



ISEK 2024 Program

Wednesday, Jun 26: 4F (outside 141)

09:30 AM - 03:30 PM

Workshop Registration

4F (outside 141)

Wednesday, Jun 26: 436 (2F)

10:00 AM - 06:00 PM

Parenting/Nursing Space

436 (2F)

Wednesday, Jun 26: 131+132 (3F)

10:00 AM - 12:00 PM

ECR Workshop – By Trainees, for Trainees: mentorship and networking to find your voice as a researcher

131+132 (3F)

Workshop

Wednesday, Jun 26: 131+132 (3F)

01:00 PM - 03:00 PM

Workshop 1 – Understanding human beings from two perspective: laboratory measurement and living environment measurement

131+132 (3F)

Workshop

Wednesday, Jun 26: 133+134 (3F)

01:00 PM - 03:00 PM

Workshop 2 – Quantum sensor-based magnetomyography to study the neuromuscular system

133+134 (3F)

Workshop

Wednesday, Jun 26: 141+142 (4F)

01:00 PM - 03:00 PM

Workshop 3 – Simplified analysis of motor unit properties with openhdemg

141+142 (4F)

Workshop

Wednesday, Jun 26: 133+134 (3F)

03:30 PM - 05:30 PM

Workshop 5 – Smart textile innovation for rehabilitation – integrating electrodes in textiles for enhanced user experience and autonomy

133+134 (3F)

Workshop

Wednesday, Jun 26: 141+142 (4F)

03:30 PM - 05:30 PM

Workshop 6 – Motor unit filters in EMG-based motor unit identification: from theory to practice

141+142 (4F)

Workshop

Wednesday, Jun 26: 4F (outside 141)

04:00 PM - 06:00 PM

Conference registration / badge pick-up

4F (outside 141)

Wednesday, Jun 26: Shiratori hall (Building 4 - 1F)

06:00 PM - 07:00 PM

Welcome Reception

Shiratori hall (Building 4 - 1F)

Social Event

Wednesday, Jun 26

07:45 PM - 09:45 PM

Delsys InterReha ECR Night

Pre-Registration required

Thursday, Jun 27

07:30 AM - 04:30 PM

Registration/Info Desk

Thursday, Jun 27: 436 (2F)

08:00 AM - 06:00 PM

Parenting/Nursing Space

436 (2F)

Thursday, Jun 27: Reception Hall (4F)

08:00 AM - 09:30 AM

Opening Address: Andrea d'Avella

EMG pattern decomposition as combinations of muscle synergies: achievements, open issues, and perspectives after 25 years

Reception Hall (4F)

Keynote

Thursday, Jun 27: Event Hall (1F)

09:30 AM - 10:00 AM

Break

Event Hall (1F)

Thursday, Jun 27: Reception Hall (4F)

10:00 AM - 11:30 AM

S.1: Estimating mechanical behavior of skeletal muscles using imaging and modeling modalities

Organiser: Filiz Ates

Reception Hall (4F)

Symposium

(S1.1) Filiz Ates

S1.1 - Skeletal muscle in vivo: unraveling mechanical behavior and detecting changes using ultrasound shear wave elastography, (University of Stuttgart)

(S1.2) Vickie Shm

S1.2 - Image based model generation and optimisation for the human Achilles tendon, (University of Auckland)

(S1.3) Can Yucesoy

S1.3 - Muscular connective tissues: do they only provide protective packaging, or are a determinant for muscle's active force production? Finite element and imaging analyses, (Bogazici University)

(S1.4) Yasuo Kawakami

S1.4 - Skeletal muscle architecture in 3D: insights from in vivo measurement with 3D ultrasonography and diffusion tensor MR imaging, (Waseda University)

(S1.5) Geoffrey Handsfield

S1.5 - Probing muscle and connective tissue structure in vivo with combined advanced MRI and computational modeling, (University of North Carolina)

Thursday, Jun 27: 131+132 (3F)

10:00 AM - 11:30 AM

Oral Session 1: Aging & Motor Units

131+132 (3F)

Oral Session

(O.1.1) Emma Fortune

O.1.1: Physical activity and body mass index are associated with skeletal muscle mass index after menopause, (Mayo Clinic)

(O.1.2) Emile Marineau

O.1.2: The influence of workload on muscular fatigue, tissue properties, and postural stability in older and younger workers, (Université du Québec à Trois-Rivières)

(O.1.3) Haoru He

O.1.3: Potential biomarkers extracted from multi-channel sEMG for sarcopenia early screening among community-dwelling Seniors, (West China Hospital of Sichuan University)

(O.1.4) Ryosuke Takeda

O.1.4: Impact of motor unit firing patterns on exercise pressor response in older hypertensive individuals, (CU)

(O.1.6) Taichi Nishikawa

O.1.6: Daily quercetin ingestion alters the effects of moderate-intensity resistance training on muscle strength and motor unit behavior in older adults, (Chukyo university)

(O.1.7) Jakob Škarabot

O.1.7: Vastus lateralis motor unit discharge characteristics in knee osteoarthritis, (Loughborough University)

Chair: Mathew Piasecki

Thursday, Jun 27: 133+134 (3F)

10:00 AM - 11:30 AM

Oral Session 2: Muscle synergy & Sports Sciences

133+134 (3F)

Oral Session

(O.2.1) Elisa Romero Avila

0.2.1: Muscle control strategies of the central nervous system (CNS) in terms of muscular coactivation and muscle synergies when performing unfamiliar tasks, (Institute of Applied Medical Engineering)

