

## SYNTHETIC FORM FOR A BOARD CERTIFIED TRAINING UNIT

UNIT NAME: Department of Physical and Rehabilitation Medicine,  
Medical University of Lodz.

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### **Main clinical activities of the unit:**

(state the main areas of care depending on clinical workload and interests)

The Department of PRM provides the following settings of care contracted by the National Health fund of Poland: in-patient rehabilitation, day rehabilitation, out-patient rehabilitation. The Department of PRM has a 57-bed in-patient ward (including 37 beds for adults and 20 beds for children) with the circulation of approximately 600 patients a year. The mean length of stay is 3 weeks (21 days). Typical health conditions treated in patients of the Department of PRM include: consequences of multiple injuries and musculoskeletal injuries,

osteoarthritis of the spine and peripheral joints, rheumatic diseases, systemic connective tissue inflammatory diseases, multiple sclerosis, Parkinson's disease and Parkinsonian syndromes, cerebral palsy, scoliosis, inherited malformations, consequences of stroke, consequences of elective surgeries (joint replacements, corrective osteotomies, limb elongation, scoliosis corrections). The outpatient clinic is specialized in the treatment of patients with musculoskeletal conditions including osteoporosis, neurological rehabilitation (stroke, multiple sclerosis, Parkinson's disease and others), and inflammatory rheumatic diseases. It provides pediatric rehabilitation, urogynecological rehabilitation, postmastectomy rehabilitation (focusing on lymphedema), treatment of temporomandibular joint diseases, applications of ergonomic interventions, injections, manual medicine and many others. The mean number of patients seen in outpatient clinics is approximately 15 per day.

Typical therapeutic interventions performed on the regular basis in in- and out-patient settings include: medical interventions, physiotherapy (eg. local and general pharmacotherapy), occupational therapy, application of assistive devices, orthoses and prostheses, education of patients, counseling for families and caregivers, PRM nursing. If needed - on prescription of a PRM physician - speech and language therapy and psychological interventions are also performed). Physiotherapeutic interventions available for patients include: Proprioceptive Neuromuscular Facilitation according to the standards of International Proprioceptive Neuromuscular Facilitation Association, Orthopaedic Medicine J. Cyriax Method according to the standards of Orthopaedic Medicine International, Mechanical Diagnosis and Therapy according to

the standards of McKenzie International, Medical Therapy Training according to the standards of Deutsche Gesellschaft für Orthopädische Manuelle Therapie, mobilization of Nerves System according to the standards of Neurodynamic Solutions, Neuromuscular Reactivation (NEURAC), NDT Bobath (Neurodevelopmental Treatment Bobath), Sensory Integration, Trigger Points Therapy, Kinesiology Taping, Muscle Energy Techniques, Electrotherapy, Phototherapy, Low Level Laser Therapy, Multiwave Locked System, Magnetotherapy and low energy magnetic field stimulation, ozonotherapy, Radial Shock Wave Therapy, hydrotherapy, treatment for lymphedema (Bodyflow), classical and medical massage (deep friction massage, functional massage), relaxing massage, manual therapy according to the standards of International Federation of Orthopaedic Manipulative Physical Therapists, orthopaedic manipulative therapy according to the standards of Kaltenborn-Evjenth International, manual therapy according to the standards of Deutscher Verband für Physiotherapie, Zentralverband der Physiotherapeuten/Krankengymnasten ZVK eV.

In the Department of PRM are hospitalized:

- Adults patients:
  - after multiple injuries and musculoskeletal injuries,
  - after elective surgery (as joint prostheses after implantation, corrective osteotomy),
  - with osteoarthritis of the spine and peripheral osteoarthritis,
  - with rheumatic diseases,
  - with systemic connective tissue diseases,
  - with SM,
  - with Parkinson's Disease and Parkinsonian Syndromes,
  - with a history of previous stroke.
- Children:
  - after injuries of the musculoskeletal system,
  - after extension of the limbs,
  - after surgical treatment of malformations,
  - due to scoliosis,
  - children with cerebral palsy.

### **Specific research interests of the unit: (give the key words for each theme)**

Main scope of research activities in Department of Physical Medicine and Rehabilitation of the Medical University of Lodz include: the effectiveness of the selected methods of physiotherapy, incidence of faulty posture and scoliosis in children and adolescents in Lodz region, prevention of bedsores and verification of suitability of impedance plethysmography in monitoring blood flow parameters in the study area, analysis of the effect of laser

radiation on function and structure of cell membrane, studies on mechanisms of cell damage induced by oxidative stress, analysis of changes in biophysical parameters of bone mesenchymal stem cells under the influence of laser radiation MLS, clinical studies on assessing effectiveness of methods of physical therapy (low level laser therapy, ultrasonic wave, electrotherapy).

