

**DESCRIPTION OF COURSE UNIT FOR DOCTORAL STUDIES
AT VILNIUS UNIVERSITY**

Scientific Area/eas, Field/ds of Science	Medical and Health Sciences (M 000): Medicine (M 001)			
Faculty, Institute, Department/Clinic	Faculty of Medicine Institute of Health Sciences Department of Rehabilitation, Physical and Sports Medicine			
Course unit title (ECTS credits, hours)	Rehabilitation after Spinal Cord Injuries 8 credits (212 hours)			
Study method	Lectures	Seminars	Consultations	Self-study
Number of ECTS credits	-	-	1	7
Method of the assessment (in 10 point system)	Exam (in written form). The written exam task consists of 4 open questions. The value of each question is 2.5 points.			
PURPOSE OF THE COURSE UNIT				
<p>The purpose of the course is to provide knowledge about comprehensive rehabilitation interventions and methods in patients after spinal cord injuries in order to restore the patient's biopsychosocial functions or, in the case of irreversible changes in the body, to compensate or maintain the patient's biopsychosocial functional capacity; and to introduce methodologies for evaluation of rehabilitation effectiveness.</p>				
THE MAIN TOPICS OF COURSE UNIT				
<p>Aetiology, pathophysiology of spinal cord injury. Classification, aetiology, pathogenesis, clinic, treatment, prevention of non-traumatic and traumatic spinal cord injuries. ASIA classification. Spinal cord injury syndromes. Neurological levels of spinal cord injury.</p> <p>Aspects of treatment for traumatic and non-traumatic spinal cord injury. Organizational structure of rehabilitation, rehabilitation criteria, indications and contraindications. Impairment of biopsychosocial functions: movement and self-service, communication, behaviour control, ability to work, etc. The role of rehabilitation team members in patients after spinal cord injuries. Interaction of the rehabilitation team members and their cooperation with the patient and his relatives.</p> <p>Rehabilitation services: physiotherapy, occupational therapy, psychotherapy, social assistance, physical therapy, massage, complications prevention, patient and relative training, medical treatment, diet, compensatory and orthopaedic aids. Interaction of rehabilitation interventions. Complications in patients after spinal cord injuries (increased muscle tone, severe orthostatic reactions, contractures, deep vein thrombosis, heterotopic ossification, osteoporosis, bedsores, hypostatic pneumonia, pelvic organ dysfunction, etc.). Effects of hypokinesia in patients after spinal cord injury.</p> <p>Methods of examination of patients after spinal cord injury during rehabilitation. Assessment of patient functional independence (Barthel index, FIM, SCIM, TFK). Methods for assessing physical capacity after spinal cord injuries (evaluation of aerobic and anaerobic capacity, respiratory function parameters, body composition, range of motion, muscle strength, endurance). Adaptation of circulatory and</p>				

respiratory systems to physical activity in patients after spinal cord injuries. Formulation of rehabilitation goals: short-term, long-term goals.

Instrumental and non-instrumental research methods used in physiotherapy in patients after spinal cord injury. Setting goals for physiotherapy. Physiotherapy in the acute period after spinal cord injury: positional therapy, active and passive physiotherapy. Physiotherapy in later periods: examination of the patient, determination of short-term and long-term goals of physiotherapy, creation of a physiotherapy program. Active physiotherapy: physical exercises for muscles strengthening, reduction of muscles tone, muscles stretching, balance, coordination and improvement of mobility, gait correction and training. Evaluation of the effectiveness of physiotherapy in different stages of rehabilitation. Physiotherapy methodologies. Application of aerobic cycling exercises to patients after spinal cord injuries, its influence on physical capacity and functional independence. Selection and application of compensatory and orthopaedic aids.