(O.2.2) Usha Kuruganti

0.2.2: The Influence of contraction intensity on muscle activity of the triceps Surae in males and females during isometric plantarflexion, (University of New Brunswick)

(O.2.3) Marco Ghislieri

0.2.3: Impact of electrode placement on muscle synergy extraction: insights from lower-limb sEMG signals, (Politecnico di Torino)

(O.2.4) Christopher Thompson

0.2.4: Flexible and independent control of synergist muscles during standing balance, (Temple University)

(O.2.5) Amornthep Jankaew

0.2.5: Athletes with hamstring injuries exhibit lower EMG-EMG coherence of posterior chain coordination muscles during a single-leg postural lean, (National Cheng Kung University)

(O.2.6) Katsura Konishi

0.2.6: sEMG on muscle groups innervating the hand and fingers in hanging onto a thin hold in sport climbing., (Keio University)

(O.2.7) Marco Ghislieri

0.2.7: Neuromuscular control changes in Parkinson's disease after deep brain stimulation: insights from muscle synergy parameters, (Politecnico di Torino)

Chair: Eduardo Martinez-Valdes

Thursday, Jun 27: 141+142 (4F)

10:00 AM - 11:30 AM

Oral Session 3: Motor control & biomechanics

141+142 (4F)

Oral Session

(O.3.1) Mika Konishi

0.3.1: Effect of anticipation and sex on trunk and knee biomechanics during side-step cutting: implications for noncontact ACL injury, (University of Tsukuba)

(O.3.2) Genki Hisano

0.3.2: Whole-body angular momentum during cross-slope walking in unilateral transfemoral prosthesis users, (Arts et Metiers Sciences et Technologies)

(O.3.3) Genki Tokuda

0.3.3: Unilateral vs bilateral skipping gaits : symmetric limb functions lead to temporally more demanding and mechanically more loading, (Tokyo University of Science)

(O.3.4) Yuki Sugimoto

0.3.4: Validation of a novel limb symmetry index to discriminate movement strategies during bilateral jump landing in individuals with ACLR with and without a history of ankle sprains., (Northwestern University Feinberg School of Medicine)

(O.3.5) Wai-Hong Chin

0.3.5: Effects of blood flow restriction and band tissue flossing technique on ankle stability and muscle control in athletes with chronic ankle instability, (China Medical University)

(O.3.6) Marco Romanato

0.3.6: Limb coordination in people with Parkinson's disease is differently modulated by dopamine medication and directional subthalamic deep brain stimulation, (Sorbonne Université, Paris Brain Institute)

(O.3.7) Magdalene Mcdonough

0.3.7: The Influence of a stroke on reciprocal control of the stretch reflex during posture, (Northwestern University)

Chair: Marcel B. Lanza

Thursday, Jun 27: Event Hall (1F)

11:30 AM - 01:00 PM

Poster Session 1 + Lunch

Event Hall (1F)

Poster Session 1

Thursday, Jun 27: Reception Hall (4F)

01:00 PM - 02:30 PM

S.2: Characterizing and targeting muscle stiffness to improve treatment and rehabilitation

Organiser: Ridhi Sahani

Reception Hall (4F)

Symposium

(S2.1) Taylor Dick

S2.1 - Exploring the dynamics of in vivo muscle shape change: integrating internal properties and the external environment, (University of Queensland)

(S2.2) Ridhi Sahani

S2.2 - Coupled micromechanical models and experiments reveal implications of collagen organization on passive muscle tissue properties, (Northwestern University)

(S2.3) Benjamin Binder-Markey

S2.3 - Quantification and modeling of whole muscle passive mechanics, (Drexel University)

(S2.4) Jun Umehara

S2.4 - A novel method to identify muscle mechanical property for three-dimensional joint in vivo

Thursday, Jun 27: 131+132 (3F)

01:00 PM - 02:30 PM

S.3: Unique engineering approaches to modify neuromotor activity through human-robot intention and perception

Organiser: Minoru Shinohara

131+132 (3F)

Symposium

(S3.1) Minoru Shinohara

S3.1 - A new robotic rehabilitation paradigm: Controlling and embodying a detached robotic hand by synergistic torso muscle activity for limb function, (Georgia Institute of Technology)

(S3.2) Jinwoo Lee

S3.2 - Intention-driven strength augmentation: integration of an intelligent upper-limb exoskeleton with soft bioelectronics and deep learning, (Dongguk University)

(S3.3) Yuichi Kurita

S3.3 - Developing training support technology with simultaneous visual and force feedback using pneumatic gel artificial muscles, (Hiroshima University)

Thursday, Jun 27: 133+134 (3F)

01:00 PM - 02:30 PM

Oral Session 4: Motor control & motor units

133+134 (3F)

Oral Session

(O.4.1) Giuseppe De Vito

O.4.1: Effects of 10 days of unilateral lower limb suspension followed by 21 days of retraining on motor unit conduction velocity, (University of Padova)

(O.4.2) Edoardo Lecce

O.4.2: Cross-Education and motor unit adaptations: insights from high-density electromyography, (University of Rome 'Foro Italico')

(O.4.3) Roopam Dey

O.4.3: High density surface electromyographic (HDsEMG) technique to differentiate between coracobrachialis and short head of biceps activity, (University of Cape Town)

