

2025 HUMAN MOVEMENT VARIABILITY & GREAT PLAINS BIOMECHANICS CONFERENCES

May 19-20, 2025

*Scott Conference Center
Omaha, Nebraska*



UNIVERSITY OF
Nebraska
Omaha



Great Plains Biomechanics Conference

Monday, May 19th, 2025

Central Time	Location	Item
7:00-8:45 AM	Foyer East Room Entrance	Exhibitor Set Up Poster Session A Set Up Registration
8:45-9:00 AM	Center Room	Welcome
9:00-10:15 AM	Center Room	Keynote Speaker: Dr. João Paulo Vilas-Boas "Obtaining Relevant Biomechanical Data For The Swimmer: A Challenging Mission!"
10:15-10:30 AM	Foyer	Coffee/Exhibitors
10:30-11:50 AM	Center Room	Podium Session A "Functional Neuroimaging Insights Into Functional Neural Network Adaptations Following Targeted Muscled Reinnervation" Toka Ahmed "Functional Connectivity Differences In Prosthetic Users Before And After Training" Kaitlin Fraser "A Novel Approach To Discovering Governing Equations Of Baseball Pitching" Seung Kyeom Kim "Walking With Robotic Ankle Exoskeletons Enhances Ground Reaction Forces In Patients With Peripheral Artery Disease" Zahra Salamifar "Impact Of Stent-Graft Compliance On Aortic Stiffness: An In-Vivo Porcine Study" Ramin Shahbad

Great Plains Biomechanics Conference**Monday, May 19th, 2025**

Central Time	Location	Item
12:00-2:00 PM	Center Room	Lunch (Boxed Lunch During Poster Session A)
12:30-2:00 PM	East Room	Poster Session A
2:00-2:15 PM	East Room	Poster Take-Down/Set up For Poster Session B
2:15-3:30 PM	Center Room	<p>Podium Session B</p> <p>"Tactile Biofeedback Of Stance Time Influences Trailing Limb Angle And Propulsion Asymmetry"</p> <p>Chris Engsberg</p> <p>"Mobility Assistive Technology with Self-tensile Networks"</p> <p>Jingxian Gu</p> <p>"Biomechanical Comparison Of Overground, Self-Paced Treadmills, And Fixed-Speed Treadmill Walking and Running"</p> <p>Cameron Jensen</p> <p>"Single Leg Hop Testing Does Not Predict A Second Injury After ACL Reconstruction"</p> <p>Manual Romero-Padron</p> <p>"Does The Surface Matter For Gait Training With An Error-Augmenting Exosuit? A Comparison Of Overground And Treadmill Walking"</p> <p>Sangwon Shin</p>
3:30-3:45 PM	Foyer	Coffee/Exhibitors
3:45-4:00 PM	Center Room	Poster Session B Set Up
4:00 PM	Biomechanics Research	Tour of Biomechanics Research Building Labs
4:00 PM	Inner Rail Food Hall	<p>Happy Hour Social</p> <p>Address: 1911 S 67th St, Omaha, NE 68106</p>

Human Movement Variability Conference

Tuesday, May 20th, 2025

Central Time	Location	Item
8:00-8:55 AM	Foyer Entrance	Coffee/Exhibitors Registration
9:00-9:15 AM	Center Room	Welcome
9:15-10:15 AM	Center Room	Keynote Speaker: Dr. Peter Beek "TBD"
10:15-10:30 AM	Foyer	Coffee/Exhibitors
10:30-11:50 AM	Center Room	Podium Session C "Adopted Step Length Necessitates A Minimum Walking Speed" Seyed-Saleh Hosseini-Yazdi "Differences In Trailing Limb Inter-Segment Coordination Between Elderly Fallers And Non-Fallers During Obstacle Crossing" Hocheng Lu "Personalized Gait Tube For Stability Recovery Assessment" Seongwoo Mun "Center of Mass Variability is Associated With Self Reported Measures Of Symptom And Function Impairment In People With Knee Osteoarthritis" Ogundoyin Ogundiran "Exploring Home-Based Exosuit Use For Gait Retraining: Reforging Symmetry in Chronic Stroke" Pieter Van den Berghe
12:00-2:00 PM	Center Room	Lunch (Boxed Lunch during Poster Session B)

Human Movement Variability Conference

Tuesday, May 20th, 2025

Central Time	Location	Item
12:30-2:00 PM	East Room	Poster Session B
2:00-2:15 PM	East Room	Poster Take-Down
2:15-3:30 PM	Center Room	<p>Podium Session D</p> <p>"Levodopa-Induced Dyskinesia in Parkinson's Diseases Causes Inflexible Multisegmental Coordination During Standing"</p> <p>Joseph Aderonmu</p> <p>"Bilateral Gait Variability Responds Asymmetrically to External Cueing"</p> <p>Mehrnoush Haghighatnejad</p> <p>"Collective Systems Adaptation Analysis Applied to Multiple Domains"</p> <p>Jayci Landfair</p> <p>"Reliable Hurst Exponents Can Be Derived From Short Walking Trials"</p> <p>Vasileios Mylonas</p> <p>"Perturbation Detection in Longitudinal Social Interaction and Physiological Data Using Collective Systems Adaptation Analysis"</p> <p>Lidia Obregon</p>
3:30-3:45 PM	Foyer	Coffee/Exhibitors
3:45-4:45 PM	Center Room	<p>Panel</p> <p>Scientific Committee Meeting: Score and Select Awardees</p>
4:45-5:30 PM	Center Room	Award Ceremony

Great Plains Biomechanics Conference



KEYNOTE PRESENTATION

OBTAINING RELEVANT BIOMECHANICAL DATA FOR THE SWIMMER: A CHALLENGING MISSION!

DR. JOÃO PAULO VILAS-BOAS

PROFESSOR OF BIOMECHANICS AT THE UNIVERSITY OF PORTO, FACULTY OF SPORT

HEAD OF LABIOMEUP - PORTO BIOMECHANICS LABORATORY, UNIVERSITY OF PORTO

ABOUT DR. VILAS-BOAS

Dr. João Paulo Vilas-Boas was born in 1960 and has been, since 2004, a Full Professor at the University of Porto, Faculty of Sport, Porto, Portugal, and at the School of Biotechnology of the Portuguese Catholic University, Porto, Portugal. TBD

He defended his Ph.D. thesis in 1993, with the main theme of "Biophysics of Swimming", where he sought to understand how swimmers use available energy, and how this process can be optimized. Since then, and after more than 100 M.Sc. dissertations and 45 Ph.D. promoted thesis (more than 350 scientific articles indexed in SCOPUS, h=37, 5230 citations), he never finished the task (he continues fighting every day...).

Following his organization of BMS2006 conference, Vilas-Boas was invited to join the Steering Group Biomechanics and Medicine in Swimming of the International Council for Science in Sports, and in 2018 he was appointed President of the International Council for Biomechanics and Medicine in Swimming.

He was the chairman of the ISBS2011 conference in Porto, and in 2012 he created the Porto Biomechanics Laboratory (LABIOMEUP), where he currently holds the position of Director. This new challenge determined a change to a broader approach to biomechanics (occupational, clinical, biomedical, etc.) and also focused on sports other than swimming. Through LABIOMEUP, various biomechanical services are provided to the community at different levels of science transfer.

In 2022, the International Society of Biomechanics in Sport awarded him the ISBS Geoffrey Dyson Prize, highlighting the efforts made to translate knowledge into sports practice. In parallel to his academic career of more than 40 years, Vilas-Boas was also a swimming coach for 22 years (ending this career after the 2004 Olympic Games), with 6 nominations and 3 times been awarded "Portuguese Swimming Coach of the Year". From 2004 to 2012 he was Vice-President and President of the General Assembly of the Portuguese Swimming Federation, after which he became a member of the board and currently Vice-President of the Olympic Committee of Portugal.

PRESENTATION

Human Movement Variability Conference



BARRY T. BATES KEYNOTE PRESENTATION

VARIABLE PERSPECTIVES ON INTERINDIVIDUAL VARIABILITY IN MOTOR PERFORMANCE AND LEARNING

DR. PETER J. BEEK

PROFESSOR OF COORDINATION DYNAMICS, DEPARTMENT OF HUMAN SCIENCES
FACULTY OF BEHAVIOURAL AND MOVEMENT SCIENCES, VRIJE UNIVERSITEIT
AMSTERDAM

ABOUT DR. BEEK

Dr. Peter J. Beek is a Professor of Coordination Dynamics at the Department of Human Movement Sciences of the Vrije Universiteit Amsterdam in the Netherlands. He served twelve years as the Dean of the corresponding Faculty and twenty years as editor-in-chief of the journal of Human Movement Science. His main interest is in the performance and acquisition of real-life perceptual-motor activities, notably juggling, walking, running and swimming, and changes therein as a function of learning and training in sports and rehabilitation. His research is strongly interdisciplinary in nature and has been published extensively (over 330 articles) in a broad spectrum of international peer-review journals covering the fundamental and applied study of human movement. He is currently coordinator for the scientific support of recreational and elite swimming on behalf of the Tongelreep National Swimming Center at Eindhoven, the Netherlands, the Royal Dutch Swimming Federation and the Dutch National Water Safety Council Foundation. More information about Dr. Peter Beek's interests, work, and person can be found at his personal website (www.peterjbeek.com).

PRESENTATION

Human motor behavior is inherently variable, both within and between individuals, regardless of how competent they are in a specific skill. Although this undisputed fact is recognized by all human movement scientist, they have focused their research efforts predominantly on understanding intra- rather than interindividual variability in motor performance and learning. As in other behavioral sciences at large, interindividual variation is typically used to derive statistics that characterize the state of affairs in populations of subjects. In this keynote lecture, I will discuss different perspectives on, and methods by which, interindividual differences in motor performance and learning might be understood, drawing on examples from research on real-life cyclical activities like juggling, tapping, running and swimming in which I am or have been engaged. In particular, I will discuss dynamical as well as biomechanical models of interindividual differences and their limitations, as well as how experimentally induced variation may be exploited to gain insight into performance-determining factors. In closing, I will discuss some promising directions for gaining better handles on interindividual variability in motor performance and learning that we have been able to muster and pursue thus far.

POSTERS

Poster #	Day	Session	Presenter (Last Name)	Presenter (First Name)	Title
1	1	A	Barlow	Steven	Wireless Sensing of Lower Lip and Thumb-index Finger 'Ramp-and-Hold' Isometric Force Dynamics Across the Lifespan
2	1	A	Carver-Ritter	Claire	Effects of Unilateral Fatigue on Maximal Isometric Contractions and Maximal Cycling Performances
3	1	A	Davis	Calvin	Analysis of Minor League Baseball Pitcher UCL Injuries Before and After the Pitch Clock
4	1	A	Delgado	Liliana	Development of a 3D Printed Modular Assistive Device for Children with Uper Limb Loss
5	1	A	Doehne	Brandon	The Relationship Between Shoulder External Rotation Delta Values and Known Performance and Injury Parameters in Baseball Pitchers
6	1	A	Farmani	Sanaz	Biomechanical And Structural Properties Of Human Umbilical Arteries: A Preliminary Study
7	1	A	Ghanbari	Mahboubeh	Optimizing Platelet Adhesion Methods for Accurate Assessment Thrombogenicity of Blood-Contacting Materials
8	1	A	Gilyazov	Rail	Effects of Orbital Atherectomy and Balloon Angioplasty on the Treatment of Calcified Femoropopliteal Arteries
9	1	A	Haan	Dimitiri	Exploring the Effect of Propulsive Ground Reaction Biofeedback on Shoulder and Elbow Biomechanics in Baseball Pitchers
10	1	A	Ide	Tomohiro	Changes in UCL Morphology and Grip Strength Throughout a Competitive Season in Division I Baseball Pitchers
11	1	A	Kargarbahrkhazar	Bahman	External Elastic Lamina Breaks and Associated Extracellular Matrix Remodeling in Human Arteries
12	1	A	Kirkland	Jonathan	Impact of Peripheral Artery Disease (PAD) on Peak Plantar Flexor torque and Total Work: Before and After Using Ankle Foot Orthoses for Three Months

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13	1	A	Koperski	Dominic	Developing an Antimicrobial and Selective Laser Sintered Prosthetic Socket
14	1	A	Lloyd	Elle	Robotic Exoskeleton May Improve Muscle Oxygenation in Patients with Peripheral Artery Disease
15	1	A	Iro	Yassine Mahamane	Ischio-Sacral Region Pressures While Seated on Different Cushion types
16	1	A	Masaei	Mobina	DE-AFO-1550: A Comfortable Robotic Ankle Exoskeleton for Children with Cerebral Palsy Using Stacked Dielectric Elastomer Actuators
17	1	A	Mohammadi	Sahel	Advancing Soft Rehabilitation Robotics: Evaluating the Stress and Strain Generation Capabilities of Stacked Dielectric Elastomer Actuators (SDEAs)
18	1	A	Moser	Gabrielle	Flyband® Exobots Allow for Increased Ankle Range of Motion During Walking Compared to Conventional Boots
19	1	A	Muczynski	Brandon	Isokinetic Shoulder Strength Differences Between High School and College Baseball Pitchers
20	1	A	Neihart	Joseph	Oxygen-Guided Supervised Exercise Improves Ground Reaction Forces During Walking in Patients with Peripheral Artery Disease
21	1	A	Nguyen	Ann	Lung Capacity Increases by Using the Lung Master (Pulmonary Exerciser)
22	1	A	Ogasawara	Takato	Age Difference in Joint Torque Power Generation on Stride Leg and Relation to Ball Velocity
23	1	A	Perez-Durham	Marisa	Effects of Passive Exoskeleton Footwear on Ground Reaction Forces During Walking in Patients with Peripheral Artery Disease

