Blaž Mavčič

MUSCULO-SKELETAL SYSTEM & ORTHOPAEDICS

Instructions for ERASMUS students

University of Ljubljana
Faculty of Medicine
Chair of Orthopaedics

I. Introductory lecture
• History
• Clinical work
• Principles of growth and development
• Abnormal growth
• Bones, cartilage, ligaments, tendons and muscles
• Spine and spinal roots

II. Basics of diagnostics in orthopedics
• Principles of orthopedic examination
• Pain
• Status
• Leg length and range of motion
• Special tests
• Basic neurological examination
• Spinal root compression
• Diagnostic methods in orthopedics

III. Orthopedic diseases - symptoms and signs
• Pain
• Swelling
• Limited flexibility
• Deformation
• Instability
• Nausea
• Limp
• Tingling
• Snapping

IV. Orthopaedic diseases - aetiology
• Natural and typical course of the disease
• Degenerative diseases
• Inflammatory Disease
• Metabolic
• Avascular necrosis
• Tumors
• Injuries
• Neuromuscular diseases
• Paralytic diseases
• Aseptic loosening
• Congenital and developmental anomalies
• Bone dysplasia
• Myofascial syndrome
• Somatoform disorders

V. Diseases of nervous, muscular and soft tissues
• Nervous system: cerebral palsy, HMSN (Charcot-Marie-Tooth), obstetric paralysis, neuropathy, nerve injury in the spine
• Muscles: hypotony, dystrophy, inactivity atrophy, disbalance
• Soft tissue: bursitis, tenosynovitis, degenerative enthesopathy, polymyalgia rheumatica, benign and malignant soft tissue tumors

VI. Spine
• Posture
• Torticollis (muscle, bone, neurogenic obtained)
• Cervical kyphosis
• Cervical spine instability
• Scoliosis (idiopathic, congenital, neuromuscular)
• Congenital deformities of the spine and chest
• Thoracic kyphosis (Mb. Scheuermann)
• Osteomyelitis of the spine and TBC
• Degenerative diseases
• Cervicobrachial syndrome
• Sciatica
• Spondylolisthesis

VII. Treatment of orthopedic diseases
• Treatment is not necessary
• Non-operational treatment:
  Modification of physical activity
  Immobilization
  Orthoses
  Injection therapy
  Medication therapy
  Physiotherapy
  Preventive training
  Ergonomics
• Surgical treatment
  Invasive diagnostics (puncture biopsy, arthrography, discography)
  Arthroscopy, mini incision
  Soft tissue procedures
  Osteotomy, arthrodesis, elongation
  Artificial joints
  Arthrotomy

VIII. Hip and Pelvis
• Clinical examination
• Developmental dysplasia of the hip (LCC)
• Congenital abnormalities of the hip
• Arthritis of the hip
• Legg Calve-Perthes disease
• Avascular necrosis
• Epiphysiolysis
• TBC
• Snapping hip
• Tumors
• Skeletal dysplasias
• Neuromuscular diseases
• Surgical treatment

IX. Knee and calf
• Congenital anomalies
• Chondromalatia
• Aseptic necrosis
• Osteochondritis dissecans
• Meniscus and ligament injuries
• Acute suppurative inflammation
• TBC
• Synovial inflammation
• Baker cyst and bursitis
• Tumors
• Varicose syndrome

X. The upper limb
• Clinical examination
• Congenital anomalies
• Arthritis
• Periscapular pathology
• Tenosynovitis
• Aseptic necrosis
• Instability
• Tumors
• Dyplasias
• Neuromuscular diseases
• Treatment
• Epiconodylitis
• Bursitis
• Volkmann ischemic contracture
• Tenosynovitis
• Treatment

XI. Bone and joint disorders
• Bones and joints: embryonic development of bones and joints, hormonal influences, skeletal development
• Systemic skeletal disease: dysplasias, metabolic and endocrine diseases
• Local bone disease: tumors, inflammation, osteochondrosis, injuries
• Joint diseases: arthritis, sprains, intraarticular disorders, injuries