(O.4.4) Helio Cabral

O.4.4: Biomechanical changes in muscle length directly influence shared synaptic inputs to spinal motor neurons, (Università degli Studi di Brescia)

(O.4.5) Eduardo Martinez-Valdes

O.4.5: Changes in cortical beta inputs to spinal motoneurons during the acquisition and retention of a new visuomotor skill task, (University of Birmingham)

(O.4.6) Kaya Yoshida

O.4.6: Effects of repeated bouts of split-belt walking on locomotor adaptation, physiological arousal, and cortical activation, (Rehabilitation Research Program)

(O.4.7) Michail Arvanitidis

O.4.7: Associations between delayed onset trunk muscle soreness, altered EMG-torque relationships, and lumbar kinematics in dynamic contractions, (University of Birmingham)

Thursday, Jun 27: 141+142 (4F)

01:00 PM - 02:30 PM

Oral Session 5: Motor units & signal processing

141+142 (4F)

Oral Session

(O.5.1) Simon Avrillon

0.5.1: The decoding of extensive samples of motor units in human muscles reveals the rate coding of entire motoneuron pools, (Université Côte d'Azur)

(O.5.2) Nina Murks

0.5.2: On time effectiveness of manual editing of motor unit spike trains, (University of Maribor)

(O.5.3) Lara Mcmanus

0.5.3: Quantifying the collective synchrony of motor units using multi-variate coherence, (Trinity College Dublin)

(O.5.4) Ales Holobar

0.5.4: Activity index outperforms cumulative spike train and amplitude envelopes in surface EMG coherence analysis, (University of Maribor)

(O.5.5) Laura Ferrante

0.5.5: Interfacing with motor unit activity using high-density thin-film electrodes following targeted muscle reinnervation, (Imperial College London)

(O.5.6) Antonio Hernandez

0.5.6: Estimating low-threshold motor unit twitch responses in high-force trials: towards real-time estimation of neuromusculoskeletal function through motor unit-driven approaches, (Universiteit Twente)

(O.5.7) Thomas Klotz

0.5.7: Magnetomyography can provide new insights into motor units in living humans, (University of Stuttgart)

Chair: Silvia Muceli

Thursday, Jun 27

02:30 PM - 02:45 PM

Transition

Thursday, Jun 27: Reception Hall (4F)

02:45 PM - 03:45 PM

Keynote 2: Jane Butler

Neural control of human inspiratory muscles. What have we learnt from measures of single motor unit activity?

Reception Hall (4F)

Keynote

Jane Butler

Neuroscience Research Australia, University of New South Wales

Chair: Kylie Tucker

Thursday, Jun 27

03:45 PM - 04:00 PM

Transition

Thursday, Jun 27: Reception Hall (4F)

04:00 PM - 05:30 PM

S.4: Enhancing physical function in aging and hospitalized populations with neuromuscular electrical stimulation

Organiser: Toshiaki Miyamoto

Reception Hall (4F)

Symposium

(S4.1) Toshiaki Miyamoto

S4.1 - Exploring the potential of sub-tetanic neuromuscular electrical stimulation for maintaining and improving physical function, (Kansai Medical University)

(S4.2) Brian Caulfield

S4.2 - Personalisation and optimisation of NMES to enhance adherence and clinical effectiveness, (University College Dublin)

(S4.3) Javier Rodriguez-Falces

S4.3 - On the origins of the heterogeneity in neuromuscular electrical stimulation effects in clinical populations, (Public University of Navarra)

Thursday, Jun 27: 131+132 (3F)

04:00 PM - 05:30 PM

S.5: Neuromechanical characterisation of muscles and their functional units using ultrasound imaging methods: State-of-the-art and future perspectives

Organiser: Robin Rohlén

131+132 (3F)

Symposium

(S5.1) Dario Farina

S5.1 - Neuromechanical characterization of muscles and their functional units – The basics of ultrafast ultrasound acquisition, processing and bio-mechanical source, Imperial College London

(S5.2) Martino Franchi

S5.2 - Skeletal muscle ultrasound and the never-ending search for a link to function: beyond just static imaging, (University of Padova)

(S5.3) Alberto Botter

S5.3 - Combining US imaging and High-Density EMG: applications, potentialities, and challenges, (Politecnico di Torino)

(S5.4) Emma Lubel

S5.4 - Ultrafast ultrasound decomposition into individual motor unit contributions, (Imperial College London)

(S5.5) Robin Rohlén

S5.5 - State-of-the-art and future perspectives, (Lund University / Imperial College London)

Thursday, Jun 27: 133+134 (3F)

04:00 PM - 05:30 PM

Oral Session 6: Clinical neurophysiology

133+134 (3F)

Oral Session

(O.6.2) Frederique Dupuis

0.6.2: Asymmetry in the onset of paraspinal muscles activity during rapid arm movements differs in adolescents with idiopathic scoliosis compared to those with a symmetrical spine, (Université Laval)

(O.6.3) Tamara Valencič

0.6.3: Long-term effects of ACL reconstruction with a hamstring tendon autograft on neural control of the vastii muscles at different knee-joint angles, (Loughborough University)

(O.6.4) Alejandro Pascual Valdunciel

0.6.4: Characterization of spinal circuits with high density surface electromyography (HDsEMG), (Imperial College London)

(O.6.5) Mathieu Yèche

0.6.5: Modulation of subthalamic nucleus activity during gait initiation in Parkinson's disease patients: a biomarker for freezing, (Sorbonne Université, Paris Brain Institute)

