

TURKISH SPINE SOCIETY CORE CURRICULUM

BASIC SCIENCES ANATOMY

		BASIC LEARNING OBJECTIVES			BASIC LEARNING OBJECTIVES			BASIC LEARNING OBJECTIVES		
		S	F	KNOWLEDGE	S	F	SKILL	S	F	ATTITUDE
Anatomy										
Functional anatomy of the vertebral column	3	4	Identifies the bones comprising the vertebral column and their anatomy. Lists and describes the parts of each vertebra, such as the body, pedicle, facet, pars lamina. Lists the anatomy and functions of muscles and muscle groups related to the vertebral column motion. Lists the anatomy and functions of the intervertebral discs and ligaments. Recognizes the anatomy of vessels directly related to the vertebral column (segmental arteries, vertebral arteries), and describes their courses. Lists the anatomy of vessels adjacent to the vertebral column (aorta, vena cava, iliac arteries and veins), and describes their courses and branches. Describes the facet joints of the vertebra and their orientations.				3	4	Recognizes the significance of anatomy knowledge in spine surgery.	
Functional anatomy of the spinal cord and spinal nerve roots	3	4	Describes the cross-sectional and functional anatomy of the spinal cord. Elucidates the long tracts, their functions and locations within the spinal cord. Explains the blood supply of the spinal cord. Describes the anatomy of nerve roots and dorsal root ganglions. Explains the function of individual nerve roots, the muscles they innervate and their dermatomes.				3	4	Appreciates the significance of anatomy knowledge in spine surgery.	
Anatomy of the pelvis	2	3	Describes the bony anatomy of the pelvis. Explains and describes the spatial orientation of the pelvis. Lists the great vessels in the pelvis, describes their courses and branches. Lists other intrapelvic organs, explains their location and relationship with the bony pelvis. Describes the muscles inserting to pelvis and their functions. Explains the anatomy of the sacroiliac joint. Describes its relationship with the pelvis and sacrum.				3	4	Recognizes the significance of anatomy knowledge in spine surgery.	
Surgical Approaches										
Approaches to the craniocervical region (C0-C2)	1	4	Describes surgical positioning. Describes the specific anatomy of the occiput and the upper cervical region. Describes the course of vertebral and carotid arteries in this region. Explains the trajectory of occipital nerves in this area. Lists the steps of the anterior and posterior approaches to the craniocervical region.	1	3	Prepares and positions the patient for surgery. Performs steps of the anterior and posterior approaches to the craniocervical region.	2	4	Appreciates the significance of the knowledge of surgical steps that will be taken in spinal surgery. Assigns importance to preoperative planning and preparation. Assigns importance to respecting tissues during surgery.	
Approaches to the cervical spine (C3-C7)	2	4	Describes surgical positioning. Describes incisions used for anterior and posterior approaches based on the level to be operated. Lists the muscles, vessels, bones, and joints: defines the anatomic structures that need to be protected. Lists the steps of anterior and posterior approaches, describes the determination of the correct level.	2	3	Gives appropriate position to the patient and operating table. Prepares the patient by using a skull holder if necessary. Determines the level of incision. Closes the incision appropriately.	3	4	Appreciates the significance of the knowledge of surgical steps that will be taken in spinal surgery. Assigns significance to respecting the tissues during surgical applications.	
Approaches to the cervicothoracic junction (C7-T2)	1	3	Describes surgical positioning. Lists the incisions that will be used for the anterior approach. Explains the anatomy of sternum, manubrium sterni and clavicle, and their relations with the approach. Explains the anatomy of major vessels, nerves, and visceral structures of upper mediastinum, and their relations with the approach. Lists the osteosynthesis methods for sternum and clavicle. Describes the steps of anterior and posterior approaches to cervicothoracic region.	1	3	Gives the appropriate position to patient and operating table. Performs sternum and clavicle osteotomies. Fixes osteotomies of sternum and clavicle. Closes the incision appropriately.	3	4	Appreciates the significance of the knowledge of surgical steps that will be taken in spinal surgery. Assigns significance to respecting the tissues during surgical applications.	
Approaches to the thoracic spine (T3-T12)	2	4	Defines positioning. Explains thoracotomy incisions and their locations in relation to levels. Lists the steps of the anterior approach to the thoracic spine, describes the closure of the wound. Diagnoses and describes pneumothorax and hemothorax. Describes the application of a chest tube. Describes the steps of posterior approach to thoracic spine.	3	4	Gives appropriate position to patient and table. Performs thoracotomy and anterior approach to the thoracic spine in accordance with appropriate steps. Performs diaphragm repair and thoracotomy closure. Inserts a chest tube, performs and monitors underwater drainage. Closes the incision appropriately.	3	4	Appreciates the significance of the knowledge of surgical steps that will be taken in spinal surgery. Assigns significance to respecting the tissues during surgical applications.	
Approaches to the thoracolumbar/lumbar spine (T11-L5)	2	4	Defines positioning. Describes the extension of thoracic anterior approach to the TL junction. Describes the incisions used for anterior approach to TL and lumbar regions, and lists their locations by the level. Lists and describes the steps of anterior and posterior approaches to TL and lumbar spine.	3	4	Gives appropriate position to patient and table. Determines the level prior to surgery. Recognizes and protects the retroperitoneal structures. Closes the incision appropriately.	3	4	Appreciates the significance of the knowledge of surgical steps that will be taken in spinal surgery. Assigns significance to respecting the tissues during surgical applications.	
Approaches to the lumbopelvic region	1	3	Defines positioning. Lists the anterior and posterior approaches	1	3	Gives appropriate position to patient and table.	3	4	Appreciates the significance of the knowledge of surgical steps that will be taken in spinal surgery.	

(L5-sacrum-pelvis)			to lumbosacral junction, describes their steps and closures.			Determines the level of incision. Demonstrates and protects the iliac veins and arteries and other intrapelvic structures. Closes the incision appropriately.			Assigns significance to respecting the tissues during surgical applications.	
Spinal Instrumentation										
Instrumentation materials used in spinal surgery	2	3	Lists instrumentation materials used in spinal surgery and explains their functions and use. Explains the basic metallurgical or structural properties of fixation materials, explains the areas of use for materials with different properties, and their advantages and disadvantages.							
Craniocervical junction fixation (C0-C2)	1	4	Explains the methods of screw and wire insertion for occipital bone, describes their locations and risks. Explains and describes the insertion method for posterior C1 lateral mass screws. Explains and describes C2 pedicle screw insertion. Lists posterior C1-C2 fixation methods and comparative risks and advantages. Distinguishes the functions of different implants used in fixation and their areas of use.	1	3	Inserts screw and wire to the occipital bone. Inserts C1 lateral mass screws. Performs C2 pedicle screw, interlaminar screw, and facet screw techniques. Applies the C1-C2 laminar fixation techniques.	2	4	Realizes the significance of different implants and materials used in fixation and their different functions and areas of use.	
Cervical spine fixation (C3-C7)	2	4	Lists and describes the anterior and posterior fixation methods of the cervical spine. Describes the methods, advantages, and disadvantages of using lateral mass screws. Describes the anatomy of pedicles of the cervical vertebrae, describes the advantages and risks of pedicle screw usage. Distinguishes the functions and indications of different implants used in fixation.	2	4	Inserts lateral mass screws, sublaminar wires and hooks to cervical vertebrae. Performs anterior cervical discectomy and cage application. Performs anterior cervical plate application. Performs cervical disc arthroplasty.	2	4	Assigns importance to the fact that different implants used in fixation have different functions and indications.	
Thoracolumbar spine fixation (T1-L5)	2	4	Describes the anterior and posterior thoracic and lumbar instrumentation techniques. Lists the advantages and disadvantages of anterior and posterior instrumentation materials. Describes the insertion of pedicle screws to all levels of the T and L spine. Distinguishes the functions and different indications of different implants used in fixation.	2	4	Inserts pedicle screws, pedicle, laminar, facet, and transverse process hooks and sublaminar wires to thoracic and lumbar vertebrae. Uses anterior vertebral screws. Inserts discectomy and/or corpectomy implants.	2	4	Assigns importance to the fact that different implants used in fixation have different functions and indications.	
Lumbopelvic fixation (L5-sacrum-pelvis)	1	3	Lists the anterior and posterior fixation techniques for lumbosacral region. Describes the application of S1 pedicle, iliac and S1 and S2-alar screws. Describes sacroiliac joint fixation techniques. Lists the advantages and disadvantages of various lumbopelvic fixation techniques (Jackson, Dunn, etc.) Distinguishes the functions and different indications of different implants used in fixation.	1	3	Inserts S1, S2 and iliac screws. Inserts discectomy and/or corpectomy implants. Performs sacroiliac joint fixation techniques.	2	4	Assigns importance to the fact that different implants used in fixation have different functions and indications.	
Tissue Healing/Fusion										
Wound healing	3	4	Describes the phases and basic principles of wound healing. Lists the hormones, growth factors and drugs acting on different phases.					3	4	Appreciates the significance of knowing wound repair and its steps.
Bone healing / Spinal fusion	3	4	Describes the phases and basic principles of bone healing. Lists the hormones, growth factors and drugs acting on different phases.					3	4	Appreciates the significance of knowing bone repair and its steps.
Nerve healing	3	4	Describes nerve conduction and physiology. Lists nerve injury types and their differences. Describes the stages of nerve healing. Lists the factors and pharmacologic agents that affect nerve healing.					3	4	Appreciates the significance of knowing nerve repair and its steps.
Bone and bone substitutes in spinal fusion	2	4	Describes the concept of osteoinduction, osseointegration, osteogenicity. Classifies bone substitutes based on the concepts above. Distinguishes bone grafts and substitutes, including advantages and disadvantages.	3	4	Positions the patient and table for harvesting bone graft. Harvests bone grafts from the iliac bone, fibula, tibia, ribs, and other sites. Uses bone grafts or substitutes in spinal fusion.	3	4	Recognizes the importance of appropriate selection of graft or alternative materials for fusion success.	
Spine Biomechanics										
Basic biomechanics	2	4	Defines basic biomechanical concepts. Explains the biomechanical properties of different materials. Recognizes materials by stress-strain curves.	1	3					
Spine kinematics	2	3	Lists all muscles contributing to spinal motion with their functions. Explains the normal posture and its variation with age. Describes the alignment and function of the vertebral column in conditions such as walking, running, and sitting.							
Vertebral column stability	2	4	Defines stability as a concept, lists the instability criteria for every anatomic level.	2	4	Analyzes stability in any clinical condition.	3	4	Recognizes the importance of spinal stability.	
Vertebral column alignment / balance	2	4	Explains the normal alignment of the vertebral column with reference to age. Explains the relationship between the vertebral column balance and patients' quality of life. Describes the radiologic parameters of the vertebral column and pelvis balance.	2	4	Performs necessary studies to evaluate vertebral column balance. Evaluates the alignment and balance of the vertebral column.	3	4	Appreciates the significance of vertebral column alignment.	
Spine fixation biomechanics	2	4	Lists the advantages and disadvantages of fixation methods biomechanically. Compares fixation methods with respect to their biomechanical properties.	2	4	Selects the biomechanically optimal fixation method.				
Orthoses and braces	2	4	Lists and describes the types of orthoses and braces.			Decides on the use of orthosis or brace and prescribes.				

