



**AP-BIOMECH 2023**

Book of Program

# 12th Asian Pacific Conference on Biomechanics

Kuala Lumpur, Malaysia  
15 – 18th November 2023

Organized by:



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*Malaysia*  
BE Greater, Together.



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## Organizers & Sponsors

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# Welcome Message

**Dear Distinguished Guests, Speakers, Asia-Pacific Biomechanics members and conference delegates,**

Please accept my warm welcome to attend the upcoming 12th Asian-Pacific Conference on Biomechanics happening at the city centre of Kuala Lumpur Malaysia. Although the COVID pandemic made a lot of changes in our life routine chores and restricted our travel activities crossing the borders, it never stops our initiatives to continuously educating the next generation through organising this physical AP Biomechanics 2023 Conference.

We have attempted to replicate the spirit of original "conference" written by Plato, the great Greek philosopher. As he quoted, we have been preparing various "forums" to discuss the truth and beauty of science, technology and education, while celebrating our global friendships in this AP Biomechanics 2023 conference.

The AP Biomechanics 2023 Organizing Committee members have been working extremely hard to prepare this conference. The success of this scientific conference will be portrayed in a way how it will be programmed bringing experts from the Asian Pacific regions to present/share a wide range of latest topics/breakthroughs in the field of biomechanics and biomedical engineering.

Not only that, this conference will provide a platform for poster/oral/award presentations for the research groups in their respective field as well as will bring an opportunity to exchanging the knowledge with speakers through forums/discussions. We also strongly follow the principle, 'publish or perish'. Therefore, we have prepared the platform to publish your paper presented in the conference as a conference proceeding.

We also believe that the AP Biomechanics 2023 will give you a far-reaching experience to embrace the knowledge and novel ideas in the field of biomechanics and biomedical engineering. This platform will also foster to enhance research networking/collaboration among the teams across the Asian Pacific regions and this will support the initiative of new breakthroughs. Furthermore, your physical presence will give you a mind blowing experience enjoying the richness of Malaysia with beautiful forest and high rising building like the famous Petronas Twin tower at the city centre. With this once again I warmly welcome all of you to join the Asian Pacific Biomechanics 2023 conference and see you soon in Kuala Lumpur, Malaysia.



Prof Dato' Seri Ir Dr Noor Azuan Abu Osman  
Advisor  
AP-Biomech2023

## Foreword

On behalf of the Organizing Committee, we are honoured and delighted to welcome you to the 12th Asian-Pacific Conference on Biomechanics 2023 (AP-Biomech2023).

The AP-Biomech2023 aims to promote the latest research and developments related to biomechanics. The conference brings together leading academic icons, researchers, and industrial representatives to exchange and share their knowledge and research results in the latest innovations, research trends and concerns, challenges and adopted solutions in the field of Biomechanics. This conference will be one of the platforms for us to share our thoughts and exchange ideas with leading researchers from different parts of the world. We received 158 extended abstract submissions from Japan, Taiwan, South Korea, China, USA, Indonesia, Syria, Iraq, Bangladesh, India, Singapore, Vietnam and of course from Malaysia. A total of almost 250 delegates will be attending this conference of which almost 84% are international delegates.

The AP-Biomech2023 is organized by the Asia-Pacific Association of Biomechanics (APAB) and the Malaysian Society of Biomechanics (MSB) as the local organizer and supported by Universiti Malaya and the Malaysia Convention and Exhibition Bureau (MyCEB). Special thanks go to our sponsor BMEC and to STEM UM for supporting the publication of the AP-Biomech2023 Extended Abstract E-book.

My highest appreciation goes to all the honourable keynote speakers, plenary speakers, invited speakers and the forum panels for making this conference a globally recognized event. I take this opportunity to extend my heartfelt gratitude to the AP-Biomech2023 organizing committee members for their enthusiasm, commitments, dedications and hard work, and the distinguished APAB Council members for their invaluable support and assistance. Last but not least, I would like to thank all the authors, the reviewers, session chairs and the delegates for their contributions and participation. The conference will not be a success without your expertise and active participation.

To all participants of AP-Biomech2023, we hope that this conference will foster the exchange of new ideas and networking among researchers along with the joyful academic experience of AP-Biomech2023.



Dr Juliana Usman  
Chairperson  
AP-Biomech2023

## Organizing Committee

Advisor	<b>Prof Dato' Seri Ir Dr Noor Azuan Abu Osman (UM)</b>
Chairperson	<b>Dr Juliana Usman (UM)</b>
Secretary	<b>Dr Nooranida Arifin (UM)</b>
Bursary	<b>Mdm Hanie Nadia Shasmin (UM)</b>
Program Scientific & Technical	<b>Dr Muhamad Noor Harun (UTM) - Head</b> Dr Aizreena Azaman (UTM) Dr Abdul Hadi Abdul Wahab (TAR UMT) Ts Dr Mohd Al Fatihhi Mohd Szali Januddi (UniKL-MITEC) Ir Ts Dr Ab Aziz Mohd Yusof (UiTM) Dr Shazlin Shaharudin (USM) Mr Chok Chuen Leang (ISN)
Secretariat	<b>Dr Rizal Mohd Razman (UM) - Head</b> Mdm Siti Nur Khairunnisa Mad Arifin (ISN) Ms Desdemona Mollon (ISN) Ms Yeap Ming Wei (ISN) Mr Jeevaraj N.Vivekanandan (UM) Mr Abd Alghani Khamis (UM) Ms Cheah Pei Yi (UM) Mr Hamza Al Kouzbary (UM) Mr Taha Khamis (UM) Ms Zaina Al-Hashimi (UM) Mr Nor Akmal Farhan Kamsani Tuah (UM) Ms Quazi Isha Nafisa (UM) Ms Hanisah Bakeri (UM) Ms Nur Athirah Abd Rahman (USM)
Publication	<b>Dr Shazlin Shaharudin (USM) - Head</b> Ms Yallini Selva (ISN)
Program Website	<b>Dr Krishnamurithy Genasan (UM) - Head</b> Mr Mohd Shukri Hadafi Md Nor (PTM-UM) Ms Siti Noor Rabiatal Madia Malek Razuan (UM)
Public & Industry Relation	<b>Ir Dr Nasrul Anuar Abd Razak (UM) - Head</b> Mr Yuvaraj Ramasamy (ISN)
IT Technical Support	<b>Mdm Sainah Che Umar (UM) - Head</b> Mr Ku Mohd Haziq Ku Yusof (UM) Mr Mohd Fauzie Pamuji (UM) Mr Adhli Iskandar Putera Hamzah (UM) Mr Yuslialif Mohd Yusup (UM)