(O.6.6) Eduardo Martinez-Valdes

0.6.6 - Feasibility of high-density surface electromyography for the detection of neuromuscular disorders in children, (University of Birmingham)

(O.6.7) Yukiko Makihara

0.6.7: On the origin of short and medium latency soleus stretch reflexes: how do the amount and speed of ankle joint rotation relate to the spinal stretch reflexes in humans?, (International University of Health and Welfare)

Chair: Giuseppe De Vito

Thursday, Jun 27: 141+142 (4F)

04:00 PM - 05:30 PM

Oral Session 7: Modelling & signal processing

141+142 (4F)

Oral Session

(O.7.1) Andra Oltmann

0.7.1: Respiratory sEMG measurements for quantitative comparison of bipolar electrode leads, (Fraunhofer IMTE)

(O.7.2) Jonathan Lundsberg

0.7.2: Muscle activity mapping by 3-dimensional localization of motor unit action potentials from high-density surface electromyography, (Lund University)

(O.7.3) Yasin Dhaher

0.7.3 - Identification of mutual motor unit expression in two independently decomposed HDsEMG signals Subaryani Soedirdjo, (UT Southwestern Medical Centre)

(O.7.4) Kristen Beange

0.7.4: Is spinal motion preserved following vertebral body tethering for adolescent idiopathic scoliosis? A prospective study, (Carleton University)

(O.7.5) Nebojsa Malesevic

0.7.5: Continuous knee dynamics monitoring: combining inertial measurement units and multichannel electromyography, (Lund University)

(O.7.6) Giacinto Luigi Cerone

0.7.6: Design and validation of a versatile and flexible electrode grid for US-transparent acquisition of HD-sEMG signals, (Politecnico di Torino)

Chair: Corrado Cescon

Friday, Jun 28

08:00 AM - 04:00 PM

Registration/Info Desk

Please feel free to drop by at any time during the opening hours specified, we'll be happy to assist with anything from directions to luggage storage.

Friday, Jun 28: 436 (2F)

08:00 AM - 06:00 PM

Parenting/Nursing Space

436 (2F)

Friday, Jun 28: Reception Hall (4F)

08:30 AM - 09:30 AM

Basmajian Award Lecture: Catherine Disselhorst-Klug

What are my muscles up to? The contribution of surface electromyography to clinical decision-making

Reception Hall (4F)

Keynote

Catherine Disselhorst-Klug
RWTH Aachen University

Chair: Madeleine Lowery

Friday, Jun 28: Event Hall (1F)

09:30 AM - 10:00 AM

Break

Event Hall (1F)

Friday, Jun 28: Reception Hall (4F)

10:00 AM - 11:30 AM

Award Session

Reception Hall (4F)

Award Session

Granata Awardee: Taylor Dick

Robots, Roos, and Really Big: exploring the biomechanics and energetics of movement across scales of size and structure, (The University of Queensland)

DeLuca Award Finalist: Simon Avrillon

Neuromechanical constraints on the control of motor units and its implications for neural interfacing, (Imperial College London)

DeLuca Award Finalist: Jakob Škarabot

Surface EMG decomposition and motor unit behaviour during high synchronisation activity, (Loughborough University)

Friday, Jun 28: 131+132 (3F)

10:00 AM - 11:30 AM

Oral Session 8: Motor unit & physiology

131+132 (3F)

Oral Session

(O.8.1) Utku Yavuz

0.8.1: Statistical and physiological variations in single motor unit reflex amplitude estimation, (The University of Twente)

(O.8.2) Sascha Selkmann

0.8.2: Comparison of FES induced muscle fatigue during isometric and isotonic forearm muscle contractions, (Ruhr-Universitaet Bochum)

(O.8.3) Prakarsh Yadav

0.8.3: Modulation of spinal motor neuron excitability by transcranial electrical stimulation, (PhD student)

(O.8.4) Karen Mackay

0.8.4: Caffeine attenuates discharge rate reduction during maximal sustained contractions, (Torrens University Australia)

(O.8.5) Jérémy Liegey

0.8.5: Changes in recruitment and motor unit firing patterns with deep brain stimulation for Parkinson's disease, (UCD)

(O.8.6) Tyler Henderson

0.8.6: Serotonergic modulation of lower and higher threshold motoneurons via 5-HT₂ receptors in humans, (Griffith University)

Chair: Trent Herda

Friday, Jun 28: 133+134 (3F)

10:00 AM - 11:30 AM

Oral Session 9: Signal processing & data fusion

133+134 (3F)

Oral Session

(O.9.1) Raul Simpetru

0.9.1: Uncertainty aware hand posture classification for better assistive devices in spinal cord injury patients, (Friedrich-Alexander-Universität Erlangen-Nürnberg)

(O.9.2) Shihan Ma

0.9.2: Conditional generative models to simulate motor unit action potentials during dynamic contractions, (Imperial College London)

(O.9.3) Homayoon Zarshenas

0.9.3: Development of an adaptive and generic model to forecast ankle motion based on EMG signals during walking at different speeds and inclines, (The University of Auckland)

(O.9.4) Shawn Beaudette

0.9.4: Automated movement screen: using smartphone videos to objectively appraise low back motor function, (Brock University)

(O.9.5) Jessica Wenghofer

0.9.5: The use of artificial intelligence and accessible smartphone technology for predicting the degree of spinal curvature in adolescents with adolescent idiopathic scoliosis, (University of Ottawa)