XII. The foot
• Congenital anomalies
• Arthritis
• Aseptic necrosis
• Instability
• Postural disorders
• Metatharsalgia
• Painful heel
• Tumors
• Dysplasia
• Neuromuscular diseases
• Diabetic foot
• Treatment

MUSCULOSKELETAL SYSTEM (ORTHOPAEDICS) - 200 EXAMINATION QUESTIONS

Orthopaedic examination and general orthopedics

1. Varus and valgus
2. The difference between the apparent and absolute leg length discrepancy
3. The functional difference in leg length
4. Causes of leg length discrepancy
5. Causes of large differences in measurements of passive and active range of motion
6. Radiographic and anatomical joint space
7. Typical radiographic changes in joint degeneration
8. Typical radiographic changes in inflammatory rheumatism
9. Intraarticular causes of painful knee
10. Complications after plaster application on extremities
11. Infiltration therapy
12. Medicamental pain treatment
13. Osteotomy
14. Arthrodesis
15. Bone transplantation
16. Biopsy
17. Chondrocyte transplantation and mosaic-plasty
18. Clinical features and diagnosis of osteoarthritis
19. Treatment of osteoarthritis
20. Joint endoprostheses
21. Orthopedic problems in haemophilia
22. Schober test (anatomical explanation)
23. Lasegue sign
24. Femoralis stretch test
25. Clinical assessment of muscle strength, examples of reduced strength
26. Bone cells and matrix
27. Types of ossification
28. The growth of bones in length
29. Blood circulation of bones
30. Bone turnover
31. Muscle types according to the phylogenetic development
32. Paget's disease (osteitis deformans)
33. Acute osteomyelitis
34. Chronic osteomyelitis
35. Brodie abscess
36. Suppurative arthritis
37. Septic spondylitis and discitis
38. TBC of bones and joints
39. Rheumatoid arthritis in adults
40. Ankylosing spondylitis
41. Seronegative arthritis in adults
42. Gout
43. Pseudogout
44. Primary malignant bone tumors
45. Secondary malignant bone tumors
46. Gigantocellular tumor
47. Osteoma and osteohondroma
48. Osteoid osteoma
49. Aneurismal and solitary bone cyst
50. Compartment syndrome
51. Volkmann ischemic contracture

52. Normal bone healing
53. Pseudoarthrosis
54. Posttraumatic joint instability
55. Complex regional pain syndrome (Sudeck dystrophy)
56. Thomas test
57. Osteomalacia
58. Primary osteoporosis
59. Secondary osteoporosis
60. Types of osteosynthesis
61. Reticuloendothelioses

Pediatric orthopedics
62. Skeletal development before birth
63. Types of inborn defects
64. Orthopedic problems in Down's syndrome
65. Developmental deformations
66. Epiphysiodesis
67. Surgical lengthening of bones
68. Achondroplasia
69. Dischondroplasia (Mb. Ollier)
70. Metaphyseal aclasis
71. Osteogenesis imperfecta
72. Eosinophilic granuloma
73. Gaucher's disease
74. Mucopolysaccharidosis
75. Marfan and Ehlers-Danlos syndrome
76. Arthrogryposis
77. Klippel-Feil and Sprengel syndrome
78. Torticollis
79. Myelopathy
80. Rickets
81. Antero-posterior spinal curvature
82. Lateral spinal curvature
83. Antalgic gait
84. Valgus / varus knee deformities in children
85. Muscular systrophy
86. Deformations of the chest
87. Osteomyelitis and septic arthritis in infants
88. Juvenile rheumatoid arthritis
89. Risk factors for congenital dislocation of the hip
90. Diagnostics of developmental dysplasia of the hip
91. Treatment of developmental dysplasia of the hip
92. Transient synovitis of the hip
93. Legg-Calvé-Perthes disease
94. Slipped capital femoral epiphysis (femoral epiphysiolysis)
95. Osgood-Schlatter's disease
96. Inborn equinovarus foot (pes equinovarus)
97. Inborn calcaneovalgus foot (pes calcaneovalgus)
98. High-arched foot (pes cavus)
99. Flexible flatfoot and 100. Rigid flatfoot
101. Koehler's disease (I and II)
102. Apophysitis calcanei (Sever's disease)
103. Obstetric paralysis

