with respect to any of the tissues of the musculoskeletal system:
 - A.3.1.1 stress
 - A.3.1.2 strain
 - A.3.1.3 stiffness
 - A.3.1.4 toughness
 - A.3.1.5 viscoelasticity
 - A.3.1.6 creep
 - A.3.1.7 hysteresis
 - A.3.1.8 fatigue failure
- A.3.2 Describe the movement of any joint in terms of translation and rotation about the biomechanical axes.
- A.3.3 Define, in biomechanical terms, the following terms as they are applied to joints:
 - A.3.3.1 hypomobility and stiffness
 - A.3.3.2 hypermobility and instability

- A.3.4 Demonstrate an ability to apply precepts of biomechanics to:
 - A.3.4.1 clinical features
 - A.3.4.2 posture
 - A.3.4.3 the gait cycle
 - A.3.4.4 activities of daily living, including occupational and recreational activities.

PAIN

A.4

- A.4.1 To describe the taxonomy of pain.
- A.4.2 To describe the anatomy, physiology, pathophysiology, and proposed mechanisms of pain.
- A.4.3 To differentiate acute and chronic pain and their proposed mechanisms.
- A.4.4 To describe the relationship between psychosocial factors and chronic pain.
- A.4.5 To describe the role of the autonomic nervous system in relation to pain.

NATURAL HISTORY AND EPIDEMIOLOGY

A.5

EVIDENCE-BASED MANUAL MEDICINE

A.6 MEMORANDUM

Basic Anatomy (From Pansky, Review of Gross Anatomy, McMillan)

(but any textbook could be accepted)

Osteology of the spinal column, typical vertebrae, ribs, pelvis
 Spinal nerves and cutaneous nerves of the back
 Spinal cord and meninges
 Muscles of the back (superficial and deep layers)
 Muscles producing movements on the spine
 Arterial supply of the spinal cord
 Veins of cord and vertebral column
 C0–C1, C1–C2 articulations
 Typical intervertebral and costovertebral articulation
 Sacro-iliac and coxofemoral joints
 Cutaneous nerves and dermatomes, upper and lower extremity
 Brachial plexus and thoracic outlet
 Osteology of the shoulder girdle and upper extremities (scapula-humeral, sternocostal, sternoclavicular)

Muscles of the upper extremity, lower extremity, pelvis, chest, abdomen, gluteal region
The ribs
Osteology of the lower extremities (hip, knee, ankle and foot)
Lumbar and sacral plexus

DIAGNOSTIC EXAMINATION

The examination is divided in a screening, a scanning, and appropriate local examinations.

Diagnosis requires careful interpretation of these findings integrated with history, physical and ancillary tests.

The **screening examination** asks the question: Is there a problem in the musculoskeletal system that deserves additional evaluation?

The **scanning examination** asks the question: What region and what tissues within the region are dysfunctional and of relevance?

The **local examination**: Includes the specific palpation of tissues of the musculoskeletal system.

Different palpatory examinations look at elements of pain provocation, sensory changes, tissue texture changes, examination of range of motion, and characteristics of end-feel barrier, depending upon the diagnostic system used. One or more of these elements are assessed. The relative importance of these tests varies in the different systems.

Diagnosis of dysfunction is based first on a conventional medical examination, secondly on a manual topographical examination.

Functional and pathologic abnormalities often coexist. In manual medicine, both structural and functional disturbances are identified to reach a diagnosis. A conventional medical examination is required to understand the condition of the patient with respect to indications, contraindications and therapeutic options. In manual topographical diagnosis (e.g. spinal, muscular, regional) of dysfunction it is required to designate the sight and appropriate form of manual medicine treatment.

DIAGNOSTIC OBJECTIVES

- I: To determine if there is a problem within the neuromusculoskeletal system that deserves evaluation.
 - a) Conduct a thorough history and examination with emphasis on biomechanical, occupational, orthopedic, neurological, psychosocial factors
 - b) Observe posture
 - c) Observe gait
 - d) Observe gross ranges of motion

- II: To determine what regions or tissues within the region are dysfunctional.
 - a) Conduct orthopedic, neurological, systemic and ancillary tests using methods to provide "physician-level" understanding of the patient's pathophysiological/structural condition pertaining to the tissue in question.
Conduct a palpatory examination of the region or tissue to identify the specific dysfunctions.
- III: To determine the dysfunctions considered for treatment and the characteristics important in the selection of treatment including indications and contraindications.
- IV: The ability to evaluate the patient and patient progress by using methods of measurement including outcome measures.
 - a) e.g.: VAS, dolorimeter, disability, impairment scales, general health scales.

MANUAL TREATMENT MODALITIES/MANUAL MEDICINE TREATMENT

All manual treatment modalities in manual/musculoskeletal medicine are prescribed by a physician working toward a definitive goal and with a full armatorium of medication, surgery, psychotherapy, orthotics injections and various other adjunctive modalities. As with any treatment regimen, the physician must select the best therapeutic agents for the situation, must calculate the appropriate dose and frequency for the agents and must both educate the patient and be prepared to deal with any potential side effects or untoward results. The following deals only with manual techniques constituting core manual medicine techniques.

A: Soft tissue technique

1) Myofascial release, massage, etc.

Lateral stretch, longitudinal stretch, inhibition, transverse friction.

2) Trigger point treatment

Active, e.g. muscle energy technique (neuromuscular), myofascial spray and stretch technique.

B: Mobilization (without thrust)

1) **Active**, e.g. automobilization: McKenzie techniques, stretching, strengthening and aerobic exercises.

2) Passive

a) **General**, e.g. axial manual traction, regional techniques.

b) **Specific**

Within the physiological range (gliding, traction, rotational), beyond the physiological range (with low velocity over pressure).
For all joints: spine, extremities.

C: Manipulation (passive mobilization with low amplitude and high velocity thrust technique)

- a) General: e.g. traction, Cyriax techniques, "lumbar roll"
- b) Specific: e.g. spinal segments at all levels, and extremity joints.

Manual musculoskeletal medicine physicians must know how to employ the comprehensive range of treatment, options, available for treatment of their patients.

We propose that a basic core curriculum be structured to contain:

- Information course 8 hours.
 - Diploma course 300 hours.
 - 30 % examination.
 - 35 % treatment.
 - 35 % theory.
- That is
- 125 hours conferences, theory.
 - 125 hours practical training.
 - 50 hours assistance to commented consultations of true patients in a hospital.

Ideal organization of teaching manual medicine:
Classroom teaching.
Student examines normal persons under supervision.
Student examines patients under supervision.
Student treats normal persons under supervision.
Student treats patients under supervision
Student examines and treats patients.