(O.9.6) Jeuhee Lee

0.9.6: Prediction of upper limb function from simple activity of daily living using deep learning in patients with stroke, (Yonsei University)

(O.9.7) Manuela Besomi

0.9.7: Planting the CEDE: Co-designing and co-developing knowledge translation strategies to implement current expert-based recommendations on electromyography – bridging evidence to practice, (University of Queensland)

Chair: Yasuharu Koike

Friday, Jun 28: 141+142 (4F)

10:00 AM - 11:30 AM

Oral Session 10: EMG & motor control

141+142 (4F)

Oral Session

(O.10.1) Tomoya Kitamura

0.10.1: Differences in the muscle activity pattern of the superficial trunk extensor muscles to the onset of the rectus femoris in the active straight leg raising score in the functional movement screen, (Saitama Prefectural University)

(O.10.2) Ryogo Takahashi

0.10.2: Modulation of activity and synchrony of ankle muscles during quiet standing by emotional intervention, (The University of Tokyo)

(O.10.3) Christian Sure

0.10.3: Distribution of forearm SEMG amplitude during isolated and combined activation of extrinsic hand and finger muscles, (Ruhr-Universitaet Bochum)

(O.10.4) Alessandra Giangrande

0.10.4: Volitional muscular activation alters cortical processing of ankle joint proprioceptive afference, (Politecnico di Torino)

(O.10.5) Atsushi Yamasaki

0.10.5: Center of pressure displacements during gait initiation in healthy children : Temporal and positional analysis, (Bunkyo Gakuin University)

(O.10.6) Kentaro Chino

0.10.6: Changes in electromyographic signals of the prime movers during sustained submaximal isometric bench press, (Kokugakuin University)

(O.10.7) Siripatra Atsawakaewmongkhon

0.10.7: Effect of inclined and declined slopes on postural balance and ankle muscle activity, (Paris Saclay University)

Chair: Alberto Botter

Friday, Jun 28: Event Hall (1F)

11:30 AM - 01:00 PM

Poster Session 2 + Lunch

Event Hall (1F)

Poster Session 2

Friday, Jun 28: Reception Hall (4F)

01:00 PM - 02:30 PM

Oral Award Session

Reception Hall (4F)

Award Session

(Oral.Award.1) Haydn Thomason

Oral.Award.1: Motor unit activity and muscle contractile properties during rapid contractions in long-term resistance trained and untrained individuals, (Loughborough University)

(Oral.Award.2) Benjamin Goodlich

Oral.Award.2: Antagonism of 5-HT₂ receptors attenuates self-sustained firing of human motor units, (Griffith University)

(Oral.Award.3) Yuyao Ma

Oral.Award.3: The neuromuscular control of the shoulder muscles in healthy individuals: a TMS study, (The University of Queensland)

(Oral.Award.4) Nikki Bonett

Oral.Award.4: Ischaemic block of large-diameter axons increases motor unit discharge rate non-linearity and hysteresis, (Loughborough University)

(Oral.Award.5) Gakuto Nakao

Oral.Award.5: Site-specific assessment of the mechanical properties of each hamstring muscle in human cadavers using shear wave elastography, (Sapporo Medical University)

(Oral.Award.6) Stefano Nuccio

Oral.Award.6: Neuroplastic alterations in common synaptic inputs and synergistic motor unit clusters controlling the vastii muscles of individuals with ACL reconstruction, (University of Rome "Foro Italico")

Chair: Francois Hug

Friday, Jun 28: 131+132 (3F)

01:00 PM - 02:30 PM

S.6: Cancelled

131+132 (3F)

Symposium

Sorry for the cancellation, this last minute change was out of our control.

Friday, Jun 28: 133+134 (3F)

01:00 PM - 02:30 PM

S.7: Exoskeletons for health

Organiser: Pascal Madeleine

133+134 (3F)

Symposium

(S7.1) Pascal Madeleine

S7.1 - Exoskeletons for more or better physical activity?, (Aalborg University)

(S7.2) Cristina-Ioana Pircoveanu

S7.2 - The effect of wearing a hip assistive exoskeleton on walking characteristics during dual-tasking, (Aalborg University)

(S7.3) Kévin Desbrosses

S7.3 - Muscle activities and kinematics during a shoulder flexion with the use of a physical assistance, (French National Institute of Occupational Health and Safety)

(S7.4) Divya Srinivasan

S7.4 - A comparative evaluation of passive vs. powered back-support exoskeletons for assisting load carriage, (Clemson University)

Friday, Jun 28

02:30 PM - 02:45 PM

Transition

Friday, Jun 28: Reception Hall (4F)

02:45 PM - 03:45 PM

Keynote 4: Yasuo Kawakami

Muscle mechanics and joint actions, revisited

Reception Hall (4F)

Keynote

Yasuo Kawakami
Waseda University

Chair: Taku Wakahara

Friday, Jun 28

03:45 PM - 04:00 PM

Transition

Friday, Jun 28: Reception Hall (4F)

04:00 PM - 05:30 PM

S.8: International Motoneuron Society: non-invasive methods to understand human motoneuron physiology in health, disease, and training

Organiser: Greg Pearcey

Reception Hall (4F)

Symposium

(S8.1) Allison Hyngstrom

S8.1 - Fatigue matters – force regulation and motor unit firing behavior in fatiguing contractions post stroke, (Marquette University)

(S8.2) Sophie Jenz

S8.2 - Sex matters – biological sex and hormonal effects on estimating motoneuron properties in humans, (Northwestern University)