			Knows the biomechanical properties of braces and compares with each other. Lists the indications, advantages and disadvantages of orthoses and braces.	2	4	Follows up the patient with an orthosis or a brace, decides on altering or terminating treatment if necessary.			
Intervertebral Disc (IVD)									
Functional anatomy, physiology, and biomechanics of IVD	2	4	Explains the functional anatomy of the AF and NP. Explains the basic molecular structure and physiologic properties of both tissues. Describes the IVD biomechanics.						
IVD degeneration physiopathology and mechanics	2	4	Explains the effects of aging and degeneration on the anatomy, physiology and biomechanics of IVD. Recognizes and distinguishes between findings of degeneration and aging in IVDs.	2	4				
IVD regeneration	1	3	Lists the methods of IVD regeneration in clinical use.						
Embryology/ Growth									
Vertebral column embryology	1	3	Lists embryologic developmental basic steps of the vertebral column. Describes the mechanisms of developmental malformations of the spine.						
Embryologic diseases of the vertebral column / spina bifida	2	4	Defines occult and open spina bifida and explains the mechanisms. Describes split cord malformations and tethered spinal cord syndromes. Defines the Chiari syndrome and lists the types. Describes syringomyelia. Describes basic surgical treatment for open spina bifida.	2	4	Recognizes the types of spinal dysraphism, shows and defines them radiologically.	3	4	Appreciates the significance to spinal dysraphism.
Vertebral column growth	1	4	Lists the stages of the vertebral column and spinal cord growth. Explains the link between the vertebral column growth and lung development.						
Genetics									
Clinical genetics	2	3	Describes the fundamental concepts of clinical genetics. Describes the genetic basis of common spinal problems.						
Genetic-based diseases / syndromes of the vertebral column	1	3	Describes the prognosis and natural history of genetic diseases and syndromes involving the vertebral column. Lists the indications for surgery and conservative treatment.			Recognizes the genetic diseases and syndromes in the vertebral column.			
Storage diseases / osteodystrophies	2	3	Describes osteodystrophies of the vertebral column. Explains their prognoses. Lists the indications for surgery and conservative treatment.			Recognizes the osteodystrophies of the vertebral column.			
Inflammation									
Basic inflammation mechanism	3	4	Describes the basic pathophysiology of inflammation. Lists spinal inflammatory diseases and diagnostic criteria.	2	4	Identifies inflammatory diseases of the vertebral column clinically and radiologically.			
Inflammation/CTD pharmacology	2	3	Lists the anti-inflammatory pharmacologic interventions with indications and side effects.	3	4	Refers inflammatory diseases to appropriate specialties.			
Pain									
Pain physiology	2	4	Describes afferent nerve physiology and pain pathways. Explains theories on pain perception.						
Pain pharmacology	3	4	Lists the pharmacologic agents used in the treatment of pain, indications for use, and side effects.	3	4	Measures and evaluates the pain originating from disease or surgery. Initiates and maintains pain treatment.			
Infection									
Basic infection mechanism	3	4	Describes the basic physiopathology of infection. Lists the infectious diseases of the spine, explains the diagnostic criteria. Lists the risk factors.	3	4	Recognizes basic clinical, radiologic, and laboratory signs of infection.			
Wound infections	3	4	Lists the principles of asepsis. Describes infection prophylaxis. Lists risk factors.	3	4	Recognizes wound infection. Utilizes infection prophylaxis.	3	4	Pays attention to infection prophylaxis.
Infection pharmacology	3	4	Explains the pharmacotherapy indications for infections. Describes rational antibiotic use.	3	4	Prescribes appropriate antibiotics for spinal infections.			
Metabolic Diseases									
Physiology of the bone	2	4	Explains the bone formation and remodeling. Lists the mechanical, physiologic, and pharmacologic agents that mediate bone metabolism.						
Trauma									
Metabolic and endocrine response to trauma	3	4	Explains the outlines of metabolic and endocrine response to trauma. Explains the SIRS and CARS concepts. Explains damage control trauma surgery and early total care concepts.	2	4	Applies the algorithms of damage control surgery or early total care.	3	4	Attains significance to the metabolic and endocrine response to trauma.
Hemorrhage and Coagulation									
The physiology of hemorrhage and coagulation	2	3	Explains the physiologic base of hemorrhage and coagulation. Lists the laboratory studies on hemorrhage and coagulation. Lists coagulation disorders.	3	4	Evaluates the patients with respect to bleeding and clotting problems.	3	4	Realizes the importance of bleeding and clotting problems in spinal surgery.
Blood loss control in spinal surgery	3	4	Classifies methods to decrease blood loss in spinal surgery. Describes mechanical methods. Lists locally applied materials and their mechanisms. Lists the methods to decrease allogeneous	3	4	Applies mechanical methods to decrease blood loss. Organizes a preoperative blood donation program. Sets cell-saver devices and use when needed.	3	4	Realizes the vital importance of blood loss.

			blood transfusion. Describes the autologous blood donation program before surgery. Lists the indications for the use of cell-saver.						
Hemorrhage control pharmacology	2	4	Lists the names, mechanisms of action, contraindications and side effects of pharmacologic agents to decrease blood loss.	2	4	Uses pharmacologic treatments to decrease blood loss and plans when necessary.			
DVT/PE in spinal surgery	2	4	Explains the risk factors, diagnosis and treatment for DVT and PE. Lists the indications and methods for DVT/PE prophylaxis in spine surgery.	3	4	Uses mechanical and pharmacological methods for DVT prophylaxis. Uses the clinical, laboratory, and imaging methods for the diagnosis of DVT/PE. Prescribes treatment for DVT or PE.	3	4	Realizes the significance of DVT/PE complications in spinal surgery.
Neurophysiology									
Clinical applications of neurophysiology (SSEP, MEP, EMG)	2	4	Lists the methods for the assessment of function and conduction of nervous system.						
Spinal cord monitorization	2	4	Lists the neuromonitorization methods utilized during spinal surgery, explains their differences, advantages and disadvantages. Describes the setting of a neuromonitorization system during surgery. Discusses the possible causes of changes in neuromonitorization, lists suggestions for management. Describes the Stagnara wake-up test, and explains how to perform it.	2	4	Performs the Stagnara wake-up test with appropriate indications. Uses and analyzes multichannel spinal cord monitorization.	2	4	Realizes the significance of spinal cord monitorization.
Radiological Imaging									
Basic principles of radiology	2	4	Lists the physical basis of commonly used imaging methods (X-ray, CT, MRI). Describes how to use fluoroscopy. Lists the effect of radiation and magnetic field on health.	3	4	Protects self, medical staff, and patients from ionizing radiation. Uses fluoroscopy.			
X-ray imaging	2	4	Explains the X-ray methods for the spine and basic positions. Recognizes all anatomic structures in X-rays.			Evaluates the technical adequacy of X-rays.			
Computerized tomography	2	4	Explains the indications, advantages and disadvantages of using CT.	2	4	Interprets CTs of the spine independent from radiology reports.			
Magnetic resonance imaging	2	4	Lists the indications, advantages, and disadvantages of MRI. Lists different sequences of MRI and their indications.	2	4	Interprets MR imaging of the spine independent from radiology reports.			
Radioisotope Imaging									
Radioisotope scintigraphy	2	4	Lists the indications, advantages and disadvantages of scintigraphic methods. Describes the scintigraphic appearances of conditions such as infection, neoplasia, and stress fractures.	2	4	Interprets the scintigraphic imaging of the spine independent from a nuclear medicine specialist report.			
PET	2	4	Lists the indications for the use of PET.	2	4	Interprets and evaluates PET imaging of the spine independent from a nuclear medicine specialist report.			
Research									
Evaluation of research outcomes and critical reading	2	4	Describes how to evaluate the quality of a research report or scientific article.			Determines the scientific evidence level of a study.			
Evaluation of outcomes of treatment and quality of life	2	4	Lists the methods of health-related quality of life assessment and normal values for these tests. Describes the concept of minimum clinically important change.						
Communication Skills									
Communication	3	4	Explains the importance of communication. Lists the problems that result from lack of communication.			Empathizes with patients.			Realizes the significance of establishing appropriate communication and empathy with the patient.
Informed consent	3	4	Explains the significance of taking consent. Lists information that needs to be included in an informed consent form.	3	4	Prepares an informed consent form. Informs the patients appropriately. Obtains informed consent.	3	4	Appreciates the significance of informed consent.
Medicolegal problems	2	3	Lists the medicolegal problems that may be encountered during medical practice. Lists the precautions to minimize medicolegal problems.						