Orthopaedics of joints in adult patients

104. Anatomy subacromial space and rotatory cuff
105. Complete rupture of the rotatory cuff
106. Subacromial impingment syndrome
107. Shoulder instability
108. Acute calcifying shoulder tendinitis
109. Glenohumeral joint osteoarthritis
110. Adhesive capsulitis of the shoulder (frozen shoulder)
111. Elbow osteoarthritis
112. Tennis elbow (epicondylitis lateralis)
113. Bursitis olecrani
114. Mallet finger
115. Pseudoarthrosis of the navicular bone in the wrist
116. Kienboeck’s disease
117. Dupuytren's contracture
118. Tendovaginitis in the wrist region
119. Aseptic necrosis of the femoral head in adults
120. Hip osteoarthritis
121. Suppurative coxitis in the adult
122. Posttraumatic disorders of the femur
123. Dynamic and static stabilizers of the knee joint
124. Meniscus injury
125. Injury of the anterior cruciate ligament of the knee
126. Rupture of posterior cruciate ligament of the knee
127. Painful knee in the anterior compartments
128. Knee instability
129. Injuries of collateral knee ligaments
130. Osteochondritis dissecans of the knee
131. Knee synovitis
132. Recurrent dislocations of patella
133. Suppurative arthritis of the knee
134. Synovial chondromatosis
135. Knee osteoarthritis
136. Baker’s (popliteal) cyst
137. Foot arches and normal load distribution in the foot
138. Inflammation and rupture of the Achilles tendon
139. Ankle osteoarthritis
140. Ankle instability
141. Acquired flatfoot in adulthood
142. Painful heel
143. Metatarsalgia
144. Valgus malalignment of the toe (Hallux valgus)
145. Rigid toe (Hallux rigidus)
146. Haglund exostosis
147. Subtalar osteoarthritis

Spine and nervous system

148. Peroneal gait (rooster gait)
149. Degenerative disease of the spine
150. Neurogenic claudication
151. Spinal stenosis
152. Senile kyphosis
153. Idiopathic scoliosis
154. Lumbosacral radiculography

155. Injury or upper vs. lower neuron and its impact on the muscle
156. Limp in fully developed root injury S1
157. Limp in fully developed root injury L5
158. Limp in fully developed root injury L4
159. The root injury C5
160. The root injury 6
161. The root injury C7
162. The root injury L4
163. The root injury L5
164. The root injury S1
165. Typical patterns of sensory defects
166. Disorders of the autonomic nervous system in orthopedics
167. The central massive disc protrusion in the neck
168. Anatomy of the nervous system in the lumbar spine
169. Provocative discography
170. Vertebroplasty
171. HSMN (hereditary motor and sensory neuropathy)
172. Charcot joints
173. Cerebral palsy - orthopedic perspective
174. Neurofibromatosis
175. Medianus nerve compression in the wrist
176. Ulnaris compression neuropathy
177. Posttraumatic spinal shock
178. Spine fractures
179. Caudae equinae syndrome and conus syndrome
180. Tetraplegia
181. Paraplegia
182. Injuries of sciatic nerve and peroneal nerve
183. Radialis nerve injury
184. Acute sciatica
185. Chronic sciatica
186. Spine and inflammatory rheumatism
187. Fractures in osteoporosis
188. Tumors of the spine
189. Myofascial syndrome
190. Fibromyalgia
191. Cervicobrachialgia
192. Cervical spine instability
193. Whiplash injury of the neck
194. Herniation of intervertebral lumbar disc and cervical disc
195. Scheurmann’s disease
196. Spina bifida (myelomeningocele)
197. Spondylolisis and spondylolisthesis
198. Congenital and neuromuscular scoliosis
199. Discitis
200. Sacroiliitis

ORTHOPAEDICS – FIRST WEEK

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8.30 10.30		**PROPEDEUTICS LOWER LIMB**	**PROPEDEUTICS SPINE**	**PROPEDEUTICS UPPER LIMB**	
	LECTURES	**BREAK**	**BREAK**	**BREAK**	**LECTURES**
11.00 14.00		**WARD or OUTPATIENT CLINIC**	**WARD or OUTPATIENT CLINIC**	**RADIOLOGY SEMINAR or WARD or OUTPATIENT CLINIC**	