(S8.3) Helio Cabral

S8.3: Behavioural context matters – motor unit discharge behavior during isolated and synergistic finger movements, (Università degli Studi di Brescia)

(S8.4) Duane Button

S8.4 - Training status matters – chronic training-induced plasticity of the human cortico-motoneuronal pathway, (Memorial University of Newfoundland)

(S8.5) Jakob Škarabot

S8.5: Intensity matters – training and ageing-induced adaptations in the discharge behaviour of human motor unit populations, (Loughborough University)

Friday, Jun 28: 131+132 (3F)

04:00 PM - 05:30 PM

S.9: From lab to living room - opportunities, challenges and potential using smart textiles and wearable solutions to facilitate self-administered home-based rehabilitation

Organiser: Leif Sandsjö

131+132 (3F)

Symposium

(S9.1) Leif Sandsjö

S9.1 - Co-creation of smart textile interventions for home-based rehabilitation after stroke – a case study, (University of Borås)

(S9.2) Li Guo

S9.2 - Phantom limb pain treatment at home facilitated by a textile electrode system – a case study, (University of Borås)

(S9.3) Yohann Opolka

S9.3 - Integrating textile electrodes into pants for transcutaneous electrical nerve stimulation in postoperative pain relief, (University of Borås)

(S9.4) Elisa Romero Avila

S9.4: Easy-to-use sEMG wearable device to monitor muscle activity at the clinic or at home, (Institute of Applied Medical Engineering)

(S9.5) Xi Wang

S9.5 - Gel-free textile-based electrodes for enhanced surface Electromyography: towards efficient home-based health applications, (University of Borås)

Friday, Jun 28: 133+134 (3F)

04:00 PM - 05:30 PM

Oral Session 11: Biomechanics & sports sciences

133+134 (3F)

Oral Session

(O.11.1) Wei-Li Hsu

0.11.1: Association between trunk rotation sequence and pitching velocity in college baseball pitchers using inertial measurement units, National Taiwan University

(O.11.2) Yen-Wei Chiu

0.11.2: Kinematic comparisons of Taiwanese and Japanese university baseball pitchers, (National Sun Yet-Sen University)

(O.11.3) Wayne Albert

0.11.3: Muscular demand associated with three different techniques for moving patients vertically in a hospital bed, (University of New Brunswick)

(O.11.4) Shinichi Kawamoto

0.11.4: The role of biarticular muscles during squat-to-stand task: a consideration of bimodal ground reaction force-time curves, (Graduate School of Medicine Kyoto University)

(O.11.5) Kelly Robb

0.11.5: Neuromuscular control at the ankle joint when completing a proprioceptive task wearing textured foot orthoses, (Wilfrid Laurier University)

(O.11.6) Mathias Kristiansen

0.11.6: Functional connectivity between muscle pairs decreases in the final stage of a 2000-meter all-out kayak ergometer test, (Aalborg University)

Chair: Sumiaki Maeo

Friday, Jun 28: 141+142 (4F)

04:00 PM - 05:30 PM

Oral Session 12: Muscle fatigue

141+142 (4F)

Oral Session

(O.12.1) Nicole Voet

0.12.1: Surface electromyography thresholds as a measure for performance fatigability during incremental cycling in patients with neuromuscular disorders, (Radboudumc/ Klimmendaal)

(O.12.2) Sergi Garcia-Retortillo

0.12.2: Dynamic networks of cardio-muscular interactions during exercise, (Wake Forest University)

(O.12.3) Hao-Yuan Hsiao

0.12.3: Quantitative estimation of maximum isometric torque and muscle fatigue on forearm supination-pronation, (National Sun Yat-sen University)

(O.12.5) Andres Ubeda

0.12.5: EMG biomarkers for fatigue prediction during isometric wrist flexion, (University of Alicante)

(O.12.6) Giacomo Valli

0.12.6: Recovery of muscle endurance and muscle fibres conduction velocity after intensive care unit discharge, (Università degli Studi di Brescia)

Chair: Karen Sogaard

Friday, Jun 28

07:30 PM - 09:30 PM

Congress Banquet @ Koyoen BBQ

Koyoen Barbeque Restaurant

Social Event

Join us at Koyoen BBQ Restaurant for the Banquet! Approximately 10 minutes on foot from Fukiage Station, approximately 13 minutes on foot from Tsurumai Station, approximately 13 minutes on foot from Chikusa Station.

Saturday, Jun 29: 436 (2F)

08:00 AM - 05:00 PM

Parenting/Nursing Space

436 (2F)

Saturday, Jun 29

08:00 AM - 05:00 PM

Registration/Info Desk

Please feel free to drop by at any time during the opening hours specified, we'll be happy to assist with anything from directions to luggage storage.

Saturday, Jun 29: Reception Hall (4F)

08:30 AM - 09:30 AM

Keynote 5: Sandra Hunter

Aging and Motor Performance: The Protective Effects of Exercise

Reception Hall (4F)

Keynote

Sandra Hunter

Marquette University

Chair: Minoru Shinohara

Saturday, Jun 29: Event Hall (1F)

09:30 AM - 10:00 AM

Break

Event Hall (1F)

Saturday, Jun 29: Reception Hall (4F)

10:00 AM - 11:30 AM

S.10: Factors influencing neuromodulation of motoneurons and/or PICs: What do human studies tell us and what are the applications?