TURKISH SPINE SOCIETY CORE CURRICULUM

SPINAL TRAUMA

	BASIC LEARNING OBJECTIVES			BASIC LEARNING OBJECTIVES			BASIC LEARNING OBJECTIVES		
	S	F	Knowledge	S	F	Skill	S	F	Attitude
Clinical Evaluation									
Patient history	3	4	Identifies the time and mechanism of trauma. Describes the mechanism of injury. Describes other associated injuries.	3	4	Evaluates and documents patient history.	3	4	Attains significance to obtaining detailed information in patient history.
General physical examination	3	4	Describes the patient's general condition and trauma sign by inspection. Elucidates whether there is tenderness on the spine by using palpation. Lists other internal organ injuries that may be associated with spine injury and explains the relevant examination findings and studies.	3	4	Performs thorough physical examination.	3	4	Attains significance to the findings of physical examination.
Neurologic examination	3	4	Describes the motor and sensory function for each spinal nerve. Explains how motor power is graded. Explains the superficial, deep and cortical sensory examinations and findings for each dermatome. Describes how sensory examination is graded. Describes the importance of deep tendon reflexes and how to assess these reflexes. Lists scoring and scaling methods (ASIA, Frankel).	3	4	Performs and documents a detailed neurologic examination in patients with trauma. Evaluates, documents, and records the changes in trauma-related scores (ASIA, Frankel) during treatment process.	3	3	Attains significance to neurologic examination. Attains significance to sharing physical examination results with patients and relatives. Raise awareness to the significance of neurological examination records in follow-up.
Imaging methods	3	4	Explains when and how static and dynamic direct X-rays need to be taken in patients with spinal injury. Lists the indications for obtaining a CT. Lists and evaluates the indications for obtaining an MRI.	3	4	Evaluates and interprets direct X-rays, CT, and MRIs, and plans surgery according to study results.	3	4	Recognizes the significance and indications for each imaging method.
Upper Cervical Trauma									
Occipital condyle fractures	2	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	1	3	Performs necessary surgical techniques: <ul style="list-style-type: none"> Posterior occipitocervical fusion Posterior wiring and bone fusion Posterior screw-plate/rod system implantation and bone fusion Recognizes and handles possible complications of treatment.	2	4	Recognizes the significance of describing the indications and complications of surgery to the patients and relatives.
Atlanto-occipital dislocations	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	1	3	Performs necessary surgical techniques (posterior occipitocervical fusion, posterior wiring and bone fusion, posterior screw-plate/rod system implantation and bone fusion). Recognizes and handles possible complications of treatment.	2	4	Recognizes the significance of describing the indications and complications of surgery to the patients and relatives.
Atlas (C1) fractures (Isolated)	2	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	2	3	Utilizes the necessary treatment modality with complete understanding of the indications. Recognizes and handles possible complications of treatment.	2	4	Recognizes the significance of describing the indications and complications of surgery to the patients and relatives.
Atlantoaxial subluxation and dislocations	2	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis...). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	1	3	Performs necessary surgical techniques: <ul style="list-style-type: none"> Posterior C1-C2 fusion Interlaminar clamp fixation posterior wiring techniques (Gallie, Brooks, etc.) Goel-Harms technique (C1 lateral mass screw+C2 pedicle/pars screw+bone fusion) Magerl technique (transarticular screwing+modified Brookes fusion) C1 lateral mass+C2 translaminar screwing+bone fusion Anterior C1-C2 fusion C1-C2 plate fixation Recognizes and handles possible complications of treatment.	2	4	Recognizes the significance of describing the indications and complications of surgery to the patients and relatives.
Axis fractures Traumatic spondylolisthesis of the axis (Hangman's fracture)	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	1	3	Plans the treatment of hangman's fractures according to classifications (Levine/Efendi and Francis grading) Performs necessary surgical techniques by their indications: <ul style="list-style-type: none"> Posterior C2-C3 fusion C2 pedicle screw+C3 lateral mass screw+bone fusion C2/C3 pedicle screw+bone fusion Anterior C2-C3 fusion Anterior C2-C3 discectomy+autograft/cage implantation+plate insertion Recognizes and handles possible	2	4	Recognizes the significance of describing the indications and complications of surgery to the patients and relatives.

						complications of treatment.			
Axis fractures Odontoid fractures	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	1	3	Plans the treatment of odontoid fractures according to classification (Anderson and D'Alonzo). Describes and performs necessary surgical techniques: <ul style="list-style-type: none"> • Primary dens osteosynthesis • Anterior odontoid screw fixation • Posterior C1-C2 fusion • Interlaminar clamp fixation • Posterior wiring techniques (Gallie, Brooks, etc.) • Goel-Harms technique [C1 lateral mass screw+C2 pedicle/ pars screw+bone fusion] • Magerl technique (transarticular screwing+modified Brookes fusion) • C1 lateral mass screw+C2 translaminar screwing+bone fusion Recognizes and handles possible complications of treatment.	2	4	Recognizes the significance of describing the indications and complications of surgery to the patients and relatives.
Other C2 fractures	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	1	3	Uses the orthoses in this group which includes fractures of the spinal process, lamina, facet, lateral mass, and vertebral body . Performs halo traction according to its indication.	2	4	Recognizes the significance of describing the indications and complications of surgery to the patients and relatives.
C1-2 fractures (combined)	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	1	3	Recognizes the need for and uses external immobilization in most cases. Performs the necessary surgical technique by the indications.	2	4	Recognizes the significance of describing the indications and complications of surgery to the patients and relatives.
Lower Cervical Trauma (C3-C7)									
Lower cervical area traumas	3	4	Lists and describes commonly used classification systems for subaxial cervical trauma (Allen, CSISS [Cervical Spine Injury Severity Score], SLIC [Subaxial cervical spine injury classification system], etc.). Lists the instability criteria.	3	4	Classifies traumatic lesions of the lower cervical area using different classification schemes based on neurologic examination and radiologic data.	2	4	Recognizes the significance of classification in treatment.
Anterior column injuries									
Anterior compression fractures	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	3	4	Uses appropriate techniques in the surgical treatment of anterior compression fractures by their indications. Recognizes and treats possible complications of surgical treatment.	3	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.
Burst fractures	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	3	4	Uses appropriate techniques in the surgical treatment of burst fractures by their indications: <ul style="list-style-type: none"> • Anterior corpectomy+strut graft/mesh cage insertion+anterior cervical plating+fusion Recognizes and treats possible complications of surgical treatment.	3	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.
Flexion-Axial loading injuries (teardrop fractures)	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.) Lists the symptoms and probable findings on examination Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	2	4	Uses appropriate techniques in the surgical treatment of teardrop fractures by their indications: <ul style="list-style-type: none"> • Anterior surgery • Anteroposterior surgery Recognizes and treats possible complications of surgical treatment.	2	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.
Disc distraction injury	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.) Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options.	3	4	Uses appropriate techniques in the surgical treatment of disc distraction injuries by their indications. <ul style="list-style-type: none"> • Anterior surgery • Anteroposterior surgery Recognizes and treats possible complications of surgical treatment.	2	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.

			Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.						
Transverse process fractures	3	4	Explains the possibility of coexistence of transverse process fractures with vertebral artery injury.	3	4	Refers transverse process fractures presenting with vertebral artery injury to emergency endovascular treatment.	3	4	Gives significance to the possibility of a vertebral artery injury in transverse process fractures.
Posterior Column Injuries									
Lamina and spinous process fractures, posterior ligamentous injury (without subluxation)	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	3	4	Uses appropriate techniques in the surgical treatment of posterior element injuries by their indications: • Posterior surgery Recognizes and treats possible complications of surgical treatment.	2	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.
Lateral Column Injuries									
Facet fractures and dislocations	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	3	4	Uses appropriate techniques in the surgical treatment of facet fractures and dislocations by their indications: • Posterior fusion • Anterior fusion Recognizes and treats possible complications of surgical treatment.	2	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.
Whiplash injury	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and physical examination findings. Describes and evaluates the imaging methods. Grades and lists the treatment options. Lists conservative treatment options. Lists surgical treatment indications.	3	4	Performs the follow-up and medical treatment of whiplash injuries based on the degree of injury, and performs surgery depending on the indication.	3	4	Is aware of the significance of whiplash injury. Attains importance to informing the course of this disorder to the patient and relatives, and adds this to the treatment process.
Thoracic, Thoracolumbar and Lumbar Trauma									
Thoracic, thoracolumbar, and lumbar area	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Lists the instability criteria specific for the thoracic, thoracolumbar and lumbar areas. Explains and uses classifications: • Denis • McAfee • Ferguson-Allen • AOSpine • Load-sharing • TLICS Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	3	4	Classifies the injury for every patient. Plans the treatment in light of these classifications.	3	4	Recognizes and appreciates the significance of classifications in treatment.
Evaluation of Fracture Types									
Minor Injuries	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Lists the instability criteria specific for the thoracic, thoracolumbar, and lumbar areas. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods. Describes the significance of symptoms caused by minor injuries.	3	4	Is versatile in conservative treatment.	3	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.
Major injuries	3	4	Defines the pathology (etiopathogenesis, prevalence, differential diagnosis...). Lists the symptoms and probable findings on examination. Describes and evaluates imaging methods. Lists the instability criteria specific for the thoracic, thoracolumbar, and lumbar areas. Explains and uses classifications. Lists the conservative treatment options. Lists the surgical treatment indications. Lists the techniques that may be used in surgical treatment and relevant indications. Lists the possible complications that may occur after surgical treatment and their treatment methods.	3	4	Performs differential diagnostic workout. Determines the surgical indications under the guidance of classifications. Applies necessary conservative or surgical techniques as indicated: Compression fractures • Posterior fusion • Posterior percutaneous instrumentation • Vertebroplasty/Kyphoplasty Burst fractures • Posterior decompression and fusion • Posterior transpedicular corpectomy+expandable cage insertion+posterior fusion • Anterior corpectomy+strut graft/corpectomy cage insertion+fusion • Combined approaches (posterior+anterior) Flexion-distraction injuries • Posterior instrumentation and fusion	3	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.

						<ul style="list-style-type: none"> Posterior percutaneous instrumentation Fracture-dislocation injuries <ul style="list-style-type: none"> Posterior decompression+instrumentation and fusion Extension and extension-distraction injuries <ul style="list-style-type: none"> Posterior instrumentation and fusion (long segment) Posterior percutaneous instrumentation (long segment) Recognizes and treats possible complications of surgical treatment.			
Sacral Trauma									
Sacral fractures	1	3	<p>Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.)</p> <p>Lists the symptoms and probable findings on examination</p> <p>Describes and evaluates imaging methods.</p> <p>Lists the instability criteria specific for the sacral area.</p> <p>Explains and uses classifications.</p> <p>Lists the conservative treatment options.</p> <p>Lists the surgical treatment indications.</p> <p>Lists the techniques that may be used in surgical treatment and relevant indications.</p> <p>Lists the possible complications that may occur after surgical treatment and their treatment methods.</p>	1	3	<p>Performs differential diagnostic workout. Determines the surgical indications under the guidance of classifications.</p> <p>Applies necessary conservative or surgical techniques as indicated:</p> <ul style="list-style-type: none"> Reduction and open/percutaneous iliosacral screw fixation Unilateral lumbopelvic fixation±posterior decompression Bilateral lumbopelvic fixation±posterior decompression <p>Recognizes and treats possible complications of surgical treatment.</p>	2	4	Attains importance to explaining the indications and complications of treatment to patients and relatives.
Pediatric Spine and Spinal Cord Injuries									
Pediatric spine injuries	1	3	<p>Describes the characteristics of the pediatric spinal column and stages of development.</p> <p>Lists the areas vulnerable to injury by age groups.</p> <p>Describes the injury types specific for childhood.</p> <p>Defines the pathology (etiopathogenesis, prevalence, differential diagnosis, etc.)</p> <p>Lists the symptoms and probable findings on examination.</p> <p>Describes and evaluates imaging methods.</p> <p>Lists the instability criteria specific for the sacral area.</p> <p>Explains and uses classifications.</p> <p>Lists the conservative treatment options.</p> <p>Lists the surgical treatment indications.</p> <p>Lists the techniques that may be used in surgical treatment and relevant indications.</p> <p>Lists the possible complications that may occur after surgical treatment and their treatment methods.</p>	1	4	<p>Uses special care and trains assistive staff in the transportation of patients with pediatric spine injury.</p> <p>Performs differential diagnostic workout. Determines the surgical indications under the guidance of classifications.</p> <p>Applies necessary conservative or surgical techniques as indicated:</p> <ul style="list-style-type: none"> Posterior decompression Anterior fusion Posterior fusion <p>Follows the patients, provides information to patients and family on the long-term sequelae of injuries including spinal deformities.</p>	2	4	<p>Gives significances to the fact that pediatric spine injuries are different than adult spinal injuries, and shares with the patients and families.</p> <p>Attains importance to explaining the indications and complications of treatment to patients and relatives.</p>
Spinal Cord Injury (SCI)									
Definition, Pathophysiology	2	4	<p>Describes the mechanisms of spinal cord injury (SCI).</p> <p>Explains the pathophysiology of SCI.</p>				3	4	<p>Understands the importance and natural course of SCI.</p> <p>Attains importance to informing the patients and families on the prognosis and the importance of rehabilitation.</p>
Pre-hospital management	3	4	<p>Describes the patient group that needs cervical immobilization.</p> <p>Lists the equipments used in cervical immobilization.</p> <p>Describes the clinical examination of a SCI patient.</p> <p>Lists the types and mechanisms of circulatory shock seen in SCI patients (neurogenic shock, spinal shock) and describes the appropriate treatment methods.</p> <p>Describes proper methods of patient transfer and transport and the tools that can be used during transport.</p>	3	4	<p>Performs appropriate patient transfer and transport.</p> <p>Trains the assistive medical staff on appropriate patient transfer and transport.</p> <p>Uses necessary orthoses and devices (collar, spoon stretcher) during transport, gives necessary education.</p> <p>Distinguishes between spinal shock and neurogenic shock. Plans and executes the treatment.</p>	3	4	<p>Attains utmost importance to safe and effective transfer and transport of patients.</p> <p>Attains utmost importance to training personnel in this respect.</p>
Neurologic evaluation	3	4	<p>Lists the motor, sensory and reflex examinations of SCI patients.</p> <p>Lists the muscle groups, dermatomes, and related spinal segments that should be inspected during neurologic examination.</p> <p>Lists the classifications that are used in the classification of SCI patients.</p> <p>Classifies patients according to these systems and describes their likely prognoses.</p> <p>Describes incomplete injury syndromes (central cord syndrome, Brown-Séquard syndrome, and posterior cord syndrome) and explains their clinical findings.</p>	3	4	<p>Performs the physical examination of SCI patient, differentiates between neurogenic shock-spinal shock, determines the prognosis.</p> <p>Plans the medical treatment based on the patient's condition.</p> <p>Determines whether there is need for surgery and applies the required surgery.</p>	3	4	Attains importance to informing the patients and families on the prognosis and the importance of rehabilitation.
Radiologic and electrophysiologic evaluation	2	4	<p>Lists which radiologic studies to be performed.</p> <p>Lists the electrophysiologic studies (EMG, EP, etc.) that may be performed and their prognostic significances.</p>	2	4	<p>Interprets the findings of radiologic studies (X-ray, CT, and MRI) in spinal injury and uses them in planning treatment.</p> <p>Plans when and with which indications EMG and EP be performed in the follow-up of the patient, executes, and interprets.</p> <p>Organizes the treatment process in light of these findings.</p>	2	4	Gives significance to the role of radiologic and electrophysiologic studies in doing the correct treatment.
Treatment	2	4	<p>Lists the general systemic signs caused by trauma in patients with SCI. Explains the clinical presentation and treatment of trauma specific neurogenic shock and spinal shock.</p> <p>Plans and explains the conservative treatment in spinal trauma.</p> <p>Discusses the alternatives and the current knowledge on pharmacological intervention in a patient with SCI.</p> <p>Lists the indications of emergency surgical procedures in patients with SCI.</p> <p>Lists and discusses the current knowledge on novel regenerative strategies (stem cells etc) that may be used.</p> <p>Lists the surgical techniques in patients with SCI.</p> <p>Describes the rehabilitation processes of SCI patients.</p>	2	4	<p>Performs the emergency medical management of SCI patients as indicated.</p> <p>Performs surgery using the appropriate technique (anterior-posterior decompression+instrumentation+fusi on, etc.) as indicated.</p> <p>Plans the rehabilitation process.</p>	3	4	<p>Gives significance to the emergency management of patients with spinal trauma.</p> <p>Attains importance to explaining to the patient and relatives the reasons why these interventions are carried out and giving information on the prognosis.</p>

TURKISH SPINE SOCIETY CORE CURRICULUM

DEGENERATIVE SPINE DISEASES

	BASIC LEARNING OBJECTIVES			BASIC LEARNING OBJECTIVES			BASIC LEARNING OBJECTIVES		
	S	F	KNOWLEGDE	S	F	SKILL	S	F	ATTITUDE
Degenerative Conditions of The Cervical Spine									
Cervical degenerative disc disease	2	4	<p>Defines the pathology (etiopathogenesis, prevalence, pathologic anatomy, differential diagnosis).</p> <p>Lists risk factors.</p> <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>	2	4	<p>Takes patient history carefully.</p> <p>Performs thorough physical examination.</p> <p>Uses medical and conservative treatments in cervical degenerative disc disease.</p> <p>Decides on and performs the appropriate surgical method as indicated.</p> <ul style="list-style-type: none"> • Anterior simple discectomy • Anterior microdiscectomy, interbody caged or non-caged fusion. • Anterior microdiscectomy, interbody fusion, anterior plate application • Anterior microdiscectomy, cervical disc prosthesis insertion • Posterior cervical laminectomy and foraminotomy • Posterior key-hole foraminotomy and discectomy <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>	3	4	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>
Cervical degenerative spondylosis and stenosis	2	4	<p>Defines the pathology (etiopathogenesis, prevalence, pathologic anatomy, differential diagnosis).</p> <p>Lists risk factors.</p> <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>	2	4	<p>Utilizes medical and conservative treatment modalities as indicated.</p> <p>Decides on the appropriate surgical treatment method as indicated.</p> <p>Performs appropriate surgical treatment method:</p> <ul style="list-style-type: none"> • Anterior microdiscectomy • Anterior microdiscectomy, interbody caged or non-caged fusion • Anterior microdiscectomy, interbody fusion, plating • Anterior corpectomy and fusion • Anterior corpectomy, fusion, and stabilization with plate system. • Transoral upper cervical region approach • Retropharyngeal upper cervical area approach • Posterior cervical laminectomy and foraminotomy • Posterior laminoplasty • Unilateral widening • Midline release • Posterior wiring stabilization • Stabilization of spinous processes with wire • Sublaminar wiring stabilization • Wire stabilization of the facets • Posterior lateral mass screw-rod or screw-plate stabilization • Posterior pedicular screw stabilization • Posterior translaminar stabilization • Posterior craniocervical stabilization <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>	3	4	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>
Degenerative Diseases of The Thoracic Spine									
Thoracic degenerative disc disease	2	4	<p>Defines the pathology (etiopathogenesis, prevalence, pathologic anatomy, differential diagnosis).</p> <p>Lists risk factors.</p> <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and</p>	2	4	<p>Utilizes medical and conservative treatment modalities as indicated.</p> <p>Decides on the appropriate surgical treatment method as indicated.</p> <p>Performs appropriate surgical treatment method.</p> <p>Performs appropriate surgical approaches to the cervicothoracic</p>	3	4	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-</p>

			<p>diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>			<p>junction and thoracic spine:</p> <ul style="list-style-type: none"> • Supraclavicular approach to the cervicothoracic junction • Transsternal approach to the cervicothoracic junction • Transmanubrial and transsternal approach to the cervicothoracic junction. • Lateral parascapular extrapleural approach • Anterior microdiscectomy, fusion and plate system stabilization with thoracotomy • Thoracic laminectomy and foraminotomy • Transpedicular approach • Transfacet pedicle preserving approach • Costotransversectomy approach • Lateral extracavitary approach <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>			<p>based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>	
Thoracic degenerative spondylosis and stenosis	2	4	<p>Defines the pathology (etiopathogenesis, prevalence, pathologic anatomy, differential diagnosis).</p> <p>Lists risk factors.</p> <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>	2	4	<p>Utilizes medical and conservative treatment modalities as indicated.</p> <p>Decides on the appropriate surgical treatment method as indicated.</p> <p>Performs appropriate surgical treatment method.</p> <p>Performs appropriate surgical approaches to the cervicothoracic junction and thoracic spine:</p> <ul style="list-style-type: none"> • Anterior corpectomy and decompression by thoracotomy • Thoracic laminectomy and foraminotomy • Thoracic laminoplasty • Decompression with transpedicular approach • Decompression with transfacet pedicle preserving approach • Decompression with costotransversectomy • Decompression with lateral parascapular extracavitary approach • Posterior corpectomy • Posterior total spondylectomy • Subtotal spondylectomy by the anterior and posterior approach • Combined anterior and posterior approaches • Instrumentation techniques • Anterior fusion with graft, stabilization with plate-screw systems • Anterior fusion with distractible and non-distractible cages and stabilization with screw-plate systems • Posterior stabilization with hook-rod systems • Posterior stabilization with transpedicular screw-rod or screw-plate systems • Applies the distraction and compression techniques • Applies the osteotomy techniques • Smith-Peterson osteotomy • Pedicle subtraction osteotomy • Vertebral column resection <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>	3	4	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>	
<i>Degenerative Diseases of The Lumbar Spine</i>										
Lumbar degenerative disc disease	3	4	<p>Defines the pathology (etiopathogenesis, prevalence, pathologic anatomy, differential diagnosis).</p>	3	4	<p>Utilizes medical and conservative treatment modalities as indicated.</p> <p>Decides on the appropriate surgical treatment method as indicated.</p>	3	4	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and</p>	

			<p>Lists risk factors.</p> <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>			<p>Performs appropriate surgical treatment method:</p> <ul style="list-style-type: none"> • Posterior lumbar microdiscectomy (with flavotomy or flavectomy) • Posterior far lateral microdiscectomy • Discectomy with lumbar hemilaminectomy • Discectomy with lumbar laminectomy • Discectomy, fusion, stabilization with screw-plate systems using anterior transabdominal approach • Discectomy, fusion, stabilization with screw-plate systems using anterolateral retroperitoneal approach • Discectomy, mini anterior lumbar interbody fusion (mini ALIF) application by anterior transabdominal approach • Lumbar discectomy, posterior lumbar interbody fusion (PLIF) application • Lumbar discectomy transforaminal interbody fusion (TLIF) application • Extreme lateral interbody fusion (XLIF) application <p>Manages the early and late-term complications of conservative and surgical treatment.</p>		<p>appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>	
Lumbar degenerative spondylosis and stenosis	3	4	<p>Defines the pathology (etiopathogenesis, prevalence, pathologic anatomy, differential diagnosis).</p> <p>Lists risk factors.</p> <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>	3	4	<p>Utilizes medical and conservative treatment modalities as indicated.</p> <p>Decides on the appropriate surgical treatment method as indicated.</p> <p>Performs appropriate surgical treatment method:</p> <ul style="list-style-type: none"> • Decompressive approaches • Lumbar hemilaminectomy • Lumbar foraminotomy • Lumbar laminectomy • Lumbar laminoplasty • Bilateral hemilaminectomy and foraminotomy by unilateral approach • Corpectomy by posterior transpedicular approach • Posterior total spondylectomy • Anterior transabdominal corpectomy • Anterolateral retroperitoneal corpectomy • Total spondylectomy with anterior and posterior approach • Combined anterior and posterior approaches • Instrumentation techniques • Anterior and anterolateral fusion with graft and stabilization with screw-plate systems • Anterior and anterolateral fusion with distractible or non-distractible cages and stabilization with screw-plate systems. • Mini anterior lumbar interbody fusion (mini ALIF) by anterior transabdominal approach and stabilization with screw and plate systems • Posterior stabilization with sublaminar wire and rod systems • Posterior stabilization with hook-rod systems • Posterior stabilization with transpedicular 	3	4	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>

					<ul style="list-style-type: none"> • screw-rod or screw-plate systems • Posterior stabilization with transarticular screwing • Posterior lumbar interbody fusion (PLIF) • Transforaminal interbody fusion (TLIF) • Extreme lateral interbody fusion (XLIF) application • Posterior and posterolateral fusion • Dynamic systems • Interspinous distraction devices • Interspinous ligament device • Instrumentation with pedicle screw and ligament • Semi-rigid instrumentation with pedicle screw • Posterior element replacement systems • Distraction and compression techniques • Osteotomy techniques • Smith-Peterson osteotomy • Pedicle subtraction osteotomy • Vertebral column resection <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>				
Lumbar degenerative spondylolisthesis	3	4	<p>Defines the pathology (etiopathogenesis, prevalence, pathologic anatomy, differential diagnosis).</p> <p>Lists risk factors.</p> <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>	3	4	<p>Utilizes medical and conservative treatment modalities as indicated.</p> <p>Decides on the appropriate surgical treatment method as indicated.</p> <p>Performs appropriate surgical treatment method:</p> <ul style="list-style-type: none"> • Decompressive approaches • Lumbar hemilaminectomy • Lumbar foraminotomy • Lumbar laminectomy • Lumbar laminoplasty • Bilateral hemilaminectomy and foraminotomy by unilateral approach • Corpectomy by posterior transpedicular approach • Posterior total spondylectomy • Anterior transabdominal corpectomy • Anterolateral retroperitoneal corpectomy • Total spondylectomy with anterior and posterior approach • Combined anterior and posterior approaches • Instrumentation techniques • Anterior and anterolateral fusion with graft and stabilization with screw-plate systems • Anterior and anterolateral fusion with distractible or nondistractible cages and stabilization with screw-plate systems. • Mini anterior lumbar interbody fusion (mini ALIF) by anterior transabdominal approach and stabilization with screw and plate systems • Posterior stabilization with sublaminar wire and rod systems • Posterior stabilization with hook-rod systems • Posterior stabilization with transpedicular screw-rod or screw-plate systems 	3	4	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>

					<ul style="list-style-type: none"> • Posterior stabilization with transarticular screwing • Posterior lumbar interbody fusion (PLIF) • Transforaminal interbody fusion (TLIF) • Extreme lateral interbody fusion (XLIF) application • Posterior and posterolateral fusion • Dynamic systems • Interspinous distraction devices • Interspinous ligament device • Instrumentation with pedicle screw and ligament • Semi-rigid instrumentation with pedicle screw • Posterior element replacement systems • Distraction and compression techniques • Osteotomy techniques • Smith-Peterson osteotomy • Pedicle subtraction osteotomy • Vertebral column resection <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>				
Lumbar degenerative instability	3	4	<p>Defines the pathology (etiopathogenesis, prevalence, pathologic anatomy, differential diagnosis).</p> <p>Lists risk factors.</p> <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>	3	4	<p>Utilizes medical and conservative treatment modalities as indicated.</p> <p>Decides on the appropriate surgical treatment method as indicated.</p> <p>Performs appropriate surgical treatment method:</p> <ul style="list-style-type: none"> • Decompressive approaches • Lumbar hemilaminectomy • Lumbar foraminotomy • Lumbar laminectomy • Lumbar laminoplasty • Bilateral hemilaminectomy and foraminotomy by unilateral approach • Corpectomy by posterior transpedicular approach • Posterior total spondylectomy • Anterior transabdominal corpectomy • Anterolateral retroperitoneal corpectomy • Total spondylectomy with anterior and posterior approach • Combined anterior and posterior approaches • Instrumentation techniques • Anterior and anterolateral fusion with graft and stabilization with screw-plate systems • Anterior and anterolateral fusion with distractible or non-distractible cages and stabilization with screw-plate systems. • Mini anterior lumbar interbody fusion (mini ALIF) by anterior transabdominal approach and stabilization with screw and plate systems • Posterior stabilization with sublaminar wire and rod systems • Posterior stabilization with hook-rod systems • Posterior stabilization with transpedicular screw-rod or screw-plate systems • Posterior stabilization with transarticular 	3	4	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>

					<ul style="list-style-type: none"> screwing Posterior lumbar interbody fusion (PLIF) Transforaminal interbody fusion (TLIF) Extreme lateral interbody fusion (XLIF) application Posterior and posterolateral fusion Dynamic systems Interspinous distraction devices Interspinous ligament device Instrumentation with pedicle screw and ligament Semi-rigid instrumentation with pedicle screw Posterior element replacement systems Distraction and compression techniques Osteotomy techniques Smith-Peterson osteotomy Pedicle subtraction osteotomy Vertebral column resection <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>				
Minimally invasive approaches in degenerative spine diseases	1	3	<p>Defines the minimally invasive spinal surgery concept.</p> <p>Lists the indications of minimally invasive interventions.</p> <p>Lists the necessary equipment and staff for minimally invasive intervention.</p> <p>Lists the advantages and disadvantages of minimally invasive interventions.</p>	1	3	<p>Performs minimally invasive interventions in cervical degenerative diseases:</p> <ul style="list-style-type: none"> Endoscopic endonasal approach to the upper cervical region Endoscopic transoral approach to the upper cervical region Percutaneous anterior odontoid screwing Cervical anterior endoscopic discectomy Cervical posterior endoscopic discectomy Cervical anterior microscopic foraminotomy Cervical anterior endoscopic foraminotomy Cervical percutaneous transfacet screwing Cervical percutaneous transpedicular screwing Cervical percutaneous lateral mass screwing Disc repair and disc replacement <p>Performs minimally invasive interventions in thoracic degenerative diseases:</p> <ul style="list-style-type: none"> Thoracoscopic discectomy Thoracoscopic instrumentation Vertebroplasty and kyphoplasty Transpedicular approach Lateral extrapedicular approach Posterolateral approach <p>Performs minimally invasive interventions in lumbar and lumbosacral degenerative diseases:</p> <ul style="list-style-type: none"> Endoscopic interlaminar lumbar discectomy Endoscopic transforaminal lumbar discectomy Bilateral decompression with endoscopic unilateral laminotomy Endoscopic transforaminal foraminotomy Percutaneous transpedicular screwing Percutaneous transfacet screwing Percutaneous PLIF and TLIF insertion Endoscopic or 	2	4	Is aware of the significance of the differences between minimal invasive interventions and other approaches, advantages and disadvantages.

					<ul style="list-style-type: none"> microscopic mini ALIF insertion • Extreme lateral interbody fusion (XLIF) application • Presacral ALIF (AXIALIF) insertion • Vertebroplasty and kyphoplasty • Transpedicular approach • Lateral extrapedicular approach • Posterolateral approach • Disc repair and disc replacement <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>	
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Degenerative Axial Pain, Degenerative Disease of The Sacroiliac Joint, Coccydynia

2	4	<p>Defines the pathology (etiopathology, prevalence, pathologic anatomy, differential diagnosis)</p> <p>Lists the red flags:</p> <ul style="list-style-type: none"> • History of major trauma • History of osteoporosis • Age • History of cancer • Undesired weight loss • Fever • Use of immunosuppressive agents or drug abuse • Gait disorder, loss of fine movements in the hand and sensory loss • Urinary and fecal incontinence • Severe and progressive neurologic deficits <p>Lists the probable obstacles to recovery (yellow flags):</p> <ul style="list-style-type: none"> • Negative attitude due to pain • Fear and withdrawal behavior • Decreasing activities • Tendency for depression • Refraining from social activities • Social and financial problems • Negative attitude towards treatment <p>Explains the clinical signs and physical examination findings.</p> <p>Describes the classification and diagnostic methods.</p> <p>Lists nonsurgical treatment options.</p> <p>Lists the medical treatments that may be used.</p> <p>Explains the physiotherapy options and methods.</p> <p>Describes the possible lifestyle modifications.</p> <p>Lists algologic treatment approaches.</p> <p>Explains the surgical treatment alternatives, indications and contraindications, their advantages and disadvantages.</p> <p>Lists and describes the management of early and long-term treatment complications.</p>	2	3	<p>Identifies and treats red flags, refers patients for multimodality treatment as indicated.</p> <p>Identifies yellow flags. Informs patients and relatives, refers patients for professional help as indicated.</p> <p>Utilizes medical and conservative treatment modalities as indicated.</p> <p>Decides on the appropriate surgical treatment method as indicated.</p> <p>Performs appropriate surgical treatment method:</p> <ul style="list-style-type: none"> • Coccygectomy • Posterior sacroiliac stabilization and fusion • Anterior sacroiliac stabilization and fusion • Percutaneous sacroiliac fusion <p>Harvests autologous bone graft from the iliac crest, fibula and other possible donor areas.</p> <p>Manages the early and late-term complications of conservative and surgical treatment.</p>	2	3	<p>Attains significance to patient's pain, quality of life and limitations in his/her life, psychosocial condition and its relationship with the patient's complaints.</p> <p>Attains significance to detailed physical examination and appropriate diagnostic methods on the recognition of pathology and planning the treatment.</p> <p>Becomes aware of the significance that, when deciding on surgical or nonsurgical treatments based on evidence-based rationale, the patient's socioeconomic status, psychosocial and cultural values will affect the treatment outcomes.</p> <p>Is aware of the significance of the timing of surgery, the most appropriate equipment and staff needed for the best performance of surgery.</p> <p>Becomes aware of the necessity of informing the patient and relatives, before and after surgery, regarding the type of surgery, treatment options after surgery if necessary, and the timing of these treatments.</p>
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TURKISH SPINE SOCIETY CORE CURRICULUM

DESTRUCTIVE SPINE PATHOLOGIES

	BASIC LEARNING OBJECTIVES			BASIC LEARNING OBJECTIVES			BASIC LEARNING OBJECTIVES		
	S	F	KNOWLEDGE	S	F	SKILL	S	F	ATTITUDE
Infection									
General	3	4	Explains the characteristics of acute, chronic infection. Lists diagnostic tools. Describes the differential diagnosis and explains the diversities in treatment.	2	4	Prepares a patient with spine infection for the operation. Decides on the approach routes depending on the location of infection in the spine Performs the necessary approach as indicated.	2	4	Attains importance to giving disease-related information and that the treatment process is not limited to surgery to the patient and patient's relatives. Is aware of the significance of multidisciplinary approach.
Nonspecific spine infections / spondylodiscitis / epidural abscess	2	4	Lists the pathological mechanisms in spinal infections, and lists the common microorganisms. Lists the symptoms and signs of spinal infections. Lists the related laboratory, radiology, and nuclear medicine studies. Explains indications for biopsy and methods. Lists the differential diagnoses. Explains possible complications of the disease process as well as various treatment methods. Explains the surgical and pharmacological aspects of treatment. Lists the long-term problems or results.	2	4	Evaluates the related laboratory and radiology studies. Performs open, CT and/or fluoroscopy-guided biopsy.	2	4	Recognizes that infection treatment is a longtime process and there are possible problems that may occur after treatment (kyphosis, ankylosis), and is aware of the need to inform the patient and relatives on this issue. Attains importance to giving disease-related information and that the treatment process is not limited to surgery to the patient and patient's relatives. Is aware of the significance of multidisciplinary approach.
Specific infections of the spine, spondylodiscitis, epidural abscess	2	4	Lists the pathological mechanisms in specific spinal infections, and lists the common microorganisms. Lists the symptoms and signs of specific spinal infections. Lists the related laboratory and radiology studies. Explains the indications and methods for biopsy. Lists the differential diagnoses. Explains the possible complications. Explains the surgical and pharmacologic aspects of treatment. Lists the long-term problems and results.	2	4	Evaluates the related laboratory and radiology studies. Performs biopsy. Performs screening for possible systemic tbc, brucella. Knows and uses the costotransversectomy approach. Performs posterior stabilization. Knows and performs the assisted anterior approach to the spine. Applies the anterior instrumentation at master's level.	2	4	Gives significance to giving the information to the patient and relatives that the treatment may continue for 10-12 months. Gives significance to giving information on possible patient isolation. Is aware of the significance of multidisciplinary approach.
Parasitic and fungal infections of the spine	2	4	Lists the pathological mechanisms in parasitic and fungal infections of the spine, and the common microorganisms. Lists the symptoms and signs of parasitic and fungal spinal infections. Lists the related laboratory and radiology studies. Explains the indications and methods for biopsy. Lists the differential diagnoses. Explains possible complications of the disease process as well as various treatment methods. Explains the surgical and pharmacologic aspects of treatment. Lists the long-term problems and results.	2	4	Evaluates the related laboratory and radiology studies. Performs biopsy. Knows and uses the costotransversectomy approach. Performs posterior stabilization. Knows and performs the assisted anterior approach to the spine. Performs the steps of anterior instrumentation at master's level.			Attains significance to the approach to spinal hydatid disease.
Surgical site infections	2	4	Lists the rules of asepsis and antisepsis. Explains the significance of operating room sterilization, humidity, heat, particle counts, and HEPA filters. Explains the risk factors. Explains surgical wound infection prophylaxis. Lists the clinical and laboratory signs of wound infections. Lists the advantages and disadvantages of laboratory tests. Explains the surgical and pharmacologic treatment of wound infections. Explains the importance of implant removal when required. Explains the assistive methods such as vacuum or hyperbaric oxygen when required.	3	4	Evaluates the related laboratory and radiology studies. Performs biopsy. Performs wound cleaning and irrigation. Refers to hyperbaric oxygen treatment when necessary. Performs a surgical debridement by posterior approach.	2	4	Attains significance to using infection prophylaxis. Attains significance to informing the patients and relatives about the long-term results of surgical site infections.
Infections of the spinal cord	2	4	Explains the clinical presentation of subdural empyema, myelitis, and myeloradiculitis. Performs differential diagnosis. Describes the treatment of spinal cord abscess. Lists the noninfectious myelitises. Explains that the cases may require rehabilitation and lists the rehabilitation programs.	2	4	Evaluates the related laboratory and radiology studies. Diagnoses spinal cord abscess.	2	4	Attains significance to informing the patients and relatives about the long-term results of surgical site infections.
Metabolic Diseases									
Osteoporosis / osteomalacia	1	3	Lists the physiopathological characteristics of osteoporosis and osteomalacia. Lists the causes and risks factors of osteoporosis. Explains the mechanical effects of osteoporosis and osteomalacia on bone. Explains the laboratory findings of	2	4	Evaluates the related laboratory and radiology studies. Performs vertebroplasty and/or kyphoplasty. Performs sacroplasty. Performs other alternatives (instrumentation, corpectomy, etc.) if vertebra augmentation methods fail. Recognizes sacral stress fractures.	2	4	Becomes aware of giving information on the disease to the patients and relatives. Becomes aware of the public and social aspects of osteoporosis. Becomes aware of emphasizing long-term medical treatment.

