Poster Abstract Summary

(ordered by poster session & theme)

Poster Session I

Wednesday, July 6

A - EMG recording, modeling, and signal processing
B - Motor performance and sports science
C - Sensorimotor control
D - Rehabilitation technologies
E - Movement disorders
F - Motor units
G - Neural Engineering
H - Neuromechanics
I - Novel measurement technologies
J - Ergonomics
K - Muscle physiology

A - EMG recording, modeling, and signal processing

P1-A-1 Bilateral and unilateral training does not affect classification accuracy for prosthesis control

Usha Kuruganti¹, Victoria Chester¹, Ashirbad Pradhan²

¹University of New Brunswick, ²National Institute of Technology

P1-A-2 Assessment of muscular fatigue and force by double normalized surface electromyography spectrum - proof of concept

Robert Seibt¹, Monika Rieger¹, Benjamin Steinhilber¹

¹University Hospital Tübingen

P1-A-3 Concentric and eccentric muscle activation of patients with knee osteoarthritis during dynamic contractions - A categorized and probabilistic analysis.
P1-A-4  EMG-force relationship of the lower posterior neck during isometric contractions
Riccardo Lo Martire¹, Kristofer Gladh¹, Anton Westman¹, Björn Äng¹
¹Karolinska Institutet

P1-A-5  A method for evaluation of dependency between diseased side and opposite side of hemiplegia patient during FES-Cycling by using transfer entropy
Mai Nozakura¹, Soichiro Morishita¹, Misato Ohdaira¹, Yinlai Jiang¹, Hiroshi Yokoi¹
¹The University of Electro-Communications

P1-A-7  Decomposition of Clinically-Detected EMG Signals Using Dynamic Time Warping and Spectral Clustering
Meena AbdelMaseeh¹, Daniel Stashuk¹
¹University of Waterloo

P1-A-8  Different responses of fingertip forces and muscle activity of the enslaved finger during dynamic tasks
Mojtaba Mirakhorlo¹, Dirkjan Veeger¹, Dick Stegeman², Huub Maas¹
¹Vrije university (VU), ²Radboud University Nijmegen Medical Centre

P1-A-9  Effect of yoga on balance, lumbopelvic stability and back muscles power in women
P1-A-10 Dynamic Curve Analysis of Surface EMG Patterns of Abdominal Muscle as a Function of Exercise and Load
Adam King¹, Rachel Meyer¹, Alex Sextro¹, Michael Bird¹
¹Truman State University

P1-A-11 Use of high density EMG grid recordings to characterize the level of injury in individuals sustaining cervical spinal cord injury
Babak Afsharipour¹, Milap Sandhu¹, Ghulam Rasool¹, William Rymer¹
¹Northwestern University

P1-A-12 Reliability of muscle fiber conduction velocity and fractal dimension of surface EMG during isometric contractions
Matteo Beretta-Piccoli¹, Corrado Cescon¹, Giuseppe D’Antona², Cristian Zampella³, Ron Clijsen¹, Marco Barbero¹
¹University of Applied Sciences and Arts of Southern Switzerland, ²University of Pavia

B - Motor performance and sports science

P1-B-13 A comparison of knee joint kinematics and kinetics during landings in three one-leg hop tests (hop for distance, vertical hop and side hop) performed by female elite floorball athletes.
Jonas Markström¹, Eva Tengman¹, Helena Grip¹, Lina Schelin¹, Charlotte Häger¹
¹Umeå University
P1-B-14 The Kinematic Chain Ratio of Pronation-to-Supination of the Calcaneus and Internal-to-External Rotation of the Shank Affects Calcaneus Motion during Gait
Masahiro Edo¹, Sumiko Yamamoto²
¹Bunkyo Gakuin University, ²International University of Health and Welfare

P1-B-15 Effects of Non-local Fatigue on EMG Amplitude During Dynamic Resistance Exercise
Anthony Ciccone¹, Cory Schlabs¹, Joseph Weir¹
¹University of Kansas

P1-B-16 Electromyographic analysis of the soleus and vastus lateralis muscles during squat exercise with and without isometric contraction in the end of eccentric phase
Caluê Papcke¹, Keith Sato¹, Lisandra Edimundo¹, Eddy Krueger², Percy Nohama¹, Eduardo Scheeren¹
¹Pontificia Universidade Católica do Paraná, ²Universidade Tecnológica Federal do Paraná

P1-B-17 Muscle fatigue in vibration exercise at different frequencies
Lin Xu¹, Chiara Rabotti¹, Massimo Mischi¹
¹Eindhoven University of Technology

P1-B-18 Effects of Neuromuscular Training for Runners with Flexible Flatfoot and Related Running Injuries
Wenyin Chen¹, Fushiang Chang¹, Wendy Wang¹
¹National Yang Ming University

P1-B-19 Does longer application of kinisiotape delay the muscle fatigue of the knee joint during isotonic flexion/extension?
Joseph Pliner¹, Naira Campbell-Kyureghyan¹
¹University of Wisconsin-Milwaukee

**P1-B-20 Shoulder problems in elite adolescent handball players - The Karolinska Handball Study**
Martin Asker¹, Lena Holm¹, Henrik Källberg¹, Markus Waldén², Eva Skillgate¹
¹Karolinska Institutet, Institute of Environmental Medicine, ²Linköping University

**P1-B-21 Shoulder strength among healthy adolescent elite handball players**
Martin Asker¹, Lena Holm¹, Henrik Källberg¹, Markus Waldén², Eva Skillgate¹
¹Karolinska Institutet, Institute of Environmental Medicine, ²Linköping University

**P1-B-22 Comparison of biomechanical characteristics of rowing performance between elite and non-elite scull rowers: a pilot study**
Han Yeop Cho¹, Jin Sun Kim¹, Han Yeop Cho¹, Soya Yoon¹, Hae-Dong Lee¹
¹Yonsei University

**P1-B-23 Effect of cryotherapy on eccentric exercise-induced muscle damage: a randomized clinical trial.**
Liane Macedo¹, Daniel Borges¹, Caio Alano Lins¹, Jamilson Brasileiro¹
¹Federal University of Rio Grande do Norte

**P1-B-24 Effect of whole body vibration on isokinetic performance and muscle activation of the quadriceps femoris: a randomized controlled trial**
Daniel Borges¹, Liane Macedo¹, Caio Lins¹, Jamilson Brasileiro¹
P1-B-25 Immediate effects of stretching exercises on the electromyographic activity of hamstring muscles, before and after performing physical activities: a randomized controlled trial
Manuele Jardim Pimentel¹, Rodrigo Marcel Valentim da Silva¹, Daniel Tezoni Borges¹, Liane de Brito Macedo¹, Jamilson Simões Brasileiro¹
¹Universidade Federal do Rio Grande do Norte

P1-B-26 Examination of Lower Limb Ambidextrous Execution of the Snap Down Technique in Folk Style Wrestling
Nicholas DeCastro¹, Tom Wu¹, Pamela Russell¹, Kathleen Laquale¹
¹Bridgewater State University

P1-B-27 Computer mouse design and ergonomic mouse pads influence wrist angle, forearm extensor and upper trapezius muscle activity
Sharika Udipi¹, Kylie Tucker¹, Sharika Udipi¹, Hweekoon Yeo¹, Torbjorn Selas¹, Michel Coppieters²
¹The University of Queensland, ²Vrije Universiteit Amsterdam

P1-B-28 Kinesio Taping promotes neither immediate nor delayed changes in neuromuscular performance in healthy, active women
Jamilson Brasileiro¹, Caio Lins¹, Daniel Borges¹, Karinna Costa¹, Liane Macedo¹
¹Federal University Of Rio Grande Do Norte

C - Sensorimotor control

P1-C-29 Quantification of the expression of the flexion synergy using reach kinematics in pediatric hemiplegia
P1-C-30 Priming the motor cortex by electrical stimulation of back muscles
Edith Elgueta Cancino¹, Hugo Masse-Alarie², Siobhan Schabrun¹, Paul Hodges¹
¹University of Queensland, ²Université Laval