Organiser: Jacob Thorstensen

Reception Hall (4F)

Symposium

(S10.1) Jacob Thorstensen

S10.1 - Pharmacological manipulations of the serotonergic system reveal neuromodulatory effects at human motoneurons, but what do different tests of motoneuron excitability tell us?, (Bond University)

(S10.2) Greg Pearcey

S10.2 - PICture this – an expansive analysis repertoire for unravelling the effects of persistent inward currents on the control of human motor output, (Memorial University of Newfoundland)

(S10.3) Francois Hug

S10.3 - Effect of experimental joint pain on estimates of persistent inward currents, (Université Côte d'Azur)

(S10.4) Lucas Orsatto

S10.4 - Altered motor neurone firing patterns unravel impaired neuromodulatory and inhibitory effects on persistent inward currents in older adults, (Deakin University)

Saturday, Jun 29: 131+132 (3F)

10:00 AM - 11:30 AM

S.11: Neurorehabilitation pipeline for upper extremity motor paralysis after stroke: xR, non-invasive brain stimulation, and Constraint-induced movement therapy

Organiser: Fuminari Kaneko

131+132 (3F)

Symposium

(S11.1) Fuminari Kaneko

S11.1 - Rehabilitation treatment package for optimal option adaptation to the stroke survivor's individual motor function, (Tokyo Metropolitan University)

(S11.2) Takashi Takebayashi

S11.2 - Robotic rehabilitation for upper limb motor disorders after stroke, (Osaka Prefecture University)

(S11.3) Michiyuki Kawakami

S11.3 - Applications of transcranial magnetic stimulation in rehabilitation medicine, (Keio University School of Medicine)

Saturday, Jun 29: 133+134 (3F)

10:00 AM - 11:30 AM

Oral Session 13: Muscle biomechanics

133+134 (3F)

Oral Session

(O.13.5) Javier Rodriguez-Falces

0.13.5: The process of filling of the sEMG signal with motor unit potentials as force is gradually increased in the quadriceps, (Public University of Navarra)

(O.13.1) Corrado Cescon

0.13.1: Shear wave tensiometry for the evaluation of Achilles tendon loading: a cross-sectional study on conservatively treated tendons after rupture, (University of Applied Sciences and Arts of Southern Switzerland)

(O.13.2) Manuela Zimmer

0.13.2: In vivo non-invasive assessment of skeletal muscle behavior using shear wave elastography: Active and passive force-length characteristics of the triceps surae muscle group, (University of Stuttgart)

(O.13.3) Marc-Olivier Dubé

0.13.3: Supraspinatus tendon thickness changes following therapeutic exercises for patients with rotator cuff-related shoulder pain; secondary analyses of two randomised controlled trials, (La Trobe University)

(O.13.4) Gregorio Dotti

0.13.4: Development and validation of a MIMU-based wearable device for telerehabilitation: a reach-to-grasp protocol study, (Politecnico di Torino)

(O.13.5) Kristen Meiburger

0.13.5: Effect of the ultrasound frame rate and beamforming method on fascicle tracking during dynamic contractions, (Politecnico di Torino)

(O.13.6) Jun Umehara

0.13.6: Three-dimensional shape of skeletal muscle determines muscle strength in older adults, (Kansai Medical University)

(O.13.7) Robin Rohlén

0.13.7: Identifying motor unit spike trains in ultrasound images comprised of varying successive twitch-like shapes and degrees of fusion in isometric contractions, (Lund University / Imperial College London)

Chair: Katsuki Takahashi

Saturday, Jun 29: 141+142 (4F)

10:00 AM - 11:30 AM

Oral Session 14: Rehabilitation & physiology

141+142 (4F)

Oral Session

(O.14.1) Chich-Haung Yang

0.14.1: Sensorimotor control of quadriceps muscles after anterior cruciate ligament reconstruction: a case-control study, (Tzu Chi University)

(O.14.2) Vicki Gray

0.14.2: Predicting lateral perturbation-induced stepping leg with electromyography of the lower limb muscles, (University of Maryland School of Medicine)

(O.14.3) Yukihiro Mizuno

0.14.3: Differences in ground reaction forces between the intact and prosthetic limbs during sit-to-stand task in individuals with unilateral transfemoral amputation, (Tokyo university of science)

(O.14.4) Yu-Chen Chung

0.14.4: Effect of acute increase in estradiol level on cutaneous silent period in young healthy females, (University of Texas Southwestern Medical Center)

(O.14.5) Nyeonju Kang

0.14.5: Non-invasive brain stimulation effects on dual-task performances in patients with Parkinson's disease: A meta-analysis, (Incheon National University)

(O.14.7) Maximilian Siebert

0.14.7: Influence of a subject's level of technology acceptance on muscular coactivation during usage of an assistive robotic system, (Institute of Applied Medical Engineering)

Chair: David Selkowitz

Saturday, Jun 29: Event Hall (1F)

11:30 AM - 01:00 PM

Poster Session 3 + Lunch

Event Hall (1F)

Poster Session 3

Saturday, Jun 29: Reception Hall (4F)

01:00 PM - 02:00 PM

General Assembly

Reception Hall (4F)

Saturday, Jun 29: Reception Hall (4F)

02:00 PM - 03:00 PM

Keynote 6: Kazunori (Ken) Nosaka

Basics of eccentric exercise and its applications for health-related fields

Reception Hall (4F)