			osteoporosis and osteomalacia. Knows, lists, explains the advantages and disadvantages of tests for the diagnosis of osteoporosis. Lists the social, mechanic, and pharmacologic agents that may be used for the prevention of osteoporosis development. Lists the neoplastic causes of osteolysis. Describes the approach to osteoporotic spine fractures. Explains the surgical and nonsurgical treatments of osteoporosis.						
Metabolic / hormonal-based diseases of the spine	1	3	Explains the effects of endocrine system diseases and disorders on the spine and nervous system. Diagnoses these conditions. Lists their basic treatments.	1	4	Evaluates the related laboratory and radiology studies. Performs biopsy.	2	4	Becomes aware of the significance of multidisciplinary treatment modalities.
Paget's disease	2	4	Lists the physiopathological characteristics of Paget's disease. Explains the mechanical effects of Paget's disease on the bone. Explains the laboratory findings of Paget's disease. Knows, lists, explains the advantages and disadvantages of tests required for the diagnosis of Paget's disease. Explains the treatments of Paget's disease.	2	4	Evaluates the related laboratory and radiology studies. Performs biopsy. Performs the treatment for compression fractures and narrow canal in different phases of Paget's disease.			
Spinal Tumors									
General information	3	4	Describes the mechanisms of tumor and metastasis formation. Explains the principles of approach to the patient with tumor. Explains diagnostic methods. Lists the indications for biopsy. Lists the principles of biopsy. Lists tumor classifications. Explains the concept of surgical margins. Lists the adjuvant treatments.	2	4	Evaluates imaging methods. Prepares a patient with tumor for surgery. Decides upon the approach according to the tumor location. Performs decompressive tumor surgery in emergency conditions.	2	4	Becomes aware of the significance of giving information on the disease to the patients and relatives. Is aware of the significance of the concept of surgical margins. Gives significance to multidisciplinary approach.
Primary benign spinal tumors (hemangioma, osteoblastoma-osteoid osteoma, aneurysmal bone cyst, eosinophilic granuloma, giant cell tumor)	1	3	List benign spinal tumors. Describes surgical treatment methods.	2	4	Evaluates related laboratory and radiologic studies. Performs biopsy. Performs decompressive tumor surgery in emergency conditions.			
Primary malignant spinal tumors (multiple myeloma, lymphoma, chordoma, neuroblastoma, chondrosarcoma, osteosarcoma)	1	3	Lists and classifies malignant tumors of the spine. Lists the surgical indications in the treatment of malignant tumors. Explains the surgical margins and the methods to achieve adequate margins.	2	4	Evaluates related laboratory and radiologic studies. Performs a biopsy. Performs decompressive tumor surgery in emergency conditions.			Recognizes the importance of careful planning. Attains importance to surgical margins. Is aware of the significance of multidisciplinary approach and adjuvant treatment methods.
Metastatic tumors of the spine	2	4	Lists and classifies common metastatic tumors. Lists the tumors requiring radiotherapy. Explains the surgical treatment indications and methods.	2	4	Evaluates related laboratory and radiologic studies. Performs biopsy. Performs vertebroplasty. Performs decompressive tumor surgery in emergency conditions.	2	4	Is aware of the significance of multidisciplinary approach and disease-specific treatment methods including RT or CT.
Intradural tumors (glioma, ependymoma, lipoma, epidermoid, dermoid, teratoma, hemangioblastoma metastases)	2	4	Classifies. Explains the clinical findings. Explains the differential diagnostic characteristics. Lists the treatment methods.	2	3	Evaluates related laboratory and radiologic studies. Performs surgical treatment as indicated.			
Intradural extramedullary tumors (schwannoma, meningioma, neurofibroma, paraganglioma, metastasis, lipomas, epidermoid tm, dermoid tm, nerve sheath myxomas, sarcomas, vascular tm)	2	4	Classifies. Explains the clinical findings. Explains the differential diagnostic characteristics. Lists the treatment methods.	2	3	Evaluates related laboratory and radiologic studies. Performs surgical treatment as indicated.			
Spinal vascular malformations	2	3	Classifies. Explains the clinical findings. Explains the differential diagnostic characteristics. Lists the treatment methods. Explains the endovascular and surgical approaches.	2	3	Evaluates related laboratory and radiologic studies. Performs surgical treatment as indicated.			
Non-tumorous spinal cord and arachnoid lesions (MS, UBO, Arachnoid cyst, Tarlov, etc.)	2	3	Classifies. Explains the clinical findings. Explains the differential diagnostic characteristics. Lists the treatment methods.			Evaluates related laboratory and radiologic studies.			
Inflammation									
Spondyloarthritis / Ankylosing spondylitis	2	4	Lists the types of spondyloarthropathies, explains the differences. Recognizes ankylosing spondylitis disease, lists diagnostic criteria. Explains the prognosis and clinical course of AS disease. Lists the indications of surgical and nonsurgical treatment.	2	3	Refers the patients to a rheumatologist when necessary. Performs surgical treatment as indicated.	2	4	Becomes aware of the significance of giving disease-related information to the patient and relatives.
Collagen tissue diseases (CTD) / Rheumatoid arthritis (RA)	2	4	Lists the diagnostic criteria for RA. Diagnoses RA. Explains the pharmacologic treatment of RA. Explains the spinal involvement in RA, its characteristics and the prognosis. Lists the indications of surgical and nonsurgical treatment.	2	3	Refers the patient to a rheumatologist when necessary. Performs surgical treatment as indicated.	2	4	Becomes aware of the significance of giving disease-related information to the patient and relatives.
DISH (Diffuse Idiopathic Skeletal Hyperostosis)	2	3	Defines DISH. Performs a differential diagnosis of DISH.			Evaluates related laboratory and radiologic studies.			
Chronic multifocal recurrent	1	3	Defines the pathology.			Evaluates related laboratory and			

osteomyelitis			Performs a differential diagnosis.			radiologic studies.			
Arachnoiditis	2	3	Defines the pathology. Performs a differential diagnosis.			Evaluates related laboratory and radiologic studies.			
Charcot's Arthropathy	1	3	Defines the pathology. Performs a differential diagnosis.			Evaluates related laboratory and radiologic studies.			

TURKISH SPINE SOCIETY CORE CURRICULUM

SPINAL DEFORMITY

SPINAL DEFORMITY											
	BASIC LEARNING OBJECTIVES				BASIC LEARNING OBJECTIVES				BASIC LEARNING OBJECTIVES		
	S	F	KNOWLEDGE		S	F	SKILL		S	F	ATTITUDE
Basic Deformity Knowledge											
History and physical examination	2	4	Lists the clinical symptoms in spine deformities. Lists the red flags in painful spine deformities. Describes neurological examination. Defines structural and nonstructural curves.		2	4	Performs neurologic examination. Evaluates trunk shift and other coronal balance parameters using a plummet. Performs Adam's forward bending test. Evaluates rib hump using a scoliometer.		2	4	Is aware of the significance of red flags in the differential diagnosis of spine deformities.
The alignment and three dimensional balance of the vertebral column	2	4	Describes the normal alignment of the vertebral column. Defines the balance of the vertebral column in the axial, sagittal and coronal planes.				Evaluates and measures balance on radiological studies.				
Assessment of maturity	2	4	Defines the menarche age, development of secondary sex characteristics and their effects on the natural course of the deformities. Describes the clinical and radiologic signs of maturity.		2	4	Evaluates the clinical and radiologic signs of maturity.		3	4	Is aware of the relationship between maturity and the progression of spinal curves.
Recognition of radiologic characteristics and classification	2	4	Defines the radiographic signs related to vertebral deformities. Describes and classifies the measurement of vertebral rotation with X-ray. Defines the indications of MRI and CT in deformity patients.		2	4	Measures the coronal and sagittal curve on radiology using the Cobb and Ferguson methods. Measures apical rotation.				
Deformity in The Growing Spine											
Early Onset Deformities											
Thoracic cage and lung	1	3	Describes the development of the thoracic cage and its relationship with the spine. Describes the thoracic insufficiency syndrome.						1	4	Is aware of the consequences of thoracic insufficiency and possible negative effects of fusion performed at an early age on lung development.
Chiari Malformation	1	3	Defines its relationship with spinal deformities. Lists the surgical indications.				Diagnoses.				
Syringomyelia	1	3	Defines its relationship with spinal deformities. Lists the surgical indications.		1	3	Diagnoses. Performs surgical treatment.				Recognizes the importance of diagnosing spinal dysraphism in patients with spinal deformity.
Meningocele Myelomeningocele-Myeloschisis	1	3	Determines the level using neurologic examination. Lists the surgical treatment indications.		1	3	Performs emergency surgical treatment at the early stages of life.				Recognizes the importance of diagnosing spinal dysraphism in patients with spinal deformity.
Spinal dysraphism	1	4	Determines the level using neurologic examination. Lists its types. Lists the surgical treatment indications.		1	3	Diagnoses. Performs surgical treatment.				Recognizes the importance of diagnosing spinal dysraphism in patients with spinal deformity.
Cleft spinal cord	2	3	Defines the pathology. Defines it radiologically. Classifies.		1	3	Diagnoses. Performs surgical treatment.				Recognizes the importance of diagnosing spinal dysraphism in patients with spinal deformity.
Tethered cord syndrome	2	4	Defines its clinical presentation. Defines its radiological findings. Lists the indications for conservative and surgical treatment.		1	3	Diagnoses. Performs surgical treatment.				Recognizes the importance of diagnosing spinal dysraphism in patients with spinal deformity.
Congenital scoliosis	2	4	Classifies. Defines its natural course. Defines its radiological findings. Lists the indications for conservative and surgical treatment. Lists surgical treatment methods. Lists complications associated with conservative as well as surgical treatment.		2	4	Performs standard fusion and instrumentation techniques. Identifies cases requiring reconstructive surgery, performs or refers.				Recognizes the significance of complete knowledge on natural history. Attains importance to providing patient relative information on natural history and results and complications of treatment.
Congenital kyphosis	2	4	Classifies. Defines its natural course and differences with congenital scoliosis. Defines its radiological findings. Lists the indications for conservative and surgical treatment. Lists surgical treatment methods. Lists complications associated with conservative as well as surgical treatment.		2	4	Performs standard fusion and instrumentation techniques. Identifies cases requiring reconstructive surgery, performs or refers.				Recognizes the significance of complete knowledge on natural history. Attains importance to providing patient relative information on natural history and results and complications of treatment.
Early onset idiopathic curves	2	4	Defines the natural course by age. Lists the indications for advanced imaging. Lists the indications for treatment. Lists surgical treatment methods. Lists complications associated with conservative as well as surgical treatment.		2	4	Applies a Risser cast. Performs follow-up for the patient with brace and weaning off. Applies the surgical methods that regulate/preserve growth. Performs standard fusion and instrumentation techniques. Identifies cases requiring reconstructive surgery, performs or refers.				Recognizes the significance of complete knowledge on natural history. Attains importance to providing patient relative information on natural history and results and complications of treatment.
Late Onset											
Adolescent Idiopathic Scoliosis (AIS)											
AIS etiology, natural course and classification	2	4	Lists the prevalence and etiological factors for AIS. Describes the natural course of AIS. Defines the AIS basic classification systems and their relevance on treatment. Lists the atypia criteria.				Diagnoses AIS. Classifies AIS.				Attains importance to providing patient relative information on natural history.
AIS nonsurgical treatment	2	4	Describes the indications for brace treatment in scoliosis. Lists other nonsurgical treatments.		2	4	Initiates, performs follow-up and weaning off.				Attains importance to providing patient relative information on natural history and results and complications of non-surgical treatment.
AIS surgical treatment	1	3	Describes the indications for surgical treatment. Lists the necessary radiographs necessary for determining the fusion		2	4	Applies basic instruments such as pedicle screw, hook and sublaminar wire/band. Performs basic correction maneuvers such as translation, derotation, and		2	4	Attains importance to providing patient relative information on natural history and results and complications of surgical treatment. Recognizes the importance of pre-operative