ORTHOPAEDICS – SECOND WEEK

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8.30 10.30		**PEDIATRIC WARD**	**PLASTER CASTS**	**PRACTICE TEST or OUTPATIENT CL.**	
	LECTURES	**BREAK**	**BREAK**	**BREAK**	**LECTURES**
11.00 14.00		**SEMINAR 10x**	**SEMINAR 10x**	**RADIOLOGY SEMINAR or PRACTICE TEST**	

SPECIAL TESTS AND THE PRINCIPLES OF ORTHOPAEDIC EXAMINATION

NECK
- Range of motion
- Tests of intraforaminal compression
- Distraction test
- Palpation of painful muscle nodes
- Paravertebral painful points
- Palpation of spinous processes

SHOULDER
- Inspection - atrophy
- Range of motion
- Scapula fixation with one hand
- Subacromial impingment tests
- Supraspinatus muscle power
- Subacromial bursitis
- AC joint
- Horizontal adduction test
- Long head of biceps test
- Apprehension tests

ELBOW
- Range of motion
- Flexion contracture
- Palpation of typical points
- Circumference
- Muscle power tests
- Joint laxity

WRIST
- Range of motion
- Circumference
- Palpation of typical points
- Tinel sign
- Phalen sign

HAND-FINGERS
- Inspection
- Range of motion
- Swelling - circumferences
- CMC thumb - palpation
- Joint laxity
- Muscle power tests

UPPER LIMB NEUROLOGY EXAM
- Muscle power
- Sensibility
- Reflexes
- Radicular lesion C6
- Radicular lesion C7
- Radicular lesion C8

SPINE
- Gait (antalgic, deviation, limping)

<u>Standing:</u>
- Inspection AP and lateral
- Physiological curves (lordosis, kyphosis)
- Adams test (bend over test)
- Level of the upper posterior iliac spine
- Schober test (lumbar, thoracic)
- Range of fingertips at bend over test

<u>Lying supine:</u>
- Lasegue test
- PseudoLasegue
- Contralateral Lasegue
- Contralateral pseudoLasegue
- Muscle power
- Sensibility
- Reflexes
- Babinski sign
- Radicular lesion L4
- Radicular lesion L5
- Radicular lesion S1

<u>Lying prone:</u>
- SIS – Menel test
- Palpation of posterior spines
- Femoralis stretching test
- Percussion of the spinous processes

HIP
- Range of motion
- Pelvis fixation while testing ROM
- Thomas test and flexion contracture
- Absolute limb length discrepancy
- Relative limb length discrepancy
- Functional limb length discrepancy (blocks)
- Palpation of typical points
- FABER test (fl, abd, ext rot)

KNEE
- Range of motion
- Flexion contracture
- Circumference over patella, 5 & 10 cm above
- Ballottement test
- Laxity in the frontal plane
- Anterior-medial laxity (Lachmann, drawer)
- Posterior drawer test
- Mc Murray test
- Zohler test (chondropathia)
- Palpation of typical points
- Muscle power tests

FOOT AND ANKLE
- Circumference
- Palpation of typical points
- Range of motion in the talocrural joint
- Subtalar range of motion
- Achilles tendon length
- Muscle power tests
- Toes and fingers: range of motion, deformities
- Peripheral pulses

VARIA
- Limb casting (retention, redression, complications, navicular cast)
- Outpatient clinic
- Adult ward, Pediatric ward
- X-ray interpretation

University of Ljubljana, Faculty of Medicine, Chair of Orthopaedics
PATIENT ADMISSION REPORT

Student:

Mentor:

Date

Department

Room No.:

Patient's given name and family name:

Birth date:

Family history:

Social history:
Working conditions, weight lifting, kneeling, absence from work due to disease

Pediatric illnesses:

Previous diseases:
Operative procedures
Orthopaedic conditions
Chronic diseases
Medications, Allergies

Present medical problem:

General status:

Local orthopaedic status:

Preliminary diagnosis:

Differential diagnosis:

What diagnostic tests have been performed, what are the results?

Are there any other diagnostic tests that need to be done?

Therapy: