MEDICAL UNIVERSITY OF VIENNA

Scientific Program

15th Vienna International Workshop on Functional Electrical Stimulation

VIENNA FES

IFESS International Functional Electrical Stimulation Society

30 years IFESS Anniversary

Vienna, Austria, September 15.-18. Sept. 2025

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The triennial "Vienna International Workshop on Functional Electrical Stimulation" provides a platform for researchers to present and discuss their recent work whilst visitors can expect a representative and actual overview of the state of the art of FES.

Conference venue

Van Swieten Saal der Medizinischen Universität Wien
Van-Swieten-Gasse 1a
A-1090 Vienna

National organizers

Medical University of Vienna
and
Austrian Society for Biomedical Engineering
"FES group of the Austrian Society for Biomedical Engineering"
M.Bijak , M. Schmoll, M.Pichler, W.Mayr

Contact address

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Center for Medical Physics and Biomedical Engineering

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A-1090 Vienna, Austria	*e-Mail:*	*melitta.pichler@meduniwien.ac.at*

Conference language

The official language of the conference is English

Dates

Pre Conference Course	*15. Sept. 2025*	*09:00 - 16:00*
Come together	*15. Sept. 2025*	*17:30 - 19:30*
Scientific program	*16. Sept. 2025*	*08:30 - 17:00*
Cybersportsday 2025	*16. Sept. 2025*	*- 19:30*
Scientific program	*17. Sept. 2025*	*08:30 - 16:30*
Conference Dinner	*17. Sept. 2025*	*18:00 - 23:00*
Scientific program	*18. Sept. 2025*	*08:30 - 14:00*

Registration Desk

Open throughout the conference

Conference Dinner

17. Sept. 2025
Waldschenke-Staar
3001 Mauerbach, Hainbuch 1
waldschenke-staar.at

Oral presentation

Time: 15 minutes
(10 minutes presentation and 5 minutes discussion)

Presentation media

Beamer and PC for PowerPoint presentations
(USB memory stick)

Speakers should submit their media 30 minutes prior to the start of their session at the slide desk.

Poster presentation

The posters should be exhibited at the assigned poster board during the whole conference. All participants are encouraged to contact the authors during the coffee breaks.
Paper size A0, portrait.

Proceedings of the conference

The proceedings with full-length papers will be available at the beginning of the workshop.

Detailed information

Please find further information at the official conference homepage:

https://mpbmt.meduniwien.ac.at/fesws2025

ViennaFES | Cybersportsday 2025

Tuesday, 16.09.2025

*For the very first time, this conference will feature a new highlight: a **FES-Cycling Race**. In this exciting event, individuals with spinal cord injury will compete head-to-head on a flat track in a real-life, over-ground race – powered solely by their paralyzed legs re-activated through FES.*

This race is more than just a competition. Beyond showcasing athletic performance, it serves as a platform to foster connections, exchange experiences and inspire innovation. Our goal is to raise awareness for the transformative potential of FES technology, outside the scope of traditional therapeutic applications.

Be part of this inspiring event – and discover the exciting possibilities of FES in sports!

Information

***Date**:* *16.09.2025*
***Location**:* *General Hospital of Vienna (AKH Michelbeuern) N48.219576, E16.344883*

Schedule
14:00 - 16:00h : Meet the Teams & Testruns
16:00 - 18:00h : Qualifications
18:30 - 19:00h : Finals
19:15 - 19:30h : Medal Ceremony

MORE INFO

Monday 15.09.2025

09:00-17:00 Pre-Conference Workshop
17:30-19:30 Welcome Cocktail

Tuesday 16.09.2025

08:20-08:30 Welcome / Opening

Key

Keynote Lecture

Chairperson: Jonathan Jarvis (Liverpool, United Kingdom)

08:30 Stanley Salmons (Liverpool, UK)
PARADIGM SHIFTS: THE FOUNDATIONS OF FUNCTIONAL ELECTRICAL STIMULATION

Ceremony
09:15

30 years IFESS

Host: Simona Ferrante, President of IFESS (Milan, Italy)

10:15-10:45 Coffee Break

Session 1	***Clinical applications of FES*** Chairpersons: Tamsyn Street (Salisbury, United Kingdom) Werner Girsch (Graz, Austria)
10:45	Tamsyn Street et al (United Kingdom) QUALITY OF LIFE AND PATIENT REPORTED OUTCOME MEASURES FOLLOWING THE USE OF FUNCTIONAL ELECTRICAL STIMULATION FOR WALKING POST STROKE
11:00	Erika G. Spaich et al (Denmark) EFFECT OF ELECTRICAL STIMULATION ON THE TIMING OF THE PREPARATORY PHASE OF GAIT INITIATION IN PARKINSON'S DISEASE
11:15	Ugo Carraro et al (Italy) EFFECTIVENESS OF FES X DDM AFTER TWENTY YEARS OF PERMANENT DENERVATION AND DEGENERATION OF HUMAN MUSCLES
11:30	Christina Buchgeher et al (Austria) CLINICAL IMPLICATIONS OF ELECTRICAL STIMULATION IN A HOME-BASED TREATMENT SETTING FOR PATIENTS WITH FACIAL NERV E PARALYSIS TO STOP DENERVATION ATROPHY
11:45	Tamsyn Street (United Kingdom) A RANDOMISED, SHAM-CONTROLLED, REMOTELY CONDUCTED, PROOF OF PRINCIPLE STUDY OF ABDOMINAL FUNCTIONAL ELECTRICA L STIMULATION (ABFES) FOR BOWEL MANAGEMENT IN SPINAL CORD INJURY (SCI)
12:00	Ines Bersch et al (Switzerland) THE EFFECT OF NEUROMUSCULAR ELECTRICAL STIMULATION ON BOWEL MANAGEMENT IN PEOPLE WITH CHRONIC SPINAL CORD INJURY
12:15	Benjamin Forrest et al (United Kingdom) A RETROSPECTIVE ANALYSIS OF ABFES IN TREATING AND MANAGING CONSTIPATION IN INDIVIDUALS WITH NEUROLOGICAL IMPAIRMENT

12:30	Janez Rozman et al (Slovenia) STIMULATION OF NEUROVASCULAR BUNDLES DURING ROBOT-ASSISTED RADICAL PROSTATECTOMY
12:45-13:45	**Lunch**

Session 2	***Afferent Nerve Stimulation*** Chairpersons: Winfried Mayr (Vienna, Austria) Ines Bersch-Porada (Nottwil, Switzerland)
13:45	Werner Girsch et al (Austria) TREATMENT OF CHRONIC NEUROPATHIC PAIN WITH PERIPHERAL NERVE STIMULATION
14:00	Milana Mileusnic et al (Austria) CLINICAL ADVANCES IN FULL BODY NEUROMODULATION TO TREAT SPASTIC MOTOR DISORDER AND CHRONIC PAIN
14:15	Rebecca Grenfell et al (Australia) FUNCTIONAL IMPACT OF THE EXOPULSE MOLLII SUIT IN SPG4 HEREDITARY SPASTIC PARAPLEGIA: A SINGLE-SUBJECT AB CASE STUDY
14:30	Sarah Massey et al (United Kingdom) OPTIMAL PARAMETERS FOR LOWER LIMB AFFERENT NERVE ROOT ACTIVATION USING TRANSCUTANEOUS SPINAL CORD STIMULATION IN HEALTHY ADULTS.
14:45	Anna Pataraia et al (Austria) HOME-BASED TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION FOR IDIOPATHIC SENSORY POLYNEUROPATHY: A PERSONALIZED APPROACH
15:00	Dibya Chowdhury et al (Austria) REAL-TIME R -PEAK PREDICTION IN ECG FOR CARDIAC-GATED AURICULAR VAGUS NERVE STIMULATION
15:15-15:45	**Coffee Break**

Session 3	***FES-Technology*** Chairpersons: Nick Donaldson (London, UK) Thomas Schauer (Berlin, Germany)

15:45	Javier Sáez et al (Chile) DESIGN PARAMETERS OF CONCENTRIC ELECTRODES: A SIMULATION STUDY TO OPTIMISE NON-INVASIVE FUNCTIONAL ELECTRICAL STIMULATION
16:00	Kevin Schuh et al (Austria) LOW-RESISTANCE COST-EFFICIENT INTERFACING FOR NEUROSTIMULATION NEEDLES BASED ON PRINTED CIRCUIT BOARD TECHNOLOGY
16:15	Siobhan Mackenzie Hall et al (United Kingdom) AI ELECTRODE AND STIMULUS DESIGN FOR FES RESEARCH: A PILOT STUDY
16:30	Hany Shaker et al (Egypt) COST-EFFECTIVE REMOTELY FULLY-CONTROLLED ELECTRICAL STIMULATOR FOR SKELETAL MUSCLES REHABILITATION
16:45	Hermann Lanmüller et al (Austria) INCREASING THE RELIABILITY OF AN IMPLANTABLE PULSE GENERATORS FOR SMALL AND LARGE LABORATORY ANIMALS
17:00	Hany Shaker et al (Egypt) TOWARDS A SAFE LONG-TERM IMPLANTABLE ELECTRICAL STIMULATION: A HIGH-EFFICIENCY CHARGE BALANCER DESIGN

17:15-19:45 ViennaFES Cybersports 2025

Wednesday 17.09.2025

Key	***Keynote Lecture*** Chairperson: Thomas Stieglitz (Freiburg, Germany)
08:30	Stanisa Raspopovic (Vienna, Austria) HUMAN-MACHINE INTERFACING FOR HEALTH BENEFITS
Session 4	***Sensory Restoration*** Chairpersons: Stanisa Raspopovic (Vienna, Austria) Eugenijus Kaniusas (Vienna, Austria)
09:10	Michael Handler et al (Austria) COMPUTER SIMULATION OF COMBINED VESTIBULAR/COCHLEAR IMPLANT STIMULATION FOR THE ANALYSIS OF CROSS-TALK AND NEURONAL RESPONSES
09:25	Laurin Xaver Koppenwallner et al (Austria) FOCAL STIMULATION OF RETINAL GANGLION CELLS BY PULSE DURATION MODULATION AND CURRENT STEERING
09:40	Klaus Peter Koch et al (Germany) A FIRST APPROACH TO PHASE-MODULATED INTERFERENCE STIMULATION FOR GENERATING MOVING TACTILE PERCEPTION
09:55-10:25	**Coffee Break**

Session 5	***Methodological Insights*** Chairpersons: Matthias Krenn (Mississippi, United States) Christine Azevedo (Montpellier, France)

10:25	Hazzira Ameera Safin Hashim et al (Malaysia) ULTRASOUND ASSESSMENT OF FOREARM MUSCLE CHANGES FOLLOWING FES IN SARCOPENIC ELDERLY: PRELIMINARY RESULTS OF A FEASIBILITY STUDY
10:40	Nur Azah Hamzaid et al (Malaysia) MUSCLE OXYGENATION-BASED CLASSIFICATION OF SPINAL CORD INJURY DURING FES USING NIRS AND MACHINE LEARNING
10:55	Ellen Huld A. Þórðardóttir et al (Iceland) INVESTIGATING PREDICTORS OF RECOVERY AFTER SPINAL CORD INJURY: A STATISTICAL APPROACH TO SECONDARY INJURY AND CLINICAL OUTCOME ANALYSIS
11:10	Sandra Dorfer et al (Austria) RESPIRATION-DRIVEN CLOSED-LOOP MODULATION OF BINAURAL BEATS
11:25	Matthias Krenn et al (United States) ELECTRICAL PRECONDITIONING OF DENERVATED MUSCLE PRIOR TO NERVE TRANSFER: A FEASIBILITY STUDY IN A NON-HUMAN PRIMATE MODEL
11:40	Jan Namysl (Poland) COUPLING FES AND DYNAMIC SURFACE ELECTROMYOGRAPHY: ADVANCING NEUROREHABILITATION
11:55	Ellen Huld A. Þórðardóttir et al (Iceland) EFFECTS OF INTERNAL AND EXTERNAL COOLING ON TEMPERATURE REGULATION FOLLOWING SPINAL CORD INJURY: A MATHEMATICAL SIMULATION-BASED STUDY

12:10-13:10 **Lunch**

Session 6	***FES-Cycling*** Chairpersons: Martin Schmoll (Vienna, Austria) Lynsey Duffell (London, United Kingdom)
13:10	Stephan Baglikow et al (Germany) REAL-TIME BAYESIAN OPTIMIZATION OF FES CYCLING
13:25	Nick Donaldson et al (United Kingdom) ADDING IMPOSED ANKLE MOTION TO FES CYCLING
13:40	Mariann Mravcsik et al (Hungary) FES-INDUCED CHANGES IN EXCITABILITY OF DENERVATED MUSCLES IN FLACCID PARAPLEGIA - CASE STUDY
13:55	Isabelle Rösler et al (Austria) DEVELOPMENT OF MODELS TO ESTIMATE REALISTIC KEY PERFORMANCE INDICATORS ON A FES-CYCLING-ERGOMETER
14:10	Tiago Coelho-Magalhães et al (France) OPTIMAL CONTROL FRAMEWORK FOR PERSONALIZED FES-CYCLING IN INDIVIDUALS WITH SPINAL CORD INJURY
14:25	Martin Schmoll et al (Austria) ASSESSING ACCURACY OF POWER-PEDALS FOR LOW POWER OUTPUT IN FES-CYCLING – PRELIMINARY RESULTS
14:40-15:10	**Coffee Break**

Session 7	***Movement Restoration*** Chairpersons: Kristin E. Musselman (Toronto, Canada) Nur Azah Hamzaid (Malaya, Malaysia)