			levels in idiopathic scoliosis. Defines basic correction maneuvers such as translation, derotation, and compression-distraction. Defines the methods of autogenous bone harvesting. Defines posterior fusion methods (interlaminar, facet, intertransverse).			compression-distraction. Performs methods of autogenous bone harvesting. Performs posterior fusion methods (interlaminar, facet, intertransverse).			planning on treatment results.
Scheuermann's Disease									
Etiology and natural course	2	4	Defines the prevalence and etiologic factors. Describes the natural course. Describes the methods and landmarks for radiological measurement.			Measures deformity.			Attains importance to providing patient relative information on natural history and results and complications of treatment.
Surgical treatment	2	4	Lists the surgical treatment indications in Scheuermann's kyphosis. Defines and interprets the radiographs necessary for determining the surgical levels. Defines the osteotomy techniques that are related to the posterior column, such as Smith-Petersen and Ponte. Defines special correction techniques (such as Cantilever) used in kyphosis surgery.			Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient relative information on natural history and results and complications of surgical treatment. Recognizes the importance of pre-operative planning on treatment results.
Neuromuscular Deformity									
Due to cerebral palsy (CP)	1	3	Classifies curves secondary to CP. Describes its natural course. Defines associated medical problems. Lists conservative treatment indications. Lists the surgical treatment indications and techniques. Defines associated medical problems. Lists possible complications and results of treatment.	1	3	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Caused by muscular diseases (Duchenne, etc.)	1	3	Classifies the curves. Describes the natural course. Defines and diagnosis-associated medical problems. Lists conservative treatment indications. Lists surgical treatment indications. Lists possible complications and results of treatment.	1	3	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient and relative information on natural history and results and complications of surgical treatment.
Due to Friedreich's ataxia	1	3	Classifies the curves. Describes the natural course. Defines and diagnoses-associated medical problems. Lists conservative treatment indications. Lists surgical treatment indications. Lists possible complications and results of treatment.	1	3	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient and relative information on natural history and results and complications of surgical treatment.
Due to hereditary sensory-motor neuropathies	1	3	Classifies the curves. Describes the natural course. Defines and diagnoses-associated medical problems. Lists conservative treatment indications. Lists surgical treatment indications. Lists possible complications and results of treatment.	1	3	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient and relative information on natural history and results and complications of surgical treatment.
Due to spinal muscular atrophy	1	3	Classifies the curves. Describes the natural course. Defines and diagnoses-associated medical problems. Lists conservative treatment indications. Lists surgical treatment indications. Lists possible complications and results of treatment.	1	3	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient and relative information on natural history and results and complications of surgical treatment.
Syndromes									
Neurofibromatosis (NF)									
Diagnosis and natural course	1	3	Lists the diagnostic criteria for neurofibromatosis. Defines the typical radiologic criteria. Defines the natural course.	1	3	Performs follow-up of a NF patient.			Recognizes the necessity of very close follow-up in NF patients. Attains importance to providing patient relative information on natural history.
Treatment	1	3	Lists conservative and surgical treatment indications. Describes preoperative preparations. Lists possible complications and results of treatment.	1	2	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Marfan and Ehlers-Danlos Syndromes									
Diagnosis and natural course	1	3	Lists the diagnostic criteria. Defines the typical radiologic criteria. Defines the natural course.	1	3	Performs follow-up of the patient.			Recognizes the necessity of very close follow-up in these patients. Attains importance to providing patient relative information on natural history.
Treatment	1	3	Lists conservative and surgical treatment indications. Describes preoperative preparations. Lists possible complications and results of treatment.	1	2	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
VATER and VACTERL Syndromes									
Diagnosis and natural course	1	3	Lists the diagnostic criteria. Defines the typical radiologic criteria. Defines the natural course.	1	3	Performs follow-up of the patient.			Recognizes the necessity of very close follow-up in these patients. Attains importance to providing patient relative information on natural history.
Treatment	1	3	Lists conservative and surgical treatment indications. Describes preoperative preparations. Lists possible complications and results of treatment.	1	3	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers.			Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.

Noonan and Angelman Syndromes						
Diagnosis and natural course	1	3	Lists the diagnostic criteria. Defines the typical radiologic criteria Defines the natural course.	1	3	Performs follow-up of the patient. Recognizes the necessity of very close follow-up in these patients. Attains importance to providing patient relative information on natural history.
Treatment	1	2	Lists conservative and surgical treatment indications. Describes preoperative preparations. Lists possible complications and results of treatment.	1	2	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers. Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Skeletal Dysplasias						
Diagnosis and natural course	1	3	Lists the diagnostic criteria. Defines the typical radiologic criteria. Defines the natural course.	1	3	Performs follow-up of the patient. Recognizes the necessity of very close follow-up in these patients. Attains importance to providing patient relative information on natural history.
Treatment	1	2	Lists conservative and surgical treatment indications. Describes preoperative preparations. Lists possible complications and results of treatment.	1	2	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers. Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Deformity in The Adult Spine						
Adult IS						
Diagnosis and natural course Treatment	2	4	Describes the natural course. Defines the symptomatology and significance. Lists the surgical treatment indications. Lists possible complications and results of treatment.	2	3	Prepares patients for surgery. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers. Is aware of the significance of bone quality and osteoporosis concepts.
Degenerative Spinal Deformity						
Diagnosis and natural course Treatment	2	4	Describes the natural course. Defines the symptomatology and significance. Defines the typical radiologic findings and differentiation between adult IS. Describes the spinopelvic balance parameters and significance. Describes diagnostic injections. Lists conservative treatment indications. Lists surgical treatment indications. Lists possible complications and results of treatment.	2	3	Performs standard diagnostic injections (epidural, facet blocks, selective foraminal injections). Performs decompression as indicated. Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers. Recognizes the importance of sagittal as well as coronal balance in these patients. Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Posttraumatic Deformity						
Diagnosis and natural course Treatment	2	4	Describes the natural course. Defines the symptomatology and significance. Lists the risk factors for progression and clinical deterioration. Lists surgical treatment indications. Lists possible complications and results of treatment.	2	3	Performs standard fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers. Performs pedicle subtraction osteotomy. Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Iatrogenic Deformity						
Diagnosis and natural course Treatment	1	4	Describes the natural course. Defines the symptomatology and significance. Defines the risk factors for clinical deterioration. Lists surgical treatment indications. Lists possible complications and results of treatment.	1	3	Performs standard decompression, fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers. Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Deformity Secondary to Ankylosing Spondylitis						
Diagnosis and natural course Treatment	2	4	Describes the natural course. Defines the symptomatology and significance. Lists surgical treatment indications. Lists possible complications and results of treatment.	1	3	Performs standard decompression, fusion, instrumentation and correction techniques. Identifies cases requiring reconstructive surgery, performs or refers. Recognizes the importance of sagittal as well as coronal balance in these patients. Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Spondylolysis-Spondylolisthesis						
Isthmic						
Natural course and etiology Diagnosis Classification Treatment	2	4	Describes the natural course. Defines the etiology. Performs differential diagnosis. Lists specific physical examination methods. Lists specific imaging methods. Classifies. Describes conservative treatment indications and methods. Lists the surgical treatment indications. Describes pars repair methods. Describes reduction methods. Describes instrumentation and fusion methods.	2	4	Orders and evaluates imaging. Makes diagnosis. Performs standard decompression, instrumentation, correction and fusion techniques. Performs pars repair methods. Identifies cases requiring reduction surgery, performs or refers. Recognizes the importance of sagittal balance in these patients. Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.
Dysplastic						
Natural course and etiology Diagnosis Classification Treatment	2	4	Describes the natural course. Defines the etiology. Performs differential diagnosis. Lists specific physical examination methods. Lists specific imaging methods. Classifies. Describes pars repair methods. Describes reduction methods. Describes instrumentation and fusion methods. Describes conservative treatment indications and methods. Lists the surgical treatment indications.			Orders and evaluates imaging. Makes diagnosis. Performs standard decompression, instrumentation, correction and fusion techniques. Identifies cases requiring reduction surgery, performs or refers. Recognizes the importance of sagittal balance in these patients. Attains importance to providing patient relative information on natural history and results and complications of surgical treatment.