# Program Schedule

## Overview of Tentative Program

**DAY 1 | WEDNESDAY (15<sup>th</sup> NOVEMBER 2023)**

TIME	ACTIVITY		
07.30 - 08.30	Registration   Venue: Corus 2		
08.30 - 09.00	<b>APBIOMECH2023 Opening Ceremony   Venue: Ballroom 1</b>		
09.00 - 10.00	<p><b>Keynote 1   Venue: Ballroom 1</b>            Title: Functional Roles of Mechanosensory Osteocytes in Bone Adaptation: In-Vitro and In-Silico Studies            Speaker: Prof Taiji Adachi (Kyoto University, Japan)  <i>Chair: Prof James Goh</i></p>		
10.00 - 10.30	Refreshment Break + Poster Tour 1   Venue: Level 1		
10.30 - 11.30	<p><b>Podium Session P1A   Venue: Ballroom 1</b>  <i>Chairs: Prof Chwee Teck Lim and Dr Muhamad Noor</i></p>	<p><b>Podium Session P1B   Venue: Ballroom 2</b>  <i>Chairs: Prof Toshiro Ohashi and Ir Dr Nasrul Anuar Abd Razak</i></p>	<p><b>Podium Session P1C   Venue: Corus 1</b>  <i>Chairs: Dr Krishnamurithy Genasan and Dr Abdul Hadi</i></p>
11.30 - 12.30	<p><b>Podium Session P2A   Venue: Ballroom 1</b>  <i>Chairs: Prof Chwee Teck Lim and Dr Muhamad Noor</i></p>	<p><b>Podium Session P2B   Venue: Ballroom 2</b>  <i>Chairs: Prof Toshiro Ohashi and Ir Dr Nasrul Anuar Abd Razak</i></p>	<p><b>Podium Session P2C   Venue: Corus 1</b>  <i>Chairs: Dr Krishnamurithy Genasan and Dr Abdul Hadi</i></p>
12.30 - 14.15	Lunch   Venue: Dondang Sayang Coffee House, Ground Floor		
14.15 - 15.00	<p><b>Plenary 1   Venue: Ballroom 1</b>            Title: Smart Telerehabilitation Robotics for Dementia            Speaker: Prof Fong-Chin Su (National Cheng Kung University, Taiwan)  <i>Chair: Prof Takuji Ishikawa</i></p>		
15.00 - 16.00	<p><b>Forum 1   Venue: Ballroom 1</b>            Title: Women in Biomechanics: Challenges and Opportunities in the AP Region            Panels: Prof Lizhen Wang (Beihang University, China), Dr Juliana Usman (Universiti Malaya, Malaysia), and Dr Kim Hebert-Losier (University of Waikato, New Zealand)  <i>Moderator: Ir Dr Nasrul Anuar Abd Razak</i></p>		
16.00 - 16.15	Refreshment Break   Venue: Level 1		
16.15 - 17.15	<p><b>Podium Session P3A   Venue: Ballroom 1</b>  <i>Chairs: Prof Takeo Matsumoto and Dr Krishnamurithy Genasan</i></p>	<p><b>Podium Session P3B   Venue: Ballroom 2</b>  <i>Chairs: Prof Taiji Adachi and Dr Juliana</i></p>	<p><b>Podium Session P3C   Venue: Corus 1</b>  <i>Chairs: Prof Andi Isra Mahyuddin and Dr Nooranida Arifin</i></p>

**DAY 2 | THURSDAY (16<sup>th</sup> NOVEMBER 2023)**

TIME	ACTIVITY		
08.00 - 08.30	Registration   Venue: Corus 2		
08.30 - 09.30	<p><b>Keynote 2   Venue: Ballroom 1</b>            Title: Development of an Affordable Polycentric Knee Prosthetic in Indonesia: From the Design Stage to the Market            Speaker: Prof Dr Andi Isra Mahyuddin (Institut Teknologi Bandung, Indonesia)            Chair: Prof Takeo Matsumoto</p>		
09.30 - 10.15	<p><b>Plenary 2   Venue: Ballroom 1</b>            Title: Bioengineering Digital Lungs for Predicting Patient-Specific Treatment Outcome            Speaker: Prof Merryn Tawhai (University of Auckland, New Zealand)            Chair: Prof Seungbum Koo</p>		
10.15 - 10.45	Refreshment Break + Poster Tour 2   Venue: Level 1		
10.45 - 11.45	<p><b>Yamaguchi Medal Award Winners Presentation   Venue: Ballroom 1</b>            Chair: Prof Ashvin Tambyah</p>		
11.45 - 12.45	<p><b>Podium Session P4A   Venue: Ballroom 1</b>            Chairs: Prof Ashvin Tambyah and Dr Nooranida Arifin</p>	<p><b>Podium Session P4B   Venue: Ballroom 2</b>            Chairs: Prof Peter Lee and Dr Aizreena</p>	<p><b>Podium Session P4C   Venue: Corus 1</b>            Chairs: Prof Fong-Chin Su and Dr Muhamad Noor</p>
12.45 - 14.15	Lunch   Venue: Dondang Sayang Coffee House, Ground Floor		
14.15 - 15.00	<p><b>BMEC Presentation   Venue: Ballroom 1</b>            Title: Beyond the Megapixel Count: Understanding the Ins and Outs of Optical Motion Capture Technology            Speaker: Dr Pavel Bogachko (Qualisys AB)            Chair: Dr Rizal Razman</p>	<p><b>Podium Session P5B   Venue: Ballroom 2</b>            Chairs: Prof Lizhen Wang and Dr Aizreena</p>	<p><b>Podium Session P5C   Venue: Corus 1</b>            Chairs: Prof Bing-Shiang Yang and Prof Tatacipta Dirgantara</p>
15.00 - 16.00	<p><b>Symposium   Venue: Ballroom 1</b>            Title: Biomechanics in Orthopaedics            Invited Speakers: Prof Azlina Amir Abbas (Universiti Malaya, Malaysia), Prof Dr Tunku Kamarul Zaman (Universiti Sains Malaysia, Malaysia), Assoc Prof Dr Ardiyansyah Syahrom (Universiti Teknologi Malaysia, Malaysia) and Dr Rukmanikanthan Shanmugam (Prince Court Medical Centre, Malaysia)            Chair: Dr Krishnamurithy Genasan</p>		
16.00 - 16.15	Refreshment Break   Venue: Level 1		
16.15 - 17.15	<p><b>Podium Session P6A   Venue: Ballroom 1</b>            Chairs: Prof James Goh and Prof Hsiang-Ho Chen</p>	<p><b>Podium Session P6B   Venue: Ballroom 2</b>            Chairs: Prof Dato' Seri Ir Dr Noor Azuan Abu Osman and Dr Rukmanikanthan</p>	<p><b>Podium Session P6C   Venue: Corus 1</b>            Chairs: Prof Fong-Chin Su and Assoc Prof Ardiyansyah</p>
19.30 - 22.00	<b>Official Conference Dinner   Venue: IPC Cornerstone</b>		