15:10	Jonathan Baum et al (France) TOWARDS ELECTROPHYSIOLOGICAL AND HISTOLOGICAL MAPPING OF UPPER LIMB NERVES IN PIGS USING EPINEURAL STIMULATION
15:25	Jonathan Jarvis et al (United Kingdom) INTERFERENTIAL OR MIDDLE-FREQUENCY STIMULATION OF PERIPHERAL NERVE
15:40	Manuela Riegler et al (Austria) STUDY PROTOCOL: EFFICACY OF EMG-TRIGGERED FOUR-CHANNEL FUNCTIONAL ELECTRICAL STIMULATION IN ARM-HAND PARESIS FOLLOWING STROKE
15:55	Christine Azevedo et al (France) EPINEURAL ELECTRICAL STIMULATION FOR GRASP RECOVERY: 28-DAY STUDY IN 4 TETRAPLEGIC PARTICIPANTS
16:10	Gabriel Graffagnino et al (France) REAL-TIME GAIT EVENT DETECTION USING MOTION CAPTURE TO CONTROL AN ELECTRICAL STIMULATOR: PROOF-OF-CONCEPT
16:25	Christine Singleton et al (United Kingdom) FES THERAPY IMPROVES GAIT DYNAMICS IN PEOPLE WITH LIMB LOSS – A FEASIBILITY STUDY

16:40-22:40	**Bus to** **Waldschenke-Staar** **Hainbuch 1** **3001 Mauerbach**

Thursday 18.09.2025

Key	***Keynote Lecture*** Chairperson: Simona Ferrante (Milano, Italy)
08:30	Ines Bersch-Porada (Nottwil, Switzerland) "THE SUCCESS OF NOTTWIL" -TAKING A CRITICAL LOOK AT HOW "SUCCESSFULLY" FES HAS BEEN INTEGRATED INTO NEUROREHABILITATION
Session 8	***Current Challenges and Future Directives of FES 1*** Chairpersons: Richard Crevenna (Vienna, Austria) Ugo Carraro (Padova, Italy)
09:00	Kristin E. Musselman et al (Canada) DEVELOPMENT OF TOOLKITS AS AN IMPLEMENTATION STRATEGY FOR FUNCTIONAL ELECTRICAL STIMULATION (FES) IN NEUROREHABILITATION PRACTICE
09:15	Elina Nezon et al (Canada) STRATEGIES TO IMPROVE USE, KNOWLEDGE, AND CONFIDENCE OF FUNCTIONAL ELECTRICAL STIMULATION IN CEREBRAL PALSY REHABILITATION
Key	***Keynote Lecture*** Chairperson: Anna Pataraia (Vienna, Austria)
09:30	Barbara Chaloupek (Vienna, Austria) FROM THE PATIENT'S PERSPECTIVE: VISION FOR THE FUTURE AND CURRENT OBSTACLES
10:00-10:30	**Coffee Break**

Key	***Keynote Lecture*** Chairperson: Manfred Bijak (Vienna, Austria)
10:30	Werner Girsch (Pressbaum, Austria) 40 YEARS PHRENIC NERVE PACING
Key	***Keynote Lecture*** Chairperson: Erika Spaich (Aalborg, Denmark)
11:00	Manfred Bammer (Vienna, Austria) REGULATORY HURTLES FOR INNOVATIVE MEDICAL DEVICES
Session 9	***Current Challenges and Future Directives of FES 2*** Chairpersons: Christine Singleton (Birmingham, UK) Hermann Lanmüller (Vienna, Austria)
11:30	Thomas Stieglitz et al (Germany) FROM INNOVATIVE IDEAS TO CLINICAL TRIALS OPPORTUNITIES AND OBSTACLES IN TRANSLATIONAL RESEARCH ON NEURAL IMPLANTS
11:45	Christof Ullrich (Austria) OVERVIEW: PROVIDING FUNCTIONAL ELECTRICAL STIMULATION TO PEOPLE WITH WALKING DISABILITIES IN AUSTRIA
12:00	Hans Dietel (Austria) A SEMI-IMPLANTABLE NEUROSTIMULATOR FOR TREATMENT OF DROP FOOT: LESSONS LEARNED ALONG A WHOLE PRODUCT LIFE CYCLE

Round Table Discussion

12:15-13:45

What have we achieved, where are we going, and what do we need for a future that is successful for patients?

Moderator: Jonathan Jarvis (Liverpool, UK)

Panelists:
Ines Bersch-Porada (Switzerland)
Kristin E. Musselman (Canada)
Elina Nezon (Canada)
Barbara Chaloupek (Austria)
Werner Girsch (Austria)
Manfred Bammer (Austria)
Thomas Stieglitz (Germany)
Christof Ullrich (Austria)
Peter van Burk (Netherlands)
Hans Dietl (Austria)

13:15-14:00 **Closing Remarks**

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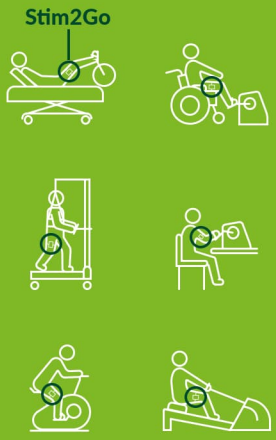

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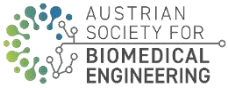

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