Scientific and educational projects conducted in the Department include: Interdisciplinary doctoral studies in the field of biopsychosocial model of human functioning in the social environment (co-financed by the European Union from the European Social Fund under the Operational Program Knowledge Education Development 2014-2020, Priority axis: III. Higher education for economy and development, Measure 3.2. Doctoral studies POWR.03.02.00-IP.08-00-DOK/16),

International Spinal Cord Injury Community Survey (InSCI), VR-Neck - Virtual Glasses for diagnosis, therapy and rehabilitation training for people with dysfunctions and injuries to the cervical spine, Cochrane Rehabilitation RCT clinical application project, International Interdisciplinary School for EBM (IIS EBM), Studies with POWER - The Competence Development Program of students of the Medical University of Lodz in the field of Public Health and Physiotherapy.

1. Analysis of the effect of laser radiation on function and structure of cell membrane, and the impact of a single wave and two waves synchronized laser radiation depending on the methodology of radiation.
2. Studies on mechanisms of cell damage induced by oxidative stress and the role of oxidative damage in some pathological conditions, as well as the therapeutic potential of some antioxidants.
3. Analysis of changes in biophysical parameters of bone mesenchymal stem cells under the influence of laser radiation MLS system and evaluation of membrane enzyme activity depending on the power and energy of radiation dose.
4. Clinical studies on assessing effectiveness of methods of physical therapy (low energy laser, ultrasonic wave, the selected method of electrotherapy) and other methods of pain management in rehabilitation of patients with musculoskeletal disorders.
5. Verification of the suitability of surface electromyography in the diagnosis and to evaluate effects of physiotherapy methods.
6. Research on effectiveness of the selected methods of physiotherapy:
  - a) Develop and implement innovative methods of diagnosis in patients with dysfunction of the cervical spine and monitor effectiveness of medical rehabilitation using "GyroNeck" device.
  - b) Verification of effectiveness of the selected techniques of manual therapy in patients with dysfunction of the spine.
  - c) Evaluation of effectiveness of hyperbaric oxygen therapy in prevention and rehabilitation of patients with musculoskeletal disorders.
7. Research on the incidence of faulty posture and scoliosis in children and adolescents in Lodz region.
8. Research on prevention of bedsore and verification of suitability of impedance plethysmography in monitoring blood flow parameters in the study area.

Planned areas of international cooperation:

Research into diagnosis of postural reactions and locomotion for assessing degree of dysfunction and monitoring effectiveness of rehabilitation methods in the treatment of primary and secondary dysfunction of the musculoskeletal system.

Verification of possibility of using objective methods for analysis of over use of musculoskeletal system due to the prevention of disorders in various sports and occupational medicine.

International Environmental Study of People with Spinal Cord Injury.

**List five publications from the last five years which most represent the unit's research programme:**

1. Krawczyk- Szulc P., Węgrowska-Koski E., Puzder A, Markowski P., Walusiak-Skorupa J: Przewlekłe zapalenie nadkłykcia kości ramiennej wywołane sposobem wykonywanej pracy- wytyczne diagnostyczno-orzecznicze. *Medycyna Pracy* 2015;66(3):443-50; IF 0,397, MNiSW 15 pkt. Wytyczne.
2. Tederko P., Kujawa J., Księżopolska-Orłowska K. European organizations of Physical and Rehabilitation Medicine. *Ortopedia Traumatologia i Rehabilitacja* 3 (6) vol.17 s.317-27. 2015. *Orthopedics. Traumatology and Rehabilitation* 3 (6) vol.17 p. 317-27. 2015.
3. Aydan Oral, Christina-Anastasia Rapidi, Jiri Votava, Nikolaos Roussos, Xanthi Michail, Jolanta Kujawa, Stefano Negrini, Enrique Varela Donoso, Nicolas Christodoulou. Evidence based position paper on Physical and Rehabilitation Medicine (PRM) professional practice for ageing people with disabilities. The European PRM position (UEMS PRM Section). *Eur. J. Phys. Rehabil. Med.* 2017 : Vol. 53, nr 5, s. 802-811, tab., bibliogr.  
ISSN: 1973-9087. Impact Factor ISI: 1.827
4. Kujawa J, Taczała J, Zawadzka A, Gworys K.  
Podstawowe problemy rehabilitacji w praktyce lekarza rodzinnego. Wybrane zagadnienia z rehabilitacji medycznej.  
Basic Problems of Rehabilitation in the Practice of a Family Doctor. Selected issues in medical rehabilitation.  
In: Family medicine.  
Editor J. Bożydar Łatkowski, Witold Łukas, Maciej Godycki-Ćwirko  
Warszawa : PZWL, 2017  
p. 807-820  
ISBN: 978-83-200-5310-4
5. Pasternak-Mnich K, Wróbel D, Nowacka O, Pieszyński I, Bryszewska M, Kujawa J. The effect of MLS laser radiation on cell lipid membrane.  
*Ann. Agric. Environ. Med.* 2017 : p 6-10.  
ISSN: 1232-1966

**Please identify if necessary the conditions and means of exchange for trainee specialist (the number permissible, the person to contact, etc.):**

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Authorisation to publish over Internet YES  Signature:

NO