P1-C-31 Effect of Movement Velocity on Hip and Knee Muscle Onset Latency During a Single Leg Squat in Subjects with and Without Patellofemoral Pain Syndrome
Ignacio Orozco-Chavez¹, Guillermo Mendez-Rebolledo¹
¹University of Talca

P1-C-32 Contributions of vestibular and somatosensory systems to quiet standing in sighted and congenitally blind people
Masaki Iguchi¹, Hideki Kadone², Richard Shields³
¹Tsukuba University of Technology, ²University of Tsukuba, ³University of Iowa

P1-C-33 Decomposition of gyroscopic trunk sway for clinical assessment of standing balance
Tomas Bäcklund¹, Fredrik Ohberg¹, Helena Grip¹, Nina Sundström¹
¹Umeå University

P1-C-34 Relationship between center of pressure and medio-lateral directions in the functional reach test: clinical projection in spinal cord injury
J. Claudio López-Monárdez¹, Valeska Gatica-Rojas¹
P1-C-35 Effect of body weight support on muscle activities during walking and running using a lower body positive pressure treadmill in healthy adults
Kiyotaka Kamibayashi¹, Shodai Yoshida¹, Taku Wakahara¹, Kojiro Ishii¹, Yoshinobu Ohira¹
¹Doshisha University

P1-C-36 The effect of acute pain and motor learning on sensorimotor integration and accuracy using a motor tracing task
Erin Dancey¹, Bernadette Murphy¹, Paul Yelder¹, Danielle Andrew¹
¹UOIT

P1-C-37 Effect of neuromuscular electrical stimulation on motor cortex excitability upon release of tonic muscle contraction
Kenichi Sugawara¹, Shigeo Tanabe¹, Tomotaka Suzuki², Toshio Higashi³
¹Fujita Health University, ²Kanagawa University of Human Services, ³Nagasaki University

P1-C-38 Trunk muscle activation during position-control tasks in sitting
Martin Eriksson Crommert¹, Kylie Tucker², Paul Hodges²
¹University Health Care Research Centre, Örebro University, ²The University of Queensland

P1-C-39 Altered integration of proprioceptive information for balance control is linked with prospective falls
Wolbert van den Hoorn¹, Graham Kerr², Jaap van Dieën³
D - Rehabilitation technologies

P1-D-40 Spike timing-dependent plasticity in lower-limb muscles after incomplete spinal cord injury
Mike Urbin¹, Monica Perez¹
¹University of Miami School of Medicine

P1-D-41 Distributed stimulation to augment force evoked with functional electrical stimulation
Ali Buckmire¹, Andrew Fuglevand¹, Danielle Lockwood¹
¹University of Arizona

P1-D-42 Long latency responses induced by Robotic Neuromodulatory Rehabilitation System for Paired Associative Stimulation
Euisun Kim¹, Jun Ueda¹, Minoru Shinohara¹, Ilya Kovalenko¹
¹Georgia Institute of Technology

P1-D-43 ’Off-the-shelf’ foot orthoses change knee load during walking in people with patellofemoral pain and mobile feet
Natalie Collins¹, Harvi Hart², Jason Bonacci³, Bill Vicenzino¹, Kay Crossley²
¹The University of Queensland, ²La Trobe University, ³Deakin University

P1-D-44 Activity-dependent axonal hyperpolarization contributes to NMES-induced contraction fatigability
Minh Luu¹, David Collins¹, Kelvin Jones¹
¹University of Alberta

P1-D-45 Performance and brain activation during slow speed and anatomical motion movie observation
Akio Ueda¹, Hiroshi Kurumadani¹, Toru Sunagawa¹
¹Hiroshima University

P1-D-46 Evidence-based prescription of shoulder rehabilitation exercises as determined by EMG
David Hawkes¹, Simon Frostick¹
¹University of Liverpool

P1-D-47 The effect of circumferential pressure on soleus muscle stiffness
James Agostinucci¹, Peter Blanpied¹
¹University of Rhode Island

P1-D-48 Effects on cervical spine kinematics following Ergo-Motor intervention: an integrated approach combining motor control training and ergonomics
Sharon Tsang¹, Billy CL So¹, LK Hung², SW Law², Grace PY Szeto¹
¹The Hong Kong Polytechnic University, ²Chinese University of Hong Kong

P1-D-49 Validity of estimation of pelvic floor muscle activation through transperineal ultrasound imaging in women
Cindy Auchincloss¹, Stephanie Thibault-Gagnon¹, Ryan Graham², Linda McLean³
P1-D-50  System Identification of Two Degrees of Freedom EMG-Force at the Hand-Wrist Using Dynamic Models
Chenyun Dai¹, Carlos Martinez-Luna², Thane Hunt², Ziling Zhu¹, Todd Farrell², Edward Clancy¹
¹Worcester Polytechnic Institute, ²Liberating Technologies, Inc.

P1-D-51  In vivo characterization of muscle viscoelastic properties using shear wave elastography
Allison Wang¹, Eric Perreault¹, Sabrina Lee¹
¹Northwestern University

P1-D-52  Reorganization of neuromuscular coordination when learning new cycling tasks
Diego Torricelli¹, Cristiano De Marchis², Daniel Nemati Tobaruela³, Filipe Barroso¹, Jose Pons¹
¹Consejo Superior de Investigaciones Científicas, ²Università Roma Tre, ³University Carlos III

E - Movement disorders

P1-E-53  Changes in the respiratory and the stomatognathic system caused by idiopathic scoliosis
Saulo Fabrin¹, Bárbara de Lima Lucas¹, Edson Donizetti Verri¹, Eloisa Maria Gatti Regueiro², Evandro Marianetti Fioco¹, Marcelo Palinkas¹, Danilo Stefani Esposto¹, Nayara Soares¹, Oswaldo Stamato Taube¹, Simone Ceílio Hallak Regalo¹
¹University of São Paulo, ²UNIFAFIBE- University Center

P1-E-54  Functional analysis of the stomatognathic system in individuals with fibromyalgia syndrome
Victor Nepomuceno¹, Bruno Ferreira¹, Gabriel Silva¹, Marcelo Palinkas¹, Oswaldo Luiz Taube², Selma Siéssere¹, Marisa Semprini¹, Simone Cecílio Regalo¹
P1-E-55  Effects of regionally selective activation of trunk muscles on dimensions of upper and lower thoraxes during respiration

Riho Higashi¹, Naoya Nishida², Tatsuya Ishizuka³, Yukisato Ishida⁴, Fujiyasu Kakizaki⁴

¹IMS group Itabashi Chuo Medical Center, Tokyo, Japan, ²Sonoda Second Hospital, ³IMS group Tokyo Nephro Urology Center Yamato Hospital, ⁴Bunkyo Gakuin University

P1-E-56  Evaluation and analysis of respiratory muscle strength of patients with multiple sclerosis

Marília Martins de Oliveira Pupim¹, Michelle Bazilio Milan¹, Saulo Fabrin², Danilo Stefani Esposto³, Gabriel Pádua da Silva², Evandro Matianetti Fioco², Simone Cecilio Hallak Regalo², Edson Donizetti Verri²

¹Claretiano University Center, ²University of São Paulo

P1-E-57  Analysis of the chewing in women post-mastectomy - pilot study

Danilo Esposto¹, Marcelo Palinkas², Saulo Fabrin³, Bárbara Lucas⁴, Edson Verri², Paulo Vasconcelos², Vânia Ferreira³, Elaine Guirro¹, Eduardo Chedid², Simone Regalo²

¹Ribeirão Preto Medical School, University of São Paulo, ²School of Dentistry of Ribeirão Preto, University of São Paulo, ³Ribeirão Preto Medical School, University of São Paulo, Brazil, ⁴Federal University of Jataí

P1-E-58  Length dependence of the shear elastic properties of the biceps brachii after stroke

Andrew Lai¹, Nina Suresh¹, Xiaogang Hu³, Zev Rymer¹

¹Northwestern University, ²University of North Carolina/ North Carolina State University
P1-E-59 Acute Intermittent Hypoxia Augments Upper Limb Neuromotor Function in Persons with Spinal Cord Injury

Milap Sandhu¹, Babak Afsharipour¹, Ghulam Rasool¹, Andres Cardona¹, William Zev Rymer¹
¹Rehabilitation Institute of Chicago

P1-E-60 Evaluation of the masticatory and cervical muscles in women post-mastectomy - pilot study

Danilo Esposto¹, Marcelo Palinkas², Saulo Fabrin², Bárbara Lucas³, Edson Verri³, Paulo Vasconcelos³, Vânia Ferreira¹, Elaine Guirro¹, Eduardo Chedid³, Simone Regalo²
¹Ribeirão Preto Medical School, University of São Paulo, ²School of Dentistry of Ribeirão Preto, University of São Paulo, ³Federal University of Jataí

P1-E-61 Effect of total knee arthroplasty on balancing capacity after sudden perturbation in patients with bilateral knee osteoarthritis

Gréta Szabó¹, Gergely Nagymáté¹, Rita Kiss¹
¹Budapest University of Technology and Economics


Can Yucesoy¹, Cemre Su Kaya¹, Yener Temelli², Filiz Ates³
¹Bogazici University, ²Istanbul University, ³Waseda University

P1-E-63 Influence of the ataxia on the masticatory efficiency

Bruno Ferreira¹, Ligia Napolitano Gonçalves², Veridiana Arnoni², Gabriel Silva¹, Camila Gonçalves³, Isabela Regalo², Sandra Rancan², Oswaldo Stamato Taube³, Selma Siéssere², Simone Hallak Regalo²
¹School of Medicine of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil, ²School of Dentistry of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil
P1-E-64 Characterization of Passive Muscle Viscoelastic Properties in Hemiplegic Stroke
Ghulam Rasool¹, Allison Wang², William Rymer³, Sabrina Lee²
¹Rehabilitation Institute of Chicago, ²Northwestern University

P1-E-65 Older and young adults with chronic low back pain present increased back muscle fatigue
Alexandre Nowotny¹, Edgar Vieira³, Marcos Cabrera³, Leandro Altimari⁴, Andreo Aguiar¹, Adriana Carvalho¹, Marcio Oliveira¹, Rubens da Silva¹
¹Universidade Norte do Parana (UNOPAR), ²Florida International University, ³Universidade Estadual de Londrina (UEL), ⁴Universidade Estadual de Londrina

F - Motor units

P1-F-66 Motor unit firing pattern of vastus lateralis muscle and its association with the strength capacity in the elderly
KOHEI WATANABE¹, Ales Holobar², Motoki Kouzaki³, Madoka Ogawa⁴, Hiroshi Akima⁴, Toshio Moritani³
¹Chukyo University, ²University of Maribor, ³Kyoto University, ⁴Nagoya University

P1-F-67 Effect of posture on motor unit control investigated by decomposition techniques in adults after stroke
Mizuki Daimon¹, Koji Ohata¹, Ryosuke Kitatani⁹, Yu Hashiguchi¹, Ayaka Maeda¹, Shihomi Kawasaki¹, Masanori Wakida¹
¹Kyoto university

P1-F-68 Evaluation of neuromuscular activation and force tracking accuracy during isometric sine-wave force exertion
Aya Tomita¹, Hiroshi Akima¹
¹Nagoya University

**P1-F-69 Cutaneous post-synaptic potentials from the in vivo cat**

Christopher Thompson¹, Michael Johnson³, Matthieu Chardon², Francesco Negro³, Dario Farina³, Charles Heckman²
¹Temple University, ²Northwestern University, ³University Medical Center, Georg-August University

**P1-F-70 Motor unit synchronization during linear motor commands**

Sarah Hruby¹, Hsaun Kang¹, Ina Joshi¹, David Hurley¹, Francesco Negro², Dario Francesco², Jules Dewald¹, Charles Heckman¹, Christopher Thompson³
¹Northwestern University, ²Georg-August University, ³Temple University

**P1-F-71 Motor axon excitability properties of the human gastrocnemius and soleus muscles**

Cliff Klein¹, Chen Ning Zhao¹, Hui Liu¹, Ping Zhou¹
¹Guangdong Provinical Work Injury Rehabilitation Center

**P1-F-72 Evaluation of the neuromuscular fatigue in long-lasting cardiothoracic surgeries, using multi-channel EMG**

Tiago Lopes³, Miguel Correia¹
¹Faculdade de Engenharia da Universidade do Porto

**G - Neural Engineering**

**P1-G-73 Feasibility study on effects of free bubble insole for walking**

Tohru Kiryu¹, Toshio Murayama², Kentaroh Yamaguchi³, Kensuke Otsuka³
P1-G-74 Mitigating the effect of wrist kinematics on pattern recognition control
Adenike Adewuyi¹, Levi Hargrove¹, Todd Kuiken¹
¹Northwestern University

P1-G-75 Towards the restoration of hand function using fully wireless cortically-controlled functional electrical stimulation
Juan Gallego¹, Stephanie Naufel¹, Steven Lanier¹, Lee Miller¹
¹Northwestern University

Poster Session II
Thursday, July 7

A - EMG recording, modeling, and signal processing

P2-A-1 A Systematic Analysis of the Relationship between Fine Wire and Surface Electromyography Onset Detection with and without the Teager Kaiser Energy Operator
Andrew Tweedell¹, Courtney Webster¹, Matthew Tenan¹
¹Army Research Laboratory

P2-A-2 Continuous frequency change of SEMG for a transition period between knee extension and knee flexion during pedaling
Kenichi Kaneko¹, Hitoshi Makabe², Kazuyuki Mito³, Kazuyoshi Sakamoto³
¹Fuji University, ²Yamagata Prefectural University of Health Sciences, ³University of Electro-Communications
P2-A-3  An Investigation of the Surface Electromyography-to-Force Relationship During Fatiguing Static Elbow Flexion
Paul Leuty¹, Chad Sutherland¹, Jim Potvin², Joel Cort¹
¹University of Windsor, ²McMaster University

P2-A-4  Wearable wireless multichannel sEMG acquisition system
Luigi Cerone¹, Marco Gazzoni¹
¹Politecnico di Torino - LSiN

P2-A-5  Geometry-related variations in CMAP distribution over the soleus: a simulation study
Alberto Botter¹, Taian Vieira¹
¹Politecnico di Torino - LSiN

P2-A-6  Spike shape analysis of mechanomyogram during linear torque decrement in fresh and fatigued muscle
Renata Andrzejewska¹, Artur Jaskólski¹, Jarosław Marusiak¹, Anna Jaskolska¹, Claudio Orizio²
¹University School of Physical Education, Wroclaw, ²University of Brescia

P2-A-7  A closed-loop neuromuscular simulation can provide insights into the origins and task-dependencies of force fluctuations.
Akira Nagamori¹, Chris Laine¹, Kian Jalaleddini¹, Francisco Valero-Cuevas¹
¹University of Southern California
P2-A-8 Evaluation of external anal sphincter innervation asymmetry in obstetrics
Vita Zacesta¹, Dace Rezeberga¹, Haralds Plaudis², Kristina Drusany-Staric³, Corrado Cescon⁴
¹Riga Stradins University, ²Riga East Clinical University Hospital, ³University Medical Centre Ljubljana, ⁴University of Applied Sciences and Arts of Southern Switzerland

B - Motor performance and sports science

P2-B-9 The Effects of Fatigue in Backward Skating in Ice Hockey
Tom Wu¹, David Pearsall², Pamela Russell¹, Yuko Imanaka¹
¹Bridgewater State University, ²McGill University

P2-B-10 The Effects of Load Mass Variations on Front and Back Squat Movement Coordination Pattern
Tom Wu¹, Joo-sung Kim³
¹Bridgewater State University, ³Texas State University

P2-B-11 Effect of whole-body vibration on isokinetic performance and muscle activation in individuals submitted to Anterior Cruciate Ligament reconstruction
Karinna Costa¹, Daniel Borges¹, Liane Macedo¹, Caio L¹, Samara Melo¹, Jamilson Brasileiro¹
¹UFRN

P2-B-12 Effects of low level laser therapy on electromyographic activity after muscular fatigue: randomized, controlled, and blinded trial
Rodrigo Marcel Valentim da Silva¹, Manuele Jardim Pimentel¹, Liane de Brito Macedo¹, Daniel Tezoni Borges¹, Jamilson Simões Brasileiro¹
¹Universidade Federal do Rio Grande do Norte
P2-B-13  Relationship between the transverse palmar arch in the hand and the intrinsic hand muscles during reach-to-grasp motion for an object of different size
Kurumadani Hiroshi¹, Okajo Misuho¹, Sunagawa Toru¹
¹Hiroshima University

P2-B-14  Supersonic Shear Imaging is a non-invasive method to early detect muscle damage
Lilian Lacourpaille¹, Antoine Nordez¹, Valentin Doguet¹, Ricardo Andrade¹, François Hug¹, Gaël Guilhem²
¹Universite of Nantes, Human Sport Sciences, ²French National Institute of Sport

P2-B-15  Effect of unilateral fatigue in the knee extensors on crank power during sprint cycling
Rosie Bourke¹, Guillaume Millet², David Rouffet¹
¹Victoria University, ²University of Calgary

P2-B-16  The effect of external support on force and COP performance after ankle plantarflexors fatigue in athletes with ankle instability during lateral drop landing
Cheng-Feng Lin¹, Wan-Ching Lee¹
¹National Cheng Kung University

P2-B-17  The influence of kinesio tape and ankle brace on the lower extremity joint motion in fatigued unstable ankles during lateral drop landing
Cheng-Feng Lin¹, Wan-Ching Lee¹
¹National Cheng Kung University
P2-B-18 Development of a Diagnostic System for Shoulder Disorder Using Musculoskeletal Simulation
Po-Hsun Huang¹, Wo-Jan Tseng², Bing-Shiang Yang¹
¹National Chiao Tung University, ²National Taiwan University Hospital Hsin-Chu Branch

P2-B-19 Reliability of the CANTAB cognitive assessment battery over short duration repeated measurements
Michael Williams-Bell¹, Shawna Buren², Steven Passmore³, Bernadette Murphy²
¹Durham College, ²University of Ontario Institute of Technology, ³University of Manitoba

C - Sensorimotor control

P2-C-20 The skinny on vibration detection; how to generate skin feedback from the soles of the feet
Leah Bent¹, Nicholas Strzalkowski¹
¹University of Guelph

P2-C-21 The effects of an 8-week stabilization exercise program on trunk muscle thickness and activation as measured with ultrasound imaging in patients with chronic low back pain
Christian Lariviere¹, Sharon Henry², Dany Gagnon³, Richard Preuss⁴, Jean-Pierre Dumas⁵
¹Institut de réadaptation Gingras-Lindsay-de-Montréal, ²The University of Vermont Medical Center, ³Université de Montréal, ⁴McGill University, ⁵Université de Sherbrooke

P2-C-23 Does continuous visual feedback mediate motor learning and consolidation? Insights into landing strategies based on extrinsic and intrinsic information
Adam Grinberg¹, Dario Liebermann¹
¹Tel Aviv University
P2-C-24  Unaware motor response induced during biological movement visual stimulus - Physiological effects of an augmented reality system for therapy in sensory-motor disorders-
Fuminari Kaneko¹, Eriko Shibata¹, Yoshihiro Itaguchi¹
¹Sapporo Medical University

P2-C-25  Low back skin sensitivity has minimal impact on active lumbar spine proprioception and stability in healthy adults
Shawn Beaudette¹, Katelyn Larson¹, Dennis Larson¹, Stephen Brown¹
¹University of Guelph

P2-C-26  Split-Belt Treadmill Adaptation in Transtibial Amputees
Oliver Kannape¹
¹University of Central Lancashire

P2-C-27  No gender effect in pinch grip coordination after lateral transfer in brain among stroke survivors
seyed Hadi Salehi¹, Na Jin Seo¹
¹Loyola maymount university

P2-C-28  People with chronic low back pain show reduced movement complexity during daily activities
Leonardo Gizzi¹, Oliver Röhrle¹, Frank Petzke², Deborah Falla²
¹Inst. Applied Mechanics, University Stuttgart, ²Universitätsmedizin Göttingen Georg-August-Universität
P2-C-29 The potential functional consequences of the distribution of fat infiltration in the neck muscles
James Elliott¹, Anneli Peolsson², Janne West², Rebecca Abbott¹, Ulrika Åslund², Anette Karlsson², Olof Dahlqvist Leinhard²
¹Northwestern University, ²Linköping University

P2-C-30 Measures of local dynamic stability at the ankle joint before and after a fatiguing protocol reveal subsets of polarised behaviours in young healthy adults
Denise McGrath¹, Christopher Millar³
¹University College Dublin, ²Ulster University

E - Movement disorders

P2-E-31 Impact of amyotrophic lateral sclerosis in the system stomatognatic
Ligia Maria Napolitano Gonçalves¹, Jaime Eduardo Cecilio Hallak², Bárbara de Lima Lucas¹, Wilson Marques Júnior², Marcelo Palinkas¹, Sandra Valéria Rancan¹, Paulo Batista de Vasconcelos¹, Marisa Semprini¹, Selma Siéssere¹, Simone Cecilio Hallak Regalo¹
¹School of Dentistry of Ribeirão Preto, University of São Paulo, ²School of Medicine of Ribeirão Preto, University of São Paulo

P2-E-32 Acupuncture applied to the branches of the facial nerve for the rehabilitation of bell’s facial paralysis
Saulo Fabrin¹, Bárbara de Lima Lucas¹, Edson Donizetti Verri¹, Danilo Stefani Esposto¹, Marcelo Palinkas¹, Edson Alves Barros Jr², Michelle Bazílio Milan², Evandro Marianetti Fioco¹, Marília Pupim², Oswaldo Stamato Taube¹, Simone Cecilio Hallak Regalo¹
¹University of São Paulo, ²Claretiano University Center

P2-E-33 Finger movement control and associated brain activity responses post-stroke
P2-E-34 Concentric and isometric torques are affected by diabetes but the eccentric remains unchanged due to diabetes or polyneuropathy

Jean Ferreira¹, Isabel Sacco², Cristina Sartor², Tania Salvini¹

¹Federal University of Sao Carlos, ²University of Sao Paulo

P2-E-35 Effect of back pain on trunk strength capacity and muscle activity patterns during isokinetic and sudden trunk loading in adolescent athletes

Steffen Mueller¹, Josefine Stoll¹, Michael Cassel¹, Juliane Mueller¹, Tilman Engel¹, Frank Mayer¹

¹University of Potsdam

P2-E-37 Functional analysis of lower limbs in individuals infected with the human immunodeficiency virus

Gabriel Silva¹, Bruno Ferreira¹, Veridiana Arnoni¹, Edson Verri¹, Camila Gonçalves², Paulo Vasconcelos¹, Maria Aparecida Vasconcelos¹, Selma Siéssere¹, Isabela Regalo¹, Marisa Semprini¹, Alcyone Machado¹, Simone Cecilio Regalo¹

¹University of São Paulo, ²Federal University of Uberlandia

P2-E-38 A systematic review of torso motor control impairments in adolescents with idiopathic scoliosis (ais) with implications for the planning of conservative interventions

Fatemeh Aslanzadeh¹, Eric Parent ², Brian MacIntosh ²

¹University of Calgary, ²University of Alberta
**P2-E-39** Effects of low vision and blindness in complex postural

Nayara Soares¹, Edson Verri², Saulo Fabrin³, Selma Siéssere¹, Victor Rodrigues Nepomuceno¹, Paulo Batista de Vasconcelos¹, Marcelo Palinkas¹, Simone Cecílio Hallak Regalo¹

¹School of Dentistry of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil, ²School of Physical Therapy of Batatais, Claretiano University Center, Batatais, Brazil

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**P2-E-40** Superficial tissue compression effects in muscle tone of patients with encephalic vascular accident

Camila Gonçalves¹, Gabriel Silva³, Bruno Ferreira³, Veridiana Arnoni³, Saulo Fabrin³, Crislaine Lima³, Vanessa Dias³, Edson Verri², Simone Cecílio Regalo²

¹Federal University of Uberlandia, Brazil, ²University of Sao Paulo, Brazil, ³School of Physical Therapy of Bebedouro, UNIFAFIBE

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**P2-E-41** Investigation of Oxygenation Difference during Sternocleidomastoid Isometric Contraction for Clients with Mechanical Neck Disorder

Po-Ching Yang¹, Chia-Chi Yang², Yung Chang², Lan-Yuen Guo¹

¹Kaohsiung Medical University, ²National Cheng Kung University

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**P2-E-42** Functional analysis of the stomatognathic system in individuals with multiple sclerosis

Gabriel Silva¹, Bruno Ferreira¹, Veridiana Arnoni¹, Edson Verri¹, Camila Gonçalves², Isabelo Regalo¹, Selma Siéssere¹, Marisa Semprini¹, Simone Cecílio Regalo¹

¹University of São Paulo, ²Federal University of Uberlandia

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**P2-E-43** Midfoot Kinematics During Adult Gait

Victoria Chester¹, Usha Kuruganti¹, Jeffrey Grant¹

¹University of New Brunswick
P2-E-44 The strategies on turning while walking after stroke
Takahito Nakamura¹, Fumihiko Hoshi²
¹Rehabilitation Amakusa hospital, ²Graduate school of Saitama Prefectural University

H - Neuromechanics

P2-H-45 Muscle synergies underlying sit-to-stand tasks and their relationship with kinematic characteristics
Hiroki Hanawa¹, Keisuke Kubota², Takanori Kokubun³, Tatsuya Marumo⁴, Keita Murata⁵, Fumihiko Hoshi³
¹Higashi Saitama general Hospital, ²Ishi Clinic, ³Saitama prefectural University, ⁴Ageo Chuou general Hospital, ⁵Rehabilitation Amakusa Hospital

P2-H-46 The importance of feed-forward control in posture stability
Chihiro Edamatsu¹, Kouki Takahashi², Kazuki Kusumoto¹, Masataka Yamamoto¹, Takeshi Miyakawa³
¹Kurashiki University of Science and The Arts, ²Tokyo Ariake University of Medical and Health Sciences, ³Kawasaki University of Medical Welfare

P2-H-47 Threat of perturbation effects on anticipatory postural control
Angel Phanthanourak¹, Taylor Cleworth², Allan Adkin¹, Mark Carpenter², Craig Tokuno¹
¹Brock University, ²University of British Columbia

P2-H-48 Age-related Differences in Neuromuscular and Morphological Characteristics of Plantar Flexors
Boram Han¹, Dae-Yeon Lee², Sung-Cheol Lee¹, Hae-Dong Lee¹
¹Yonsei University, ²Dangnam University
P2-H-49 Musculoskeletal Modeling driven by Electromyograms processed via Bayesian Filtering Techniques
Massimo Sartori¹, David Hofmann²
¹University Medical Center, Göttingen, ²Emory University

P2-H-50 Shear wave speed measurements during isometric contractions of stroke-impaired medial gastrocnemius and tibialis anterior
James Pisano¹, Sabrina Lee¹, Kristen Jakubowski¹
¹Northwestern University

P2-H-51 The interaction of biceps and brachioradialis for the control of elbow flexion and extension movements
Sylvie von Werder¹, Catherine Disselhorst-Klug¹
¹Institute for Applied Medical Engineering, RWTH Aachen University

P2-H-52 Center of pressure mean velocity predicts single limb stance time in experts and novices
Ana Gomez-del Campo¹, Andrew Sawers², Aiden Payne¹, Lena Ting³
¹Georgia Institute of Technology, ²University of Illinois at Chicago, ³Emory University

I - Novel measurement technologies
P2-I-54 New Mechanomyogram / Electromyogram Hybrid Transducer for evaluation of muscle contraction during cycling-wheelchair exercise
Hisao Oka¹, Shin-ichi Fukuhara²
¹OKayama University, ²University of Medical Welfare
P2-I-55 Evaluation of Muscle Contraction using 5×5 MMG Array Sensor, 64 Channel sEMG Multichannel Sensor and Ultrasonic Image Equipment
Hisao Oka¹, Shin-ichi Fukuhara²
¹OKayama University, ²Kawasaki University of Medical Welfare

P2-I-56 Inter-rater reliability of kinematic assessment of upper extremity movement based on inertial sensors - A pilot study
Fredrik Öhberg¹, Tomas Bäcklund¹, Nina Sundström¹, Helena Grip¹
¹Umeå University

P2-I-57 Reliability of helical axis parameters during glonohumeral rotation
Corrado Cescon¹, Marco Conti², Francesco Bozzetti¹, Filippo Ghirlanda¹, Marco Barbero¹
¹University of Applied Sciences and Arts of Southern Switzerland, ²Medsport

P2-I-58 Development of Flexible Microneedle Electrodes for Recording of Surface EMG
Kevin Krieger¹, Madeleine Lowery¹, Eoin O'Cearbhaill¹
¹University College Dublin

P2-I-59 Evaluation of shoulder rotation axis during three different tasks
Corrado Cescon¹, Francesco Bozzetti¹, Filippo Ghirlanda¹, Marco Conti², Marco Barbero¹
¹University of Applied Sciences and Arts of Southern Switzerland, ²Medsport

P2-I-60 Automatic Image Processing of Ultrasound Elastography for Obtaining Muscle Shear Modulus by Removing Connective Tissue Data
Ellenor Brown¹, Yasuhide Yoshitake², Jun Ueda¹, Minoru Shinohara¹
¹Georgia Institute of Technology, ²National Institute of Sports and Fitness, Kanoya

**P2-I-61 Is foot mobility related to age in people with anterior knee pain?**
Natalie Collins¹, Bill Vicenzino¹, Kay Crossley²
¹The University of Queensland, ²La Trobe University

**P2-I-62 Posture of the head and trunk in sitting: quantification of alignment**
María Sánchez¹, Ian Loram¹, John Darby¹, Paul Holmes¹, Penelope Butler²
¹Manchester Metropolitan University, ²The Movement Centre

**P2-I-63 Passive and active stiffness of the neck extensor muscles is depth-dependent**
Angela Dieterich¹, Ricardo Andrade², Guillaume Le Sant², Deborah Falla¹, Frank Petzke¹, Francois Hug², Antoine Nordez²
¹University Medical Center Goettingen, ²University of Nantes

**P2-I-64 A Preliminary Study on Measurement of Surgery Procedures with Multi-Channel Surface EMG signals**
Hideo Nakamura¹, Kenji Yoshida², Kenta Takayasu¹
¹Osaka Electro-Communication University, ²Kansai Medical University

**P2-I-65 Real-time ultrasound cervical muscle segmentation: with application to monitoring and diagnosis of cervical dystonia**
Ryan Cunningham¹, Peter Harding¹, Ian Loram¹
P2-I-66 Addition of a verbal dual task results in reduced right arm swing while walking and men are more susceptible
Tim Killeen¹, Christopher Easthope¹, Lilla Lörincz², Linard Filli², Armin Curt¹, Björn Zörner¹, Marc Bolliger¹
¹University Hospital Balgrist, ²University Hospital Zurich

J - Ergonomics

P2-J-67 Change in the lateral axis of high-heeled shoes on the frontal plane
Takshi Nakayama¹, Tomokazu Muto¹
¹Tokyo University of Technology

P2-J-68 The effect of Palm Supporter to writing for Patients with Essential Tremor
Kazuyoshi Sakamoto¹
¹The University of Electro-Communications

P2-J-69 The effect of Palm Supporter to writing letters for Patients with Essential Tremor
Kazuyoshi Sakamoto¹
¹The University of Electro-Communications