Keynote

Kazunori (Ken) Nosaka

School of Medical and Health Sciences, Edith Cowan University

Chair: Anthony Blazevich

Saturday, Jun 29

03:00 PM - 03:15 PM

Transition

Saturday, Jun 29: Reception Hall (4F)

03:15 PM - 04:45 PM

S.12: Back in action: muscles, mechanics, and movement in adolescent idiopathic scoliosis

Organiser: Kylie Tucker

Reception Hall (4F)

Symposium

(S12.1) Phoebe Duncombe

S12.1 - Quantifying full spine paraspinal muscle volume, intramuscular fat and fat-free muscle asymmetry in adolescent idiopathic scoliosis, (The University of Queensland)

(S12.2) Phoebe Ng

S12.2 - Maximal and asymmetrical submaximal paraspinal muscle activation in Adolescent Idiopathic Scoliosis during simple back extension tasks, KK Women's and Children's Hospital

(S12.3) Juha-Pekka Kulmala

S12.3 - Towards understanding paraspinal muscle activation asymmetry in idiopathic scoliosis – A pilot study, (Helsinki University Hospital)

(S12.4) Ryan Graham

S12.4 - Novel technology and methods for the assessment of deformity and function in Adolescent Idiopathic Scoliosis, (University of Ottawa)

Saturday, Jun 29: 131+132 (3F)

03:15 PM - 04:45 PM

Oral Session 15: Biomechanics & EMG

131+132 (3F)

Oral Session

(O.15.1) Lilian Lacourpaille

O.15.1: Prediction of the distribution of muscle damage among hamstring heads during Nordic hamstring and stiff-leg deadlift exercises, (University of Nantes)

(O.15.2) Chon Kio Wong

O.15.2: Scapular kinematics and associated muscle activity in scapular-focused closed and open kinetic chain exercises, (National Taiwan University)

(O.15.3) Taylor Dick

O.15.3 - Consensus for experimental design in electromyography (CEDE) project: Checklist for reporting and critically appraising studies using EMG (CEDE-Check), (The University of Queensland)

(O.15.4) Ciaran Mcgeady

O.15.4: Movement specific beta-band modulation during movement cancellation in EMG, (Imperial College London)

(O.15.5) Xinhui Li

O.15.5: A myoelectric pattern recognition method against electrode shifts with adaptive feature sampling, (Anhui University)

(O.15.6) Ge Gao

O.15.6: Enhance the robustness of myoelectric control in the presence of low-signal-quality electrodes, (University of Science and Technology of China)

(O.15.7) Xin Ye

O.15.7: Effects of percussion massage therapy on exercise-induced muscle damage, (University of Hartford)

Chair: Roopam Dey

Saturday, Jun 29: 133+134 (3F)

03:15 PM - 03:45 PM

Oral Session 16: Motor units & adaptations

133+134 (3F)

Oral Session

(O.16.1) Kazutaka Ota

0.16.1: Influence of temperature on motor unit activity during ballistic contraction, (The University of Tokyo)

(O.16.2) Matheus Gomes

0.16.2: Voluntary co-contraction of ankle muscles alters motor unit discharge characteristics and reduces estimates of persistent inward currents, (University of São Paulo)

(O.16.3) Zuyu Du

0.16.3: The influence of low-intensity vibration on motor unit firing rate and muscle fatigue, (Shanghai University)

(O.16.5) Tetsuya Hirono

0.16.5: Motor unit firing properties of knee extensors immediately after repeated static stretching of rectus femoris in healthy males, (Kyoto University)

(O.16.6) Wolbert Van Den Hoorn

0.16.6: Common neural input to deltoid segments: preliminary findings on control, Queensland University of Technology

(O.16.7) Andrea Casolo

0.16.7: Changes in discharge properties of longitudinally-tracked motor units after four weeks of isometric strength training in older adults, (University of Padua)

Chair: Jakob Škarabot

Saturday, Jun 29: 141+142 (4F)

03:15 PM - 04:45 PM

Oral Session 17: Rehabilitation & motor control

141+142 (4F)

Oral Session

(O.17.1) Momoko Yamagata

0.17.1: Effects of subthreshold electrical stimulation with pink noise on treadmill walking, (Kansai Medical University)

(O.17.2) Yang-Ting Chien

0.17.2: Effect of Neuromuscular electrical stimulation on the humeral adductors in patients with rotator cuff tear, (National Taiwan University)

(O.17.3) Yi-Hsuan Weng

0.17.3: Novel brace with neuromuscular electrical stimulation in patients with full-thickness rotator cuff tear: a randomized controlled trial, (National Taiwan University)

(O.17.4) David Selkowitz

0.17.4: The effect of femoral strapping on excessive hip internal rotation and pain response in females with patellofemoral pain, (MGH Institute of Health Professions)

(O.17.5) Kenya Tanamachi

0.17.5: Changes in tonic vibratory reflex after visually induced kinesthetic illusion therapy in post-stroke patients with spasticity, (Tokyo Metropolitan University)

(O.17.6) Taro Morikami

0.17.6: Characteristics of electromyographic activity during yoga-applied lunge exercise, (Saitama Medical University)

(O.17.7) Kuan-Yun Liu

0.17.7: Influence of diaphragm and breathing on shoulder kinematics and associated muscle activity, (National Taiwan University)

Chair: Toshiaki Miyamoto

Saturday, Jun 29: Reception Hall (4F)

04:45 PM - 05:15 PM

Awards + Closing

Reception Hall (4F)

Award Session



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