Importance of occupational therapy. Creation of an occupational therapy program. Occupational therapy methods. Application of occupational therapy methods: exercises for the upper extremities for the prevention of contractures, maintenance of muscles properties, coordination of hand movements, improvement of sensations. Instrumental and non-instrumental research methods used in occupational therapy in patients after spinal cord injury. Methods of self-service and daily activities training. Patients after spinal cord injuries at home, work, etc. environmental adaptation, compensatory and orthopaedic aids.

The use of physical factors in rehabilitation in patients after spinal cord injuries (muscles electrostimulation, pulse current therapy, magnetotherapy, laser therapy, darsonvalization, ultrasound therapy, compression therapy, etc.), and physical factors combination.

Nursing care for patients after spinal cord injuries. Compensatory aids for patients after spinal cord injury: wheelchair, walkers, sticks, etc. Selection and adaptation of compensatory aids according to the individual needs of patients after spinal cord injury.

Psychological assistance for patients after spinal cord injuries. Assessment of the patient's psychological condition, creation of an activity program, setting criteria for assessing the condition.

The role of the social worker in rehabilitation of patients after spinal cord injuries. Areas of activity of a social worker: selection/acquisition of compensatory equipment, adaptation of the environment, determination of disability, level of workability, special needs, benefits, employment and vocational guidance, retraining, employment, organization of leisure time, public organizations of the disabled.

The importance of participation of patients and their family members in the rehabilitation program. Training and education of the patient and relatives on the prevention of complications and diseases.

Modern technologies in rehabilitation of patients after spinal cord: computerized walking systems, "robotic arm", functional muscle stimulation (limb muscles, diaphragm, bladder), corrective measures for pain and spasticity, etc.

Evaluation of the effectiveness of rehabilitation, social integration and quality of life in patients after spinal cord injury.

RECOMMENDED LITERATURE SOURCES

1. Steven Kirshblum, Vernon W. Lin. Spinal Cord Medicine, Third Edition –Comprehensive Evidence-Based Clinical Reference for Diagnosis and Treatment of Spinal Cord Injuries and Conditions. 2020. Demos Medical. ISBN:9780826137746.
2. Jacqueline E. Reznik, Joshua Simmons. Rehabilitation in Spinal Cord Injuries 1st Edition. 2020. Elsevier. ISBN-13:978-0729543200.
3. J. Andrew Taylor. The Physiology of Exercise in Spinal Cord Injury. 2016. Springer. ISBN-13:978-1493982653.
4. Giovanni Galeoto, Anna Berardi, Marco Tofani, Maria Auxiliadora Marquez Measuring. Spinal Cord Injury: A Practical Guide of Outcome Measures. 1st ed. 2021. Springer. ISBN-13:978-3030683818.
5. Sunil Sabharwal. Essentials of Spinal Cord Medicine. 1st Edition. 2013. Demos Medical. ISBN: 1936287382.
6. Harvinder Singh Chhabra. ISCoS Text Book on Comprehensive Management of Spinal Cord Injuries. 1st Edition. 2015. LWW. ISBN: 9351294404.
7. Angeli, CA et al. Recovery of Over-Ground Walking after Chronic Motor Complete Spinal Cord Injury. 2018. New England Journal of Medicine 379(13). DOI:10.1056/NEJMoa1803588:
<https://www.nejm.org/doi/full/10.1056/nejmoa1803588>
8. Journal of NeuroEngineering and Rehabilitation:
<https://jneuroengrehab.biomedcentral.com/>
9. The Lancet Neurology:
<https://www.thelancet.com/journals/lanneur/home>
10. Spinal Cord (the official journal of the International Spinal Cord Society):
<https://www.nature.com/sc/>

CONSULTING LECTURERS

1. Coordinating lecturer: Juozas Raistenskis (Prof. Dr.).
2. Aurelija Sidlauskienė (Assoc. Prof. Dr.).

APPROVED:

By Council of Doctoral School of Medicine and Health Sciences at Vilnius University:
29th of September 2022

Chairperson of the Board: Prof. Janina Tutkuvienė