P2-J-70 A study of tissue oxygenation in neck and forearm muscles during mobile phone tasks
Grace Szeto², KH Ting¹, Tsun Sum Cheung¹, Cheuk Wing Lai¹, Chi Fai Law¹, Wing Yin Lee¹, Chun Sum Yeung¹
¹The Hong Kong Polytechnic University
P2-J -71 Effects of one-sided loading on trunk muscle activity patterns in healthy subjects and back pain patients
Juliane Müller¹, Tilman Engel¹, Steffen Müller¹, Martin Wolter¹, Josefine Stoll¹, Frank Mayer¹
¹University of Potsdam

P2-J -72 Estimating Expert-Based Functional Assessment Scores Using Sensor Data
Fatemeh Noushin Golabchi¹, Giacomo Severini¹, Phil Reaston², Mary Reaston², Paolo Bonato¹
¹Harvard Medical School, ²Emerge Diagnostics

P2-J -73 A study of neck muscle activity during mobile phone texting and association with flexion relaxation phenomenon
Kelvin Pun¹
¹The Chinese University of Hong Kong

P2-J -74 The effect of a prolonged standing exposure on lower leg volume and muscle fatigue
Benjamin Steinhilber¹, Robert Seibt¹, Rudolf Wall¹, Monika Rieger¹
¹University Hospital Tuebingen

Poster Session III
Friday, July 8

A - EMG recording, modeling, and signal processing

P3-A-1 An innovative modular wireless system for the acquisition of surface EMG signals
Luigi Cerone¹, Enrico Merlo², Alberto Botter¹, Taian Vieira¹, Andrea Bottin², Marco Gazzoni¹
¹Politecnico di Torino - LISiN, ²OT Bioeletronica s.n.c.
P3-A-2 Investigation of Force and EMG Measures in Competitive Swimmers
Usha Kuruganti¹, Victoria Chester¹, Cassandra Mooney¹
¹University of New Brunswick

P3-A-3 Evaluating Decomposition Methods for Electromyographic Characterization of Neuromuscular Disorders
Meena AbdelMaseeh¹, Daniel Stashuk¹
¹University of Waterloo

P3-A-4 Muscle activation patterns when standing on wedges and being exposed to lateral perturbation
Yun-Ju Lee¹, Bing Chen¹, Mohan Ganesan¹, Kwan-Hwa Lin², Alexander Aruin¹
¹University of Illinois at Chicago, ²Tzu Chi University

P3-A-5 Errors in RMS amplitude estimation attributable to the Inter Electrode Distance of the surface EMG electrode grids
Subaryani Soedirdjo¹, Babak Afsharipour², Paolo Cattarello³, Roberto Merletti⁴
¹Politecnico di Torino, Laboratory of Engineering of Neuromuscular System and Motor Rehabilitation, ²Northwestern University, ³Laboratory of Engineering of Neuromuscular System and Motor Rehabilitation, ⁴Politecnico di Torino

P3-A-6 The Hand Function of Stroke Patients in the View of Surface Electromyography
Petra Bastlova¹, Barbora Kolarova¹, Lucie Szmekova¹, Alois Krobot¹
¹Palacky University, Faculty of Health Sciences
P3-A-8 Effects of core muscle pre-activation on the recruitment of the hip muscles during therapeutic hip exercises
Sharon Tsang¹, Amanda Lam¹, Melody Ng¹, Cherri Tsui¹, Kiki Ng¹, Benjamin Yiu¹
¹The Hong Kong Polytechnic University

P3-A-9 Impaired hand function is related to increased alpha band coherence between intermediate deltoid and wrist/finger flexors after stroke: preliminary findings
Yiyun Lan¹, Jun Yao¹, Jules Dewald¹
¹Northwestern University

P3-A-10 Exploring sex differences in cervical spine muscle activity during sudden head perturbations in hockey players
Chad Debison-Larabie¹, Bernadette Murphy¹, Michael Holmes¹
¹University of Ontario Institute of Technology

P3-A-11 Accurate identification of motor unit activity during dynamic tasks of the forearm muscles: perspectives for prosthetic control
Tamas Kapelner¹, Francesco Negro¹, Dario Farina¹
¹Institute for Neurorehabilitation Systems

P3-A-12 Identification of sEMG-Torque Dynamics May Reveal the Underlying Control Strategy
Mahsa Golkar¹, Kian Jalaleddini², Robert Kearney¹
¹McGill University, ²University of Southern California
B - Motor performance and sports science

P3-B-13 Electromyographic analysis of the scapular muscles in rehabilitation exercise: a cross-sectional study

Guillermo Mendez-Rebolledo¹, Marcela Nuñez-Valenzuela³, Arline Rodriguez-Soto¹, Valeska Gatica-Rojas¹

¹University of Talca

P3-B-14 8-week vibration training of the elbow flexors by force modulation

Lin Xu¹, Marco Cardinal², Chiara Rabotti¹, Bogdan Beju¹, Massimo Mischi¹

¹Eindhoven University of Technology, ²Aspire Academy

P3-B-16 Different sagittal movements of trunk and pelvis dependent on trunk rotation direction at half-hip free sitting posture: Assessment comparable with gait analysis

Mio Hayashi¹, Tatsuya Ishizuka², Naoya Nishida³, Kenichiro Nishie¹, Hiroki Tsuchiya⁴, Hiroyuki Kobayashi¹, Yukisato Ishida¹, Fujiyasu kakizaki¹

¹Bunkyo Gakuin University, ²IMS group Tokyo Nephro Urology Center Yamato Hospital, ³Sonoda Second Hospital,, ⁴Tachibanadai Hospital

P3-B-17 Contribution of bilateral asymmetry in hip joint movements and trunk motion to the smooth propulsion in gait of normal adults

Kenichiro Nishie¹, Hiroyuki Kobayashi², Tatsuya Ishizuka³, Yukisato Ishida¹, Fujiyasu Kakizaki¹

¹Bunkyo Gakuin University, ²IMS Group Shinkatsushika Hospital, Tokyo, Japan, ³IMS Group Tokyo Nephro Urology Center Yamato Hospital

P3-B-18 Is there an age difference in voluntary activation during maximal dynamic contractions with elbow flexor muscles?

Vianney Rozand¹, Jonathon Senefeld¹, Hamidollah Hassanlouei¹, Sandra Hunter¹
**P3-B-19** Influence of an Acute Bout of Self-Myofascial Release on the Expression of Isometric Knee Extension Force and Electromyographic and Mechanomyographic Signals of the Quadriceps Musculature

David Cornell¹, Kyle Ebersole¹, Elizabeth Ford¹

¹University of Wisconsin-Milwaukee

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**P3-B-20** Laterally selective stimulation of laterodorsal muscles affects the bilateral deviation in trunk alignment

Kengo Sasagawa¹, Yuki Honma², Ayumi Mohara³, Yoshihiro Aramaki⁴, Kazuya Tame⁵, Tetsuro Hirayama⁶, Tatsuya Ishizuka⁶, Yukisato Ishida¹, Fujiyasu Kakizaki¹

¹Bunkyo Gakuin University, ²IMS group Clover no Sato IMS Care Kaupili Itabashi, ³IMS group Katsushika Royal Care Center, ⁴IMS group Itabashi chuo medical center, ⁵Hiro-o Orthopedics Clinic, ⁶IMS group Tokyo Nephro Urology Center Yamato Hospital

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**P3-B-21** Spatial EMG signal properties in human biceps femoris muscle during running on the treadmill

Kazuyuki Mito¹, Ryuta Inano¹, Tota Mizuno¹, Naoaki Itakura¹

¹The University of Electro-Communications

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**P3-B-22** Relationship between dynamic postural control ability with voluntary sway and passive sway and lower limb muscle activity

Toshio Murayama¹, Tamaki Ohta²

¹Faculty of Education, University of Niigata, ²Nekoyama Miyao Hospital
P3-B-23 Do whole body vibration training boost sprint and reactive agility in tennis players?
Ismail Bayram¹, Eren Kaya¹, Ali Onur Cerrah¹, Hayri Ertan¹, Deniz Simsek¹
¹Anadolu University

P3-B-24 Running related gluteus medius muscle function in health and injury: A systematic review with meta-analysis
Adam Semciw¹, Rachel Neate², Tania Pizzari²
¹The University of Queensland, ²La Trobe University

P3-B-25 Biomechanical Strategies of Drop Jump Depending on Human Knee Extensor Eccentric Strength
Jeonghoon Oh¹, Sae Yong Lee¹, Sung-Cheol Lee¹, Hae-Dong Lee¹
¹Yonsei University

P3-B-26 Effect of bilateral fatigue in the knee extensor muscles on crank power during sprint cycling
Steven O'Bryan¹, Janet Taylor², David Rouffet¹
¹Institute of Sport Exercise and Active Living (ISEAL), ²Neuroscience Research Australia

P3-B-28 Changes in postural control and dual task performance following an ultramarathon
Dean Smith¹, Joshua Haworth², Eric Brooks¹, Julie Cousins¹
¹Miami University - Oxford, ²Johns Hopkins School of Medicine, Kennedy Krieger Institute

P3-B-29 Kinematics Comparison between Dominant and Non-Dominant Lower Limbs in Thai Boxing
P3-B-30  Forearm muscle function investigated by EMG in tennis players suffering from tennis elbow
Omid Alizadehkaiyat¹, Simon Frostick²
¹Liverpool Hope University, ²University of Liverpool

P3-B-31  Neuromuscular efficiency of trunk muscles is decreased during an acute pain episode in low back pain patients
Stephan Kopinski¹, Martin Wolter¹, Tilman Engel¹, Steffen Müller¹, Frank Mayer¹
¹University Outpatient Clinic Potsdam

P3-B-32  Drop jump kinematic curves differ for ACL-deficient and ACL-reconstructed individuals ~20 years post-injury compared to controls
Kim Hébert-Losier¹, Lina Schelin², Eva Tengman², Jonas Selling², Andrew Strong², Charlotte Häger²
¹National Sports Complex, ²Umeå university

C - Sensorimotor control

P3-C-33  Modulations of correlated neural oscillations for improving muscle coactivation control due to repetition and practice
Nayef Ahmar¹, Minoru Shinohara¹
¹Georgia Institute of Technology

P3-C-34  Neural control of human precision and power grips
P3-C-35 Test-retest reliability of a novel supine knee joint position sense test.
Andrew Strong¹, Charlotte Häger¹, Eva Tengman¹, Divya Srinivasan²
¹Umeå University, ²Virginia Polytech Institute and State University

P3-C-36 Does the motor cortex contribute to electrically-evoked contractions in humans?
Emily Ainsley¹, Yoshino Okuma¹, David Collins¹
¹University of Alberta

P3-C-37 Is human walking behavior better predicted by energetics or stability: a case-study involving human-structure interactions
Varun Joshi¹, Manoj Srinivasan¹
¹The Ohio State University

P3-C-38 FES Control for Restoring Complex Functional Hindlimb Movements in the Rat
Maria Jantz¹, Amina Kinkhabwala¹, Juan Gallego¹, Lee Miller¹, Matthew Tresch¹
¹Northwestern University

P3-C-39 Muscular reflex responses of trunk and lower limb muscles following unexpected gait perturbations in people with and without back pain
Tilman Engel¹, Juliane Mueller¹, Stephan Kopinski¹, Konstantina Intziegianni¹, Antje Reschke¹, Steffen Mueller¹, Frank Mayer¹
P3-C-40  Impact of neck muscle fatigue on scapulohumeral kinematics in subclinical neck pain vs asymptomatic controls
Mahboobeh Zabihhosseinian¹, Michael Holmes¹, Samuel Howarth², Brad Ferguson³, Bernadette Murphy¹
¹University of Ontario Institute of Technology, ²Canadian Memorial Chiropractic College, ³ProTX Services

P3-C-41  Joint learning during dyadic haptic interaction
Dalia De Santis¹, Edwin Johnatan Avila Mireles², Valentina Squeri², Pietro Morasso², Jacopo Zenzeri²
¹Northwestern University and Rehabilitation Institute of Chicago, ²Istituto Italiano di tecnologia

P3-C-42  Effects of a compression garment on sensory feedback transmission in the upper limb
Trevor Barss¹, Greg E Pearcey², Bridget Munro³, E Paul Zehr²
¹Human Neurophysiology Lab, University of Alberta, ²Rehabilitation Neuroscience Lab, University of Victoria, ³Nike Exploration Team

P3-C-43  Human upright, postural control: Is sagital centre of mass location controlled to a prior?
Ian Loram¹, Vasilios Baltzopoulos², Irene Di Giulio³
¹Ian Loram, ²Brunel University, ³University College London

D - Rehabilitation technologies

P3-D-44  The effects of exercise in combination with other conventional antidepressant therapies in treating individuals suffering with Major Depressive Disorder.
Joanne Gourgouvelis¹, Paul Yelder¹, Hushyar Behbahani¹, Bernadette Murphy¹
P3-D-45  Effects of flexion-extension in upper and lower cervical spines on the laterality of upper and lower thoracic shapes
Taiichi Koseki¹, Tetsuro Hirayama¹, Tatsuya Ishizuka², Naoya Nishida³, Tsutomu Fujihara¹, Hirohisa Koseki¹, Yukisato Ishida⁴, Fujiyasu Kakizaki⁴
¹Hiro-o Orthopedics Clinic, ²Course of Medical Science in Graduate School of Tokyo Medical University, ³Department of Rehabilitation, Sonoda Second Hospital, ⁴Graduate School of Bunkyo Gakuin University

P3-D-46  Effects of variation in trunk lateral deviation on respiratory function in relation to thicknesses of rectus abdominis and lateral abdominal group muscles
Tsutomu Fujihara¹, Michie Okazaki², Tetsuro Hirayama¹, Tatsuya Ishizuka³, Taichi Koseki¹, Kazuya Tame¹, Tomoko Kawasaki¹, Fumiya Inagaki¹, Hirohisa Koseki¹, Yukisato Ishida⁴, Fujiyasu Kakizaki⁴
¹Hiro-o Orthopedics Clinic, ²Azabujuban Primary Medical Support, ³Course of Medical Science in Graduate School of Tokyo Medical University, ⁴Graduate School of Bunkyo Gakuin University

P3-D-47  Difference in the acute effect of kinesthetic illusion induced by visual stimulus and action observation on the upper-limb voluntary movement after stroke: a single-case study
Toru Inada¹, Fuminari Kaneko², Naoki Matsuda¹, Satoshi Koyama¹, Junichi Maruyama¹, Junya Shindo¹
¹Asahikawa Rehabilitation Hospital, ²Sapporo Medical University

P3-D-48  ULNAR - Upper Limb functional Assessment and Rehabilitation: tools and methods
Sofia Marques¹, Pedro Fonseca², Ana Rita Pinheiro³, Cláudia Silva³, Miguel Correia¹
¹Faculdade de Engenharia da Universidade do Porto, Instituto de Engenharia de Sistemas e Computadores, ²Laboratório de Biomecânica do Porto - LABIOMEP, ³Escola Superior de Tecnologia da Saúde do Porto - Instituto Politécnico do Porto/ Centro de Estudos
P3-D-49  A comparison of three types of neuromuscular electrical stimulation for reducing contraction fatigue of the quadriceps muscles
Francisca Claveria¹, David Collins¹, Jenny Lou²
¹University of Alberta, ²University of Toronto

P3-D-50  Task-specific movements generated by EMG-FES facilitate cortical beta band modulation for hand rehabilitation in individuals with moderate to severe stroke.
Kevin Wilkins¹, Julius Dewald¹, Jun Yao¹
¹Northwestern University

P3-D-51  Nintendo Wii decrease spasticity and improves standing balance in cerebral palsy
Valeska Gatica-Rojas¹, Ricardo Cartes-Velásquez ², Guillermo Mendez-Rebolledo¹, Eduardo Guzman-Muñoz¹
¹Universidad de Talca, ²Universidad de Concepción

P3-D-52  Onset and cessation timing of seven lower limb muscles during walking in patients with diabetes with and without sensory neuropathy and persons without diabetes
Jonas Martens¹, Filip Staes¹, Giovanni Matricali², Frank Nobels¹, Philip Roosen³, Jos Tits⁴, Kevin Deschamps¹
¹KU Leuven, ²UZ Leuven/KU Leuven, ³University Ghent, ⁴Ziekenhuis Oost-Limburg

P3-D-53  Influence of using T-Cane on variability of stride interval at a self-selected gait speed
Hitoshi Makabe¹, Yuka Takahashi², Hitomi Take³, Kenichi Kaneko⁴, Kazuyoshi Sakamoto⁵
¹Yamagata Prefectural University of Health Sciences, ²Yabuki Hospital, ³Shin-Kaminokawa Hospital, ⁴Fuji University, ⁵University of Electro-Communications
P3-D-54 Reproducibility of the motion generated by a master-slave system developed using neuromuscular electrical stimulation based on kinematic parameters

Naoyuki Kataishi¹, Fuminari Kaneko¹, Eriko Shibata¹
¹Sapporo medical university

P3-D-55 Effect of Visual Feedback on Quality and Consistency of Upper Limb Movement in Stroke Patients

Daniel Simonsen¹, Mirjana Popovic², Erika Spaich¹, Ole Andersen¹
¹Aalborg University, ²University of Belgrade

P3-D-56 Effects of augmented verbal feedback in the ankle electrical activity and torque of typical individuals

Alessandra Matias¹, Ulisses Taddei², Francis Trombin-Souza³, Jane Pires³, Renan Calori², João Darê², Milene Dalfolo², Fernanda Ribeiro², Pamela Santana³, Rafael Inoue², João Pedro Panighel², Isabel Sacco²
¹USP, ²University of Sao Paulo - USP, ³School of Physical Therapy, University of Pernambuco

E - Movement disorders

P3-E-57 Influence of the Mandibular Tori in the stomatognathic system function

Laíse Angélica Mendes Rodrigues¹, José Mendes da Silva¹, Cássia Pérola dos Anjos Braga Pires¹, Graziela de Luca Canto², Paulo Batista de Vasconcelos³, Simone Cecilio Hallak Regalo³
¹School of Dentistry of UNIMONTES, ²Federal University Florianópolis, ³School of Dentistry of Ribeirão Preto, University of São Paulo, Ribeirão Preto

P3-E-58 Latissimus Dorsi, Maximus Gluteus And Biceps Femoris Activation In People With Sacroiliac Joint Dysfunction

Laura Sánchez³, Carolina Ramírez¹, Ana Beatriz Oliveira²
P3-E-59 Subject-specific classification of startle elicited by postural perturbation
Rosalind Heckman¹, Eric Perreault¹
¹Northwestern University

P3-E-60 Analysis of electromyographic fatigue of masticatory muscles in osteoporotic individuals
Veridiana Arnoni¹, Luiz Gustavo Sousa¹, Paulo Vasconcelos¹, Bruno Ferreira¹, Marcelo Palinkas¹, Marisa Semprini¹, Priscila Scalize¹, Oswaldo Luiz Taube¹, Bárbara de Lima Lucas¹, Simone Cecilio Hallak Regalo¹, Selma Siéssere¹
¹University of Sao Paulo, Ribeirao Preto

P3-E-61 EMG analysis of cervical muscles after acupuncture in women with dysfunction temporomandibular
Odinê Maria Rêgo Bechara¹, Marcelo Palinkas¹, Marisa Semprini¹, Bárbara de Lima Lucas¹, Paulo Batista de Vasconcelos¹, Selma Siéssere¹, Simone Cecilio Hallak Regalo¹, César Bataglion¹
¹School of Dentistry of Ribeirão Preto, University of São Paulo

P3-E-62 Assessing muscular activation of patients with specific low back pain during daily activities
Michael Ferdinand Bergamo¹, Catherine Disselhorst-Klug¹
¹RWTH Aachen University | University Hospital Aachen

P3-E-63 Linear and Rotational Acceleration of the Head on Snowboard Beginner’s Falls during Freestyle Snowboarding
Toshihiko Hashimoto¹
P3-E-64 Relationship between co-contraction ratio and knee adduction moment in knee osteoarthritis subjects
Luiz Fernando Approbato Selistre¹, Theresa Nakagawa¹, Glaucia Gonçalves¹, Marina Petrella¹, Stela Mattiello¹, Richard Jones²
¹Federal University of Sao Carlos, ²University of Salford

P3-E-65 Quantification of head movement when testing segmental trunk control
María Sánchez¹, Ian Loram¹, John Darby¹, Paul Holmes¹, Penelope Butler²
¹Manchester Metropolitan University, ²The Movement Centre

P3-E-66 Impact of rheumatoid arthritis in stomatognathic system of the women
Marcelo Palinkas¹, Bárbara de Lima Lucas¹, Marisa Semprini¹, Oswaldo Luiz Satamto Taube², Laíse Angélica Mendes Rodrigues³, Selma Siéssere¹, Simone Cecilio Hallak Regalo¹
¹School of Dentistry of Ribeirão Preto, University of São Paulo, Ribeirão Preto, ²School of Physical Therapy of Bebedouro, UNIFAFIBE-University Center, Bebedouro, ³School of Dentistry of UNIMONTES, University of Montes Claros, Minas Gerais

K - Muscle physiology

P3-K-67 The effect of carbohydrate supplementation to muscle fatigue trend in training of table tennis
Mai Kitamura¹, Kei kamijima², Yukihiko Ushiyama¹, Tohru Kiryu¹
¹Niigata.Univ, ²Niigata Institute of Technology
P3-K-68 Influence of data precision on quantifying skeletal muscle movement in ultrasound images
Diego Miguez¹, Ian Loram¹, Emma Hodson-Tole¹, Peter Harding¹
¹Manchester Metropolitan University

P3-K-69 Muscle material properties of stroke-impaired plantarflexor muscles
Kristen Jakubowski¹, Ada Terman¹, Ricardo Santana¹, Sabrina Lee¹
¹Northwestern University

P3-K-70 Effects of rheumatoid arthritis in masticatory cycles of the women
Simone Cecilio Hallak Regalo¹, Bárbara de Lima Lucas¹, Oswaldo Luis Stamato Taube², Laise Angélica Mendes Rodrigues¹, Selma Siéssere¹, Isabela Hallak Regalo¹, Marisa Semprini¹, Marcelo Palinkas¹
¹School of Dentistry of Ribeirão Preto, University of São Paulo, Ribeirão Preto, ²School of Physical Therapy of Bebedouro, UNIFAFIBE

P3-K-71 Impact of complete implant-supported dentures anchored in the zygomatic bone in stomatognathic system
Marcelo Palinkas¹, Moara de Rossi¹, Carla Santos¹, Marisa Semprini¹, Lígia Oliveira¹, Selma Siéssere¹, Isabela Regalo¹, Edmilson Oliveira¹, Reginaldo Migliorança¹, Simone Cecilio Regalo¹, Barbara Lucas¹
¹University of Sao Paulo, Ribeirao Preto

P3-K-72 Fat infiltration of the Paretic Upper Limb in Individuals with Chronic Hemiparetic Stroke: Preliminary Results
Lindsay Garmirian¹, Ryan Schmid¹, Marie Wasielweski¹, Ana Maria Acosta¹, Todd Parish¹, Jules Dewald¹
¹Northwestern University
P3-K-73 Greater fatigability among type 2 diabetics without neuropathy is not associated with disruption of neuromuscular propagation or corticomotor excitability

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P3-K-74 Intra-rater reliability and agreement in the ankle electromyography activity EMG during sit to stand in healthy young adults

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P3-K-75 Ageing and electromyographic fatigue patterns of masticatory muscles

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