**DAY 3 | FRIDAY (17<sup>th</sup> NOVEMBER 2023)**

TIME	ACTIVITY		
08.00 - 08.30	Registration   Venue: Corus 2		
08.30 - 09.30	<p><b>Keynote 3   Venue: Ballroom 1</b>            Title: A Patient-Centric Measure-Model-Manufacture-Manage (4M) Platform for Safer Personalised Medical Implants            Speaker: Prof Peter Lee (Melbourne University, Australia)            Chair: Prof Tatacipta Dirgantara</p>		
09.30 - 10.15	<p><b>Plenary 3   Venue: Ballroom 1</b>            Title: Simulation of Track Cycling: Practices from the National Team            Speaker: Dr Edin Kardin Suwarganda (National Sports Institute, Malaysia)            Chair: Prof Taeyong Lee</p>		
10.15 - 11.00	Refreshment Break + Poster Tour 3   Venue: Level 1		
11.00 - 12.00	<table border="1"> <tr> <td> <p><b>Podium Session P7A   Venue: Ballroom 1</b>            Chairs: Dr Edin Kardin Suwarhganda and Dr Aizreena</p> </td> <td> <p><b>Private Session   Venue: Corus 2</b>            APAB Official Meeting</p> </td> </tr> </table>	<p><b>Podium Session P7A   Venue: Ballroom 1</b>            Chairs: Dr Edin Kardin Suwarhganda and Dr Aizreena</p>	<p><b>Private Session   Venue: Corus 2</b>            APAB Official Meeting</p>
<p><b>Podium Session P7A   Venue: Ballroom 1</b>            Chairs: Dr Edin Kardin Suwarhganda and Dr Aizreena</p>	<p><b>Private Session   Venue: Corus 2</b>            APAB Official Meeting</p>		
12.00 - 15.00	Lunch   Venue: Dondang Sayang Coffee House, Ground Floor		
15.00 - 16.00	<p><b>Forum 2   Venue: Ballroom 1</b>            Title: Robotics Rehabilitation: Current Practice and Way Forward            Panels: Dr Norhamizan Hamzah (Universiti Malaya Medical Centre, Malaysia), Mr Banister Langgum (Cyberdyne Inc.), and Mdm Wahidatul Abdah (WQ Park Health and Rehabilitation Centre)            Moderator: Dr Nooranida Arifin</p>		
16.00 - 17.00	<b>Closing and Award Ceremony + Introduction to 13th AP-BIOMECH2025 + Group Photo   Venue: Ballroom 1</b>		
17.00 - 17.15	Refreshment Break   Venue: Level 1		

**DAY 4 | SATURDAY (18<sup>th</sup> NOVEMBER 2023)**

TIME	ACTIVITY
08.00 - 21.00	<b>Post-Conference Activity Tour (Private Paid Tour)</b>
08.30 - 12.00	<b>Malaysian Society of Biomechanics Post-Conference Activity</b>

## Podium - Parallel

DAY 1: Wednesday (15 Nov 2023)

Session	Time	A	B	C
		Ballroom 1	Ballroom 2	Corus 1
P1	1030 - 1130	53	76	80
		66	85	88
		69	95	133
		113	118	228
		169	173	
		194		
P2	1130 - 1230	191	197	240
		211	201	216
		222	202	235
		250	218	299
		292	225	
P3	1615 - 1715	62	132	301
		82	219	59
		103	221	238
		108	300	
		127		
		142		

DAY 2: Thursday (16 Nov 2023)

Session	Time	A	B	C
		Ballroom 1	Ballroom 2	Corus 1
Yamaguchi Winner	1045 - 1145	101		
		107		
		147		
		220		
		314		
P4	1145 - 1245	214	249	60
		229	253	61
		258	289	171
		280	293	200
		290	294	243
P5	1415 - 1500	BMEC Presentation	138	295
			205	305
			206	77
			291	89
			296	
P6	1615 - 1715	58	83	91
		63	174	170
		130	262	199
		213	282	212
		215	286	272
		281		

DAY 3: Friday (17 Nov 2023)

Session	Time	A
		Ballroom 1
P7	1100 - 1200	236
		237
		252
		264
		306
		309

## Poster Tour

Day 1	
15 November, 2023	
1000 - 1030 am	
No	Poster -ID
1	84
2	86
3	104
4	226
5	232
6	114
7	162
8	267
9	303
10	73
11	126
12	137
13	307
14	65
15	241
16	70
17	224
18	268
19	270
20	285

Day 2	
16 November, 2023	
1015 - 1045 am	
No	Poster -ID
1	207
2	105
3	79
4	87
5	92
6	136
7	145
8	193
9	203
10	234
11	308
12	310
13	255
14	266
15	129
16	131
17	239
18	244
19	245
20	247

Day 3	
17 November, 2023	
1015 - 1100 am	
No	Poster -ID
1	99
2	248
3	256
4	259
5	260
6	269
7	273
8	275
9	277
10	279
11	304
12	112
13	74
14	93
15	94
16	210
17	227
18	242
19	257
20	302

## Podium Presentations (parallel sessions)

**Day 1 (15<sup>th</sup> November 2023, Wednesday)**

Parallel Session P1A - (Day 1)			Ballroom 1
Time	ID	Title	
10.30 am	53	A New Device for Diagnosing and Treating Hand Stiffness and Inattention Caused by Excessive Smartphone Use <i>Rui Gong, Kazunori Hase, Qian Li and Sentong Wang</i>	
10.40 am	66	Development of Assistive Surgical Devices for Total Hip Arthroplasty <i>Seita Inoue, Yu Goto, Hiromasa Tanino, Hiroshi Ito, Ryo Mitsutake and Masaru Higa</i>	
10.50 am	69	Efficient Design Method of Handwriting Self-Help Devices for Individuals with Upper Limb Disabilities <i>Qian Li, Kazunori Hase and Jun Suzurikawa</i>	
11.00 am	113	Sweep Frequency Impedance Measures of Different Ear Conditions <i>Hikaru Nakagawa, Teruki Toya, Risa Nagai, Hisashi Sugimoto and Michio Murakoshi</i>	
11.10 am	169	The Effect of Virtual Reality-Based Aerobic Dance Exercise Program on Cardiopulmonary Fitness in Older Adults <i>Wan Yun Huang, Rong-Ju Cheng and Yi-Chun Du</i>	

Parallel Session P1B - (Day 1)			Ballroom 2
Time	ID	Title	
10.30 am	76	Model-Based Design and Optimization of Tail Device for Assisting Workers: Computational Study with Human-Device Dynamics Simulation <i>Naoto Haraguchi and Kazunori Hase</i>	
10.40 am	85	A Novel Evaluation Method for Three-Dimensional Tooth Axis and Dental Arch Curve <i>Yoshihito Ishii, Makoto Sakamoto, Takashi Kameda, Koki Nagae, Koichi Kobayashi and Kazuhiko Hiramoto</i>	
10.50 am	95	Cell-Centered Dynamics Simulation of Three-Dimensional Epithelial Sheet Deformation <i>Tomohiro Mimura and Yasuhiro Inoue</i>	
11.00 am	118	Parametric Study of Rotary File Instruments During Endodontic Treatment Through Dynamic Finite Element Simulation <i>Satrio Wicaksono, Wandu Prasetia, Anna Muryani, Tatacipta Dirgantara and Andi Isra Mahyuddin</i>	

11.10 am	173	Numerical Study on Primary Cilium and its Main Mechanical Components <i>Do Tien-Dung and Mazalan Mazlee</i>
11.20 am	194	Statistical and Morphometric Analysis of Cerebral Major Arterial Shapes and Corresponding Fluid Numerical Investigation <i>Yan Chen, Yanbo Liang and Oshima Marie</i>

Parallel Session P1C - (Day 1)		Corus 1
Time	ID	Title
10.30 am	80	The Relationship Between Viscoelastic Parameters of the Arterial Wall and Atherosclerosis Risk Status in Patients <i>Duc-Manh Dinh, Juho Kim and Kyehan Rhee</i>
10.40 am	88	Inference of Area Expansion Rate Distribution in 3D Sheet Morphogenesis <i>Kentaro Morikawa, Shinichi Morita, Kazuki Sakura, Akiteru Maeno, Hiroki Gotoh, Teruyuki Niimi and Yasuhiro Inoue</i>
10.50 am	133	Experimental Study on the Deformation Behaviour of Adjacent Vertebrae with Kissing Spine <i>Sotaro Baba, Takaya Kato, Motoyoshi Fujiwara, Tetsutaro Mizuno and Tadashi Inaba</i>
11.00 am	228	Computational Study on Mechanisms of Tongue forward Protrusion <i>Kyoichi Inoue, Tomohiro Otani, Kazunori Nozaki, Tsukasa Yoshinaga and Shigeo Wada</i>

Parallel Session P2A - (Day 1)		Ballroom 1
Time	ID	Title
11.30 am	191	Electromyography Analysis of the Hip Adductor during Bicycle Ergometer <i>Atsushi Iwashita, Yuto Konishi, Fujinaga Takeshi, Tomoya Akakabe and Kajiwara Yosiyuki</i>
11.40 am	211	Evaluation of the Relative Relationship between the Scapula Glenoid and Humeral Head before and after Arthroscopic Rotator Cuff Repair <i>Sayaka Matsuguma, Takeshi Shimoto, Kazuki Noda, Satoru Ikebe, Eiji Tashiro, Naoya Kozono, Naohide Takeuchi, Satoshi Hamai, Yasuharu Nakashima and Hidehiko Higaki</i>
11.50 am	222	Stabilizing Role of the Acromioclavicular Joint Ligaments allows the Contribution of Clavicular Muscles to Arm Elevation <i>Takayuki Aimi, Atsushi Ueda and Yasuo Nakamura</i>
12.00 pm	250	Noninvasive Diagnostic System for Knee Osteoarthritis using Vibration Response <i>Takeshi Tokoshima, Kazunori hase, Rui Gong, Makoto Yoshida and Susumu Ota</i>

12.10 pm	292	Analysis of Muscle Fatigue During a Simulated Heavy Traffic Driving: Preliminary Analysis <i>Jeevaraaj Vivekanandan, Juliana Binti Usman, Andri Andriyana, Goh Siew Li and Lai Khin Wee</i>
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Parallel Session P2B - (Day 1)		Ballroom 2
Time	ID	Title
11.30 am	197	Automated Centerline Extraction of Circle of Willis using Deep Learning Approach <i>Zixuan Zhao, Yan Chen and Marie Oshima</i>
11.40 am	201	A Suppression Effect of a Magnetic Field on Breakup of a Ferrofluid Droplet in Simple Shear Flow <i>Yuto Kawabata, Shunichi Ishida and Yohsuke Imai</i>
11.50 am	202	Computer Simulation of Red and White Thrombi Formation Determined by Blood Flow <i>Ken-ichi Tsubota and Wataru Tokuno</i>
12.00 pm	218	Development of a Computational Mechanical Model of Brain Volume Change with Cerebral Atrophy <i>Yuta Iijima, Shusaku Maeda, Tomohiro Otani, Shigeki Yamada, Mitsuhito Mase and Shigeo Wada</i>
12.10 pm	225	Development of a Numerical Simulator of Phase Contrast Magnetic Resonance Imaging <i>Ellen Cavalcante Alves, Yu Sato, Tomohiro Otano, Tetsuro Sekine and Shigeo Wada</i>

Parallel Session P2C - (Day 1)		Corus 1
Time	ID	Title
11.30 am	240	Comparison of Thoracic Skin Deformations Associated with Shoulder Joint Abduction and Flexion <i>Kazuma Kajiyama, Takayuki Aimi and Yasuo Nakamura</i>
11.40 am	216	Growth-Induced Fold Formation of a Sheet-Like Tissue in a Viscous Fluid: An Isogeometric Boundary Element Analysis <i>Togo Hayashi, Hironori Takeda, Shunichi Ishida and Yohsuke Imai</i>
11.50 am	235	Evaluation of the Effect of a Cell Cycle Checkpoint on Multicellular Tissue Growth <i>Yuka Yokoyama, Yoshitaka Kameo and Taiji Adachi</i>
12.00 pm	299	Numerical Analysis of the Midgut Elongation under the Effect of the Mesentery <i>Michina Saiki, Hironori Takeda, Shunichi Ishida and Yohsuke Imai</i>

Parallel Session P3A - (Day 1)		Ballroom 1
Time	ID	Title
16.15 pm	62	Exploring the Influence of Flexibility on Cardiac Load during Exercise in Older Adults: A K-Means Clustering Analysis Approach <i>Chih-Chun Lin, Ting Hsuan Cho, Yu Sheng Lin, Jenn-Jier James Lien, Li-Chieh Kuo and Fong-Chin Su</i>
16.25 pm	82	Impact of Altered Torsional Stiffness of Air Pressure Shoes on Ankle Joint During Turning in Level Walking: A Biomechanical Study <i>Md Samsul Arefin, Hsiao-Feng Chien, Chien-Ju Lin, Cheng-Feng Lin and Fong-Chin Su</i>
16.35 pm	103	Mathematical Estimation of Muscle Co-Constrictions during Knee Flexion <i>Masaru Higa, Yudai Nakagawa, Taiga Ishii and Seita Inoue</i>
16.45 pm	108	Muscle Exertion around the Upper Arm During Playing Tremolo on Mandolin <i>Michihiko Fukunaga and Ryoga Fujjoka</i>
16.55 pm	127	Influence of Footwear on MRI T2 Relaxation Time of Lower Extremity Muscles in Elite Race Walkers: A Case Study <i>Lee Rou You, Hiroaki Noro, Yohei Yamazaki, Keiichiro Hata and Toshio Yanagiya</i>
17.05 pm	142	A Validation Method for Estimating the Reaction Force from the Ice Surface during Figure Skating Jump Movements <i>Yuse Hara, Kazunori Hase, Naoto Haraguchi, Tatsuki Koshio and Takayoshi Takahashi</i>

Parallel Session P3B - (Day 1)		Ballroom 2
Time	ID	Title
16.15 pm	132	Estimation of Pull-Out Forces of an Artificial Hip Joint with a Structure for Preventing Dislocation <i>Ei Yamamoto and Yuki Kawamura</i>
16.25 pm	219	3D Printing and Mechanical Characterization of Dynamic Bone Tissue Scaffolds with Commercialized Filaments <i>Hatice Kübra Bilgil and Masahiro Todoh</i>
16.35 pm	221	Cell Morphological Control using Gel-Micromachining Technique and Cell Differentiation Induction <i>Haruhiko Takemoto, Yoichi Saito, Yoshitaka Nakanishi and Yuta Nakashima</i>
16.45 pm	300	Trials on Mems Sensor Utilization on 3D Printed Intravascular Flow Model <i>Narendra Kurnia Putra, Fara Azzahra Dinata, Muhammad Iqbal, Muhammad Ihsan Maulana and Muhammad Salman Al Farisi</i>

Parallel Session P3C - (Day 1)		Corus 1
Time	ID	Title
16.15 pm	301	Telemedicine for Remote Monitor and Mechanical Analysis of Wound Healing using Negative Pressure Wound Treatment System <i>Chia-Ching (Josh) Wu, Chen-Han Ho, Dinh-Toi Chu and Thamil Selvee Ramasamy</i>
16.25 pm	59	Effect of a Newly Developed Titanium Implant Plate Fixation on New Bone Formation during Early Stage of Healing <i>Norain Binti Abdullah, Daisuke Miyazaki, Ei Yamamoto, Kosuke Ueki, Masaaki Nakai and Tamio Ida</i>
16.35 pm	238	Block Building to Fabricate Transplantable Organoids <i>Ayaka Kadotani, Gen Hayase and Daisuke Yoshino</i>

**Day 2 (16<sup>th</sup> November 2023, Thursday)**

Yamaguchi Winner Session - (Day 2)		Ballroom 1
Time	ID	Title
10.45 am	101	A Bayesian Approach to Characterizing Anisotropic Properties of Skin from Suction Tests <i>Taeksang Lee</i>
10.55 am	107	Motion Resistance of Sacroiliac Joint Caused by Articular Surface Morphology <i>Ryota Toyohara, Niels Hammer and Toshiro Ohashi</i>
11.05 am	147	Dynamic finite element simulation of 3D foot during stance phase of human walking <i>Kohta Ito, Takeo Nagura, Masahiro Jinzaki, Naomichi Ogihara</i>
11.15 am	220	Rheology of ferrofluid droplet suspension in wall-bounded shear flow <i>Shunichi Ishida and Daiki Matsunaga</i>
11.25 am	314	Effects of proximal-emphasized exercise equipment on balance for chronic stroke survivors <i>Yu-Lin You, Cheng-Feng Lin, Li-Chieh Kuo and Fong-Ching Su</i>

Parallel Session P4A - (Day 2)		Ballroom 1
Time	ID	Title
11.45 am	214	Inserting a Curved Carbon Plate into the Midsole Enhances Running Mechanical Efficiency at the Ankle Joint <i>Tomohiro Miyazaki, Takayuki Aimi, Yugo Yamada and Yasuo Nakamura</i>
11.55 am	229	The Relationship between Trunk Twist and Distance of Batted Balls in Baseball Hitters <i>Taku Kawamura and Michihiko Fukunaga</i>
12.05 pm	258	Evaluation of 3D Surface Scanning with Handheld 3D Scanner for Biomechanical Product Design <i>Muhammad Alfiyya Fajra, Harmein Khagi, Suprijanto and Narendra Kurnia Putra</i>
12.15 pm	280	Kinematics of a Visually Impaired Running on the Treadmill: A Case Study <i>Pei Yi Cheah and Rizal Razman</i>
12.25 pm	290	Floating Toe Scores of Athletic Athletes during Static Standing Posture <i>Yohei Yamazaki, Hiyo Inaba, Hiroaki Noro, Keiichiro Hata, Shuta Matsui, Lee Rou You and Misato Ishikawa</i>

Parallel Session P4B - (Day 2)		Ballroom 2
Time	ID	Title
11.45 am	249	Isogeometric Boundary Element Analysis of Wrinkling and Creasing of a Capsule Membrane in a Shear Flow <i>Hironori Takeda, Yusuke Asai, Shunichi Ishida and Yohsuke Imai</i>
11.55 am	253	Multi-Cell Modelling of the Skeletal Muscle Microenvironment to Explore Age-Related Changes in Satellite Cell Dynamics <i>Stephanie Khuu and Andrew D McCulloch</i>
12.05 pm	289	The Simulation of Blood Vessel Revascularization in Stenosis Case with Spring-Damper Analogy Method <i>Muhammad Ihsan Maulana, Bonfilio Nainggolan, Mikha Hilliard, Faqihza Mukhlis and Narendra Kurnia Putra</i>
12.15 pm	293	Development of a 3D Reconstruction Method for Red Blood Cell Shapes by Deep Learning and Fluid-Structure Interaction Analysis <i>Gakuto Nakaie, Shunichi Ishida, Yusuke Asai, Takuma Kaneoka and Yohsuke Imai</i>
12.25 pm	294	2-Deoxy-ATP Improves Cardiac Function in a Multiscale Computational Model of Heart Failure <i>Abigail E. Teitgen, Marcus Hock, Kimberly J. McCabe, Matthew C. Childers, Gary Huber, Daniel Beard, Michael Regnier and Andrew D. McCulloch</i>



Parallel Session P4C - (Day 2)		Corus 1
Time	ID	Title
11.45 am	60	Enhancement of Mass Transport by an Aggregation of Swimming Microorganisms <i>Yu Kogure, Toshihiro Omori and Takuji Ishikawa</i>
11.55 am	61	Swimming Simulation of Ascidian Sperm Chemotaxis <i>Sara Kamijo, Toshihiro Omori, Kogiku Shiba and Takuji Ishikawa</i>
12.05 pm	171	Collective Swimming of Spermatozoa Emerging from Unsteady Hydrodynamic Interactions <i>Toshihiro Omori, Nanami Taketoshi and Takuji Ishikawa</i>
12.15 pm	200	Flying Yeast: Aerosol Particles Released during the Fermentation <i>Ryoji Onishi, Kenji Kikuchi and Takuji Ishikawa</i>
12.25 pm	243	Comparison of Biomechanical Variables in Nurses' Work-Related Tasks between Healthy and Chronic Non-Specific Low Back Pain Nurses <i>Nur Athirah Abd Rahman and Shazlin Shaharudin</i>

Parallel Session P5B - (Day 2)		Ballroom 2
Time	ID	Title
14.00 pm	138	Simulation of Thrombus Formation in a Cerebral Aneurysm with Flow Diverter Stenting <i>Kenji Komiya, Shuta Imada, Kaito Kurata, Yoshihiro Ujihara, Shukei Sugita and Masanori Nakamura</i>
14.10 pm	205	Transdermal Transport through Intercellular Gaps of Liposomes in Suspensions <i>Jiawei Huang, Kenji Kikuchi, Keiko Numayama-Tsuruta and Takuji Ishikawa</i>
14.20 pm	206	Stagnation Phenomenon of Motile E. Coli in a Folding Wall <i>Toma Isaka, Kenji Kikuchi, Keiko Numayama-Tsuruta and Takuji Ishikawa</i>
14.30 pm	291	Numerical Simulation of Flow Behaviour in Basilar Bifurcation Computed Tomography Angiography <i>Ryo Shimodoumae, Gaku Tanaka, Ryuhei Yamaguchi and Makoto Ohta</i>
14.40 pm	296	Hemodynamics within Elastic Aneurysm in MCA <i>Shuhei Sato, Ryuhei Yamaguchi, Gaku Tanaka, Albadawi Muhamed, Khalid Saqr, Toshiyuki Nakata and Makoto Ohta</i>

Parallel Session P5C - (Day 2)			Corus 1
Time	ID	Title	
14.00 pm	295	A Deformable Capsule Propelled by inside Microswimmers <i>Zhihan Huang, Toshihiro Omori and Takuji Ishikawa</i>	
14.10 pm	305	Viscoelastic Analysis of Fermenting Puffing Dough <i>Kenji Kikuchi, Kyosuke Kimura, Keiko Numayama-Tsuruta and Takuji Ishikawa</i>	
14.20 pm	77	Quantitative Evaluation Method of Brain Activity and Autonomic Function using Heart Rate Variability Data <i>Miki Matsuhashi, Yasumi Ito, Ryuichi Yamada, Tetsuya Nemoto, Yoshiyuki Kagiyama and Qin Xu</i>	
14.30 pm	89	Transtibial Prosthesis Alignment Automation: A Machine Learning Approach for Data Analysis and Method Development <i>Taha Khamis, Hamam Mokayed, Nasrul Anuar Bin Abd Razak and Noor Azuan Abu Osman</i>	

Parallel Session P6A - (Day 2)			Ballroom 1
Time	ID	Title	
16.15 pm	58	A Comparison of Mechanical Energy Flow Pattern between Young and Old Adults during the Sit-To-Stand Task <i>Nai-Wen Hsu, Yun-Lin Tsai, Ling-Wei Yen and Chih-Hsiu Cheng</i>	
16.25 pm	63	Investigating in-vehicle Distractions: A Driving Simulator and fNIRS Study <i>Chih-Hao Liu, Sheng-Yuan Chen and Bing-Shiang Yang</i>	
16.35 pm	130	Development and Evaluation of Robust Fall Detection Algorithm using Elderly Public Datasets <i>Bummo Koo, Seunghee Lee, Sumin Yang and Youngho Kim</i>	
16.45 pm	213	Effects of a Novel Drone Guidance System on Movement Performance during Baduanjin Exercises for Older Adults: A Comparative Study with Traditional Audio and Video Guidance <i>Kanjana Chaitika, Chien-Ju Lin, Hsiao-Feng Chieh and Fong-Chin Su</i>	
16.55 pm	215	Sensor-Embedded Novel Holding Device for Upper Extremity Assessments and Rehabilitation <i>Charlie C. Ma, Chien-Ju Lin, Hsiao-Feng Chieh and Fong-Chin Su</i>	
17.05 pm	281	Prediction of Human COM Trajectory with a Slip Model Based Compliant Leg Biped during Walking and Jogging at Low Speeds <i>Saptarshi Jana and Abhishek Gupta</i>	

Parallel Session P6B - (Day 2)		Ballroom 2
Time	ID	Title
16.15 pm	83	Mechanical Adaptation of Actomyosin Fibers: Experiment and Simulation <i>Shihang Ding, Daiki Matsunaga, Taeyoon Kim and Shinji Deguchi</i>
16.25 pm	174	Living Cells Side-View Imaging Method for Cell Adhesion Evaluation <i>Mao Otake, Takaaki Abe, Yoshiaki Ukita and Hiromi Miyoshi</i>
16.35 pm	262	Biomechanical Analysis in Spheroid Culture: Induction of Hypertrophic Chondrocyte Differentiation <i>Jeonghyun Kim, Kosei Tomida, Eijiro Maeda, Taiji Adachi and Takeo Matsumoto</i>
16.45 pm	282	Transgenic Mice Expressing FRET-Based Actinin Tension Sensor for the Measurement of Intracellular Tension in Tissues with Conventional CLSMS <i>Takeo Matsumoto, Junfeng Wan, Eijiro Maeda, Yuki Tsujimura, Hideo Yokota and Tetsuya Kitaguchi</i>
16.55 pm	286	Analytical and Simulation Study on Brownian Collision for Dense Chromatin Dynamics <i>Yukitaka Ishimoto and Yuki Takahashi</i>

Parallel Session P6C - (Day 2)		Corus 1
Time	ID	Title
16.15 pm	91	Generating the Foot Pattern with a Recurrent Neural Network using Minimal Feedback Signals: Application for Powered Ankle-Foot <i>Hamza Al Kouzbary, Mouaz Al Kouzbary, Hamam Author, Nooranida Arifin and Noor Azuan Abu Osman</i>
16.25 pm	170	Stabilizing Low-Cost Thin Pressure Sensors using Neural Networks for Pressure Monitoring in IoT-Integrated Scoliosis Braces <i>Abd Alghani Khamis, Mouaz Kouzbary, Noor Azuan Abu Osman and Hamam Mokayed</i>
16.35 pm	199	Development and use of Microtubular Sensors for Non-Invasive Blood Pressure Monitoring <i>Subramaniam Shangari, Vishnu Sujeesh, Anshul Sarin, Yu Longteng, Lim Yinghao, Lim Chwee Teck and Leo Hwa Liang</i>
16.45 pm	212	Development of a Game-Based Virtual Reality Pinch Force Control Training System for Brain Activation <i>Luigi Gan, Chien-Ju Lin, Hsiao-Feng Chieh and Fong-Chin Su</i>
16.55 pm	<b>272</b>	Development of a Biomechanical Feedback Teaching Device – Edema Massage Techniques Application for Forearm <i>Yu-Chen Lin, Chieh-Hsiang Hsu, Li-Chieh Kuo and Yu-Sheng Lin</i>

**Day 3 (17<sup>th</sup> November 2023, Friday)**

Parallel Session P7A - (Day 3)		Ballroom 1
Time	ID	Title
11.00 am	236	Effect of Acceleration and Deceleration on Gait Robustness <i>F. Ferryanto, Daffa Faisal Afif and Andi Isra Mahyuddin</i>
11.10 am	237	Soft Robotic Glove System with Half Bellows-Shaped Soft Actuator for Repetitive Exercise of Hand Therapy <i>Ayu G. Risangtuni and Yul Y. Nazaruddin</i>
11.20 am	252	Analysis of Delayed Output Feedback Control Parameters using Forward Dynamics Skeletal Simulation <i>Seungwoo Yoon and Seungbum Koo</i>
11.30 am	264	Development of a Passive Exoskeleton for Care Workers to Assist the Lower Back and the Lower Limbs <i>Bian Yoshimura, Naoto Haraguchi, Makoto Yoshida and Kazunori Hase</i>
11.40 am	306	Wi-Fi-Based Human Activity Recognition and Quantification for Continuous Monitoring of Motor Functions in Parkinson's Disease <i>Chi-Lun Lin and Shih-Yuan Chen</i>
11.50 am	309	Exploring the Feasibility of using Reinforcement Learning for Shoulder Joint Moment Estimation <i>Muhammad Fairuz Abdul Jalal and Hazreen Haizi Harith</i>

## Poster Presentations

**Day 1 (15<sup>th</sup> November 2023, Wednesday)**

Poster Presentation - (Day 1)		Level 1
Time	ID	Title
10.00 - 10.30 am	84	Metastatic Competency of Breast Cancer Cells after Confined Migration <i>Xiao Song, Kuan Jiang, Lanfeng Liang and Chwee Teck Lim</i>
	86	Effect of Gold Nanoparticles on Ablation Area of Cell-Containing Tissue Phantom in Irreversible Electroporation <i>Kentaro Funada and Kosaku Kurata</i>
	104	Change in Cell Membrane Permeability during Application of Electric Pulses <i>Taishin Kinoshita and Kosaku Kurata</i>
	226	Internal Flow of C. Elegans Body Promoted by Locomotion <i>Yasuhiro Asoshina, Kenji Kikuchi and Takuji Ishikawa</i>
	232	Analysis of the Temperature Field in a Cell Separation Device using Dielectrophoresis <i>Yoshinori Seki, Aoi Nagasaka and Shigeru Tada</i>
	114	Development of Planar Lipid Membranes for Analysis of an Inner-Ear Motor Protein Prestin <i>Hayato Niioka and Michio Murakoshi</i>
	162	Flow Data Assimilation of Magnetic Resonance Images Considering Partial Volume Effect <i>Kakeru Ueda, Kazuma Imata, Tomohiro Otani and Shigeo Wada</i>
	267	Numerical Analysis of Lateral Migration of the Rigid Sphere in Bio-Inspired Pump <i>Tomoki Takada, Taimei Miyagawa, Takahiro Okabe and Minoru Shiota</i>
	303	Upper Airway Simulation of Obstructive Sleep Apnea Syndrome <i>Yuka Funaki, Atsuro Tanabe, Hiroyuki Tada and Gaku Tanaka</i>
	73	Anterior Oblique Ligament Stiffness Measurement at Various Elbow Flexion Angles using Strain Ultrasound Elastography <i>Yuto Takanezawa, Makoto Sakamoto, Takuya Sugawara, Kei Itoh, Koichi Kobayashi, Kazuhiko Hiramoto and Tomohiro Sasaki</i>

10.00 - 10.30 am

126	Relation between Interstitial Flow and MMP2 Expression <i>Shukei Sugita, Hiroomi Kaida, Yoshihiro Ujihara and Masanori Nakamura</i>
137	On the Mechanisms of Distal Stent Graft-Induced New Entry (D-Sine) <i>Shinri Morodomi, Homare Okamura, Yoshihiro Ujihara, Shukei Sugita and Masanori Nakamura</i>
307	Biomechanical Study to Determine Surgical Sites during Anterior Cruciate Ligament Reconstruction Surgery <i>Bo Won Jung and Tae Soo Bae</i>
65	Enhancing Postoperative Stability in Hemifacial Macrosomia: A Customized BSSO Reconstruction Plate Design Approach <i>Yu-Tzu Wang, Che-Kai Hsu and Po-Fang Wang</i>
241	Computer Simulation of Bone Adaptation and Microdamage Repair by Remodelling in Single Trabecula <i>Tsuyoshi Muto, Yoshitaka Kameo, Young Kwan Kim and Taiji Adachi</i>
70	Measurement of Contact Stress between Heel and Shoe <i>Takumi Agari, Kotaro Miura, Kazuhiko Sasagawa and Kazuhiro Fujisaki</i>
224	Musculoskeletal Simulation to Estimate Muscle Activity and Reaction Forces of Knee Osteoarthritis Patients while Walking <i>Takahiro Gempei, Daisuke Tawara and Masaya Anan</i>
268	High Tibial Osteotomy Increases Medial Compartment Articular Distances in Medial Knee Osteoarthritis during Stand-To-Sit using 3D Fluoroscopy <i>Kao-Shang Shih, Pei-Ling Weng, Chia-Ling Fan, Yi-Chen Wu, Cheng-Chung Lin and Tung-Wu Lu</i>
270	Application of Dynamic Tape on Semiconductor Workers with Repetitive Low Back Pain <i>Tian-Hong Wang, Jing-Min Liang and Wen-Lan Wu</i>
285	Classifying Functional Differences Based on Fugl-Meyer Assessment for Upper Extremity (FMA-UE) using Machine Learning and Markerless Pose Estimation <i>Yu-Sheng Lin, Yu-Chih Tseng, Chieh-Hsiang Hsu, Yen-Po Huang, Chin-Chun Lin, Yu-Chen Lin and Li-Chieh Kuo</i>

**Day 2 (16<sup>th</sup> November 2023, Thursday)**

Poster Presentation - (Day 2)		Level 1
Time	ID	Title
10.15 - 10.45 am	207	Thermal Conductivity Measurement of Spider Silk using Thin Hot Wire <i>Daichi Sawada, Yoko Tomo, Takanobu Fukunaga, Kosaku Kurata and Hiroshi Takamatsu</i>
	105	Study of the Effect of Modification of Mechanical Properties by Plasma Nitriding Treatment on the Straight-Line Stability of Radiotherapy Needles <i>Keita Ito, Yasumi Ito, Ryuichi Yamada, Kensuke Hattori, Masahide Saito and Hiroshi Onishi</i>
	79	Computational Mechanics of the Knee Joint Ligament <i>Sentong Wang, Kazunori Hase, Rui Gong and Tetsuro Funato</i>
	87	A Mathematical Formulation of the Three-Dimensional Occlusal Plane Based on an Intraoral World Coordinate System <i>Koki Nagae, Yoshihito Ishii, Makoto Sakamoto, Takashi Kameda, Koichi Kobayashi and Kazuhiko Hiramoto</i>
	92	Investigation for the Roles of Binding of $\alpha$ C Regions in Forming Meshwork Structures of Fibrin Aggregation by a Mesoscopic Mechanical Model <i>Takeya Ohno, Taiki Shigematsu and Satoshi Ii</i>
	136	Simulation of the Thrombus Formation in Stanford Type B Aortic Dissection under the Interaction between Thrombus and Blood Flow <i>Shuta Imada, Kenji Komiya, Naoyuki Kimura, Yoshihiro Ujihara, Shukei Sugita and Masanori Nakamura</i>
	145	Investigation of Cell-Membrane Protrusion Dynamics using a Coupling Model of Membrane and Actin-Cortex Dynamics <i>Kohsuke Tsukui, Hiromi Miyoshi, Naoya Sakamoto and Satoshi Ii</i>
	193	Development and Biomechanical Evaluation of an Artificial Cervical Intervertebral Disc with Composite Lattice Structure <i>Weng-Pin Chen and Jui-Hsien Chiu</i>
	203	Molecular Insights into ATPase Release Pathway of Cytoplasmic Dynein <i>Pei-Cheng Li, Yu-Bai Xiao and Shu-Wei Chang</i>
	234	Vertebral Strength Prediction using Automatic CT-Based L1 Models with Bone Inhomogeneity <i>Yen Cheng, Po-Liang Lai, Mao-Chieh Su and Hsiang-Ho Chen</i>
308	Development of a Practical Approach for Predicting Patient-Specific Intra-Aneurysmal Flows using a Data Assimilation Technique <i>Tsubasa Ichimura, Shigeki Yamada, Yoshiyuki Watanabe, Hiroto Kawano and Satoshi Ii</i>	

10.15 - 10.45 am

310	Effect of Correction Angles for Discoid Lateral Meniscus on Distribution of Joint Stress during Biplane Open-Wedge High Tibial Osteotomy <i>Tae Soo Bae and Bo Won Jung</i>
255	Effect of Clump Size for iPSC Cell Passaging on Pluripotency and Proliferation <i>Koji Ishii, Koki Abe, Teiji Sakamoto, Takashi Kurihara and Shogo Miyata</i>
266	Investigation of Quantitative Evaluation of Fusion Process Based on Morphological Analysis of Spheroids <i>Ginga Kinoshita, Xiu-Ying Zhang, Satone Taniguchi, Takahiro Oshio, Koharu Aoyama and Takeshi Shimoto</i>
129	Nanoplastics for Immunological Assessments <i>Yoshitaka Nakanishi, Yukio Fujiwara and Yuta Nakashima</i>
131	Quantification of Load and Loading Direction of Patellar Component in Total Knee Arthroplasty using a Surgical Assistance System <i>Kanako Ichimura, Takeshi Shimoto, Shinya Kawahara and Yasuharu Nakashima</i>
239	Evaluation of Temperature Visualization inside the Agar Phantom Simulating a Living Body in Magnetic Hyperthermia <i>Ryuhei Kubota, Keiko Ishii and Koji Fumoto</i>
244	Evaluation of Heat Generation Characteristics of Magnetic Nanoparticles Considering Polydispersity in Magnetic Hyperthermia <i>Hiroki Nakajima and Koji Fumoto</i>
245	Research on the Control of Heat Generated by Magnetic Nanoparticles in Magnetic Hyperthermia <i>Shuichi Ideno and Koji Fumoto</i>
247	Feasibility of a Virtual Reality-Based Exergames to Enhance Cardiopulmonary Fitness in Children with Developmental Coordination Disorder <i>Ya-Ju Ju, Yi-Chun Du, Po-Sen Hu Kao and Rong-Ju Cherng</i>



**Day 3 (17<sup>th</sup> November 2023, Friday)**

Poster Presentation - (Day 3)		Level 1
Time	ID	Title
10.15 - 11.00 am	99	Fall-From-Height Detection using an IMU Sensor in a Wearable Airbag <i>Seunghee Lee, Sumin Yang, Bummo Koo, Dongkwan Kim and Youngho Kim</i>
	248	Simulational Analysis of the Energy Efficiency of Walking with a Backpack <i>Makoto Yoshida, Justyna Zasada and Kazunori Hase</i>
	256	Robotic Ankle Prostheses: Designing and Fabricating a Compact Motor Driver Circuit Board for Enhanced Motor Control <i>Zaina Al-Hashimi, Nooranida Arifin, Hamam Mokayed and Noor Azuan Abu Osman</i>
	259	Associations between Trunk Movements in the Sagittal Plane and Gait Deviations in Adults with Unilateral Developmental Dysplasia of the Hip during Walking <i>Ching-Ru Chen, Kuan-Wen Wu, Ting-Ming Wang and Tung-Wu Lu</i>
	260	Development of Robotic Knee Joint Incorporating Cycloidal Gear Drives and Series Elastic Element <i>Quazi Isha Nafisa, Mouaz Al Kouzbary, Noor Azuan Abu Osman and Nasrul Anuar Abd Razak</i>
	269	Preliminary Investigation: Impact of Control Structure in Battery Charger on Prosthetic Battery Pack <i>Nor Akmal Farhan Kamsani Tuah, Nooranida Arifin and Noor Azuan Abu Osman</i>
	273	Comparison of Recurrent Neural Network Algorithms for Estimating the Body's Centre of Mass Motion Relative to the Centre of Pressure during Gait using a Single Waist-Worn IMU <i>Cheng-Hao Yu, Chih-Ching Yeh, Yi-Fu Lu, Frank Yeong-Sung Lin and Tung-Wu Lu</i>
	275	Anticipatory Whole-Body Balance Control in the Elderly for Crossing Obstacles of Different Heights <i>Ju Yang Tiong, Yi-Chen Wu, Cheng-Hao Yu, Yi-Ling Lu, Kuan-Wen Wu, Ting-Ming Wang and Tung-Wu</i>
	277	Patterns and Stability of Inter-Joint Coordination for Patients with Amnesic Mild Cognitive Impairment during Obstacle Crossing <i>Shiuan-Huei Lu, Yi-Chun Kuan, Yu-Lin Tsai and Tung-Wu Lu</i>
	279	Coordination Stability on the Body's Centre of Mass Motion Relative to the Centre of Pressure during Walking: From Toddlerhood to Adulthood <i>Chia-Tung Chung, Cheng-Hao Yu, Shiuan-Huei Lu and Tung-Wu Lu</i>

10.15 - 11.00 am

304	Gait Event Detection using a Single IMU in Electromechanical KAFO: Healthy Adult vs Hemiplegic Patient <i>Sumin Yang, Seunghee Lee, Bummo Koo and Youngho Kim</i>
112	Determining the Optimal Classification for Improving GRF Estimation: Gender, Weight, and Speed Analysis <i>Ji-Ting Lin, Ning Tung and Bing-Shiang Yang</i>
74	Visualization of Contact Stress Acting on Palm during Bat Swing <i>Daisuke Shimizu, Kazuhiko Sasagawa, Kazuhiro Fujisaki and Kotaro Miura</i>
93	Influence of Subjective Effort Level on Badminton Shot Accuracy and Movement <i>Shimizu M., Ozawa Y. and Yamada H.</i>
94	Changes in Muscle Activity when Manipulating the Difficulty of the Serve <i>Furuya R., Ozawa Y. and Yamada H.</i>
210	Kinematics and Stabilities of the Inter-Segmental Lumbar Spine: Measurement and Analysis using 3D Fluoroscopy <i>Chung-Hua Chu, Chia-Ying Shen, Kuan-Hsien Wu and Tung-Wu Lu</i>
227	Electromyographic Activity during the Lateral Step-Up, Lunge and Single Leg Squat Exercises with Standard Barbell and Safety Squat Bar <i>Ying-Ying Chen, Yu-Lin Yo, Chin-Dar Tseng and Lan-Yuen Guo</i>
242	Trunk and Lower Limb Landing Kinematics Following a Forehand Jump Smash <i>Yeap Ming Wei, Yuvaraj Ramasamy, Juliana Usman and Rizal Razman</i>
257	Comparison of Muscle Activities of the Lower Limb among Different Shooting Distances in Petanque <i>Yi-Wen Chang, Hong-Wen Wu and Guo-Xun Wu</i>
302	Silicone Elastomer Soft Pneumatic Actuators for Lower Limb Rehabilitation <i>Hanisah Bakeri, Khairunnisa Hasikin, Nasrul Anuar Abd Razak, Rizal Mohd Razman, Abd Alghani Khamis, Muhammad 'Ammar Annuha, Abbad Tajuddin and Darween Reza</i>

## Keynote Session

**Keynote 1**

**Ballroom 1**



Prof Taiji Adachi  
*Kyoto University, Japan*