
Department of Neurology

The doctors of the Department of Neurology provide diagnostic and therapeutic care to patients with neurological diseases not only in the Hradec Králové region, but also for selected diagnoses for the entire Hradec Králové and Pardubice regions. Neurology is currently one of the fastest growing fields of medicine both in terms of diagnosis and treatment, especially for demyelinating diseases (multiple sclerosis and other demyelinating diseases of the central and peripheral nervous system), cerebrovascular diseases, neurodegenerative diseases (dementia, Parkinson's disease and other extrapyramidal diseases), seizure disorders (epilepsy) and headaches (especially migraine). In the diagnosis and treatment of neurological diseases, neurologists collaborate with a number of other disciplines (e.g. neuroradiology, neurosurgery, psychiatry, psychology, cardiology, oncology, rehabilitation, ...). The increasing incidence and prevalence of neurological diseases, with, among other things, an increase in the length of survival, is leading to increasing demands on the provision of care for these patients. In addition to providing diagnostic and therapeutic care and undergraduate teaching, the clinic staff also provide postgraduate teaching and are very active in the field of scientific research. In this area, they cooperate with a number of departments not only in the Czech Republic but also abroad, and have won awards at the national and international level. In 2019-2022, for example, they have published (as lead authors or co-authors) more than 60 articles in journals with IF in the 1st and 2nd quartile. They actively participate in professional congresses (including participation in their organization) and the Department of Neurology organizes the traditional Sherkl Days every year.

Main research topics

- **Analysis of standing and gait** (modelling of pathological gait stereotypes and extraction of the most important parameters of standing and gait for use in clinical practice; development of prototypes of devices for monitoring standing and gait in clinical practice). doc. MUDr. Oldřich Vyšata, Ph.D.
- **Cognitive disorders and multiple sclerosis** (evaluation of predictors of quality of life and attitudes towards ageing in older adults with and without dementia; evaluation of predictability of EEG patterns in patients with Alzheimer's disease; development of new drugs; pharmacokinetics of cognitive agents, neuroimmunology). prof. MUDr. Martin Vališ Ph.D., FEAN
- **Cerebrovascular diseases** (acute recanalization therapy of ischemic strokes; evaluation of the ability of ultrasound examination to identify unstable carotid plaques; possibility of measuring blood flow volume in carotid and intracranial arteries using magnetic resonance angiography and duplex sonography). prof. MUDr. Roman Herzig, Ph.D., FESO, FEAN

Scientific research groups

- Standing and walking analysis team (doc. MUDr. Oldřich Vyšata, Ph.D.)
- Cognitive disorders and demyelinating diseases team (prof. MUDr. Martin Vališ Ph.D., FEAN)
- Cerebrovascular disease team (prof. MUDr. Roman Herzig, Ph.D. , FESO, FEAN)

Students of postgraduate doctoral studies are actively involved in scientific research activities, participating in single-track research projects and publishing activities and participating in internships at prestigious foreign institutions (Israel, Great Britain, USA)

Equipment

Bilateral video hit impulse test (VHIT) - use to determine normative values for vHIT conjugation/disconjugation, studies on patients with multiple sclerosis, myasthenia gravis, oculomotor deficits, stroke

Achievements

- Motion sensor for classification and quantification of gait disorders using machine learning methods - 1st place in the Data category of the Czech DIGI@MED Award 2022 (doc. MUDr. Oldřich Vyšata, Ph.D.) <https://www.youtube.com/watch?v=VOuucYLQWuI>
- Head-neck brace for head fixation for safe eating and upright body position in patients with amyotrophic lateral sclerosis with fallen head syndrome - EU industrial design No. 008597157-0001, CZ industrial design PVZ 2021-41967 (Mgr. Petra Šolínová) <https://www.youtube.com/watch?v=M5ZpvVfRm7c>

- International award of the Comprehensive Cerebrovascular Centre for the quality of care provided to stroke patients
- European Stroke Organisation Angels Award - GOLD status (2018 and 2019) and DIAMOND status (2020 and 2021) (prof. MUDr. Roman Herzig, Ph.D. , FESO, FEAN)