POSTERS

Poster #	Day	Session	Presenter (Last Name)	Presenter (First Name)	Title
24	1	A	Williams	Jania	Higher Levels of Assistance From an Ankle Exoskeleton Sustain Tibialis Anterior Activity
25	1	A	Woelfel	Sarah	Ultrasound-Based Spatial Frequency Analysis to Differentiate Patellar Tendon Quality in Tendinopathy and Healthy Participants
26	1	A	Zimmer	Gracie	Are Arm Swing Magnitudes During Slip Recovery Related to the Severity of the Slip
27	1	A	Zintek	Matthew	Correlations Between Arm Swing and Slip Directions on Curved Paths

POSTERS

Poster #	Day	Session	Presenter (Last Name)	Presenter (First Name)	Title
1	2	B	Barfi	Mahsa	Wobble Boards Enhance Postural Adaptations Through Bodywide Coordination
2	2	B	Brink	Kolby	Haptic Cueing Modulates Gait Variability and is More User Friendly Than Visual Cues
3	2	B	Camero	Samuel	The Effect of Robotic Ankle Exoskeleton Assistance on Walking Capacity in Patients with Peripheral Artery Disease
4	2	B	Decker	William	Are Dynamic Postural Stability Index Scores and Center of Mass Sway Correlated?
5	2	B	Fallahtafti	Farahnaz	A Robotic Ankle Exoskeleton Improves Walking in Peripheral Artery Disease
6	2	B	Grunkemeyer	Alli	From Disruption to Enhancement: The Impact of Noise on Haptic Perception
7	2	B	Gu	Jingxian	Delayed Auditory Feedback from Self-produced Footstep Sounds Effects Cadence in Gait Cadence in Healthy Young Adults
8	2	B	Heller	Dave	Long-Term Correlation of Acceleration During Walking Versus Running: A Single-Subject Analysis
9	2	B	Kalaitzi Manifrenti	Marilena	Stability in Multifrequency Coordination is a Product of Variability, Speed, and Ratio
10	2	B	Kalaitzi Manifrenti	Marilena	Stochastic Resonance Stimulation Does Not Influence Gait Patterns in Children with Cerebral Palsy

POSTERS

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11	2	B	Kim	Seung Kyeom	A Novel Algorithm Measuring Nuanced Chaotic Behavior Reveals Age-Related Gait Dynamics
12	2	B	Kim	Seung Kyeom	Guidelines for Parameter Selection For Recurrence Quantification Analysis
13	2	B	Lucchi	Licrezia	Fractal Scaling of Upper-Body Motion During Silent Connected-Text Reading
14	2	B	Mace	Stephanie	Manipulations of Environment and Speed Can Acutely Modulate Dynamic Motor Control During Walking in Children with Cerebral Palsy
15	2	B	Matthews	Colina	The Effect of Aquatic Environment and Speed Can Acutely Modulated Dynamic Motor Control During Walking in Children With Cerebral Palsy
16	2	B	Mingo	Maddie	The Effect of Aquatic Environment and Speed Can Acutely Modulate Dynamic Motor Control During Walking in Children with Cerebral Palsy
17	2	B	Mitchell	Jake	Differences in Visual Reference Point Distance and Mirror Feedback on Static Balance
18	2	B	Odanye	Oluwaseye	Aquatic Treadmill Influences Lower Limb Joint Coordination of Children with Cerebral palsy
19	2	B	Poomulna	Jutharat	Effects of Theia3D User Settings Adjustments on Lower Limb Kinematics During Overground Walking in Typically Developing Children and Children with Cerebral Palsy
20	2	B	Schlattman	Brian	Postural and Cognitive Demands Reshape Whole-Body Coordination Networks

POSTERS

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21	2	B	Shakerian	Narges	Steering Variability and Neural Activation in Response to Driving Task Conditions
22	2	B	Shrestha	Sohan	The Effect of Varying Moment Arm Length on the Generated Exoskeleton Torque Profile During Gait
23	2	B	Wiles	Tyler	Near-Perfect Person Identification Using Five Seconds of Overground Walking Data
24	2	B	Wiles	Tyler	The Influence of Auditory Gait Manipulations on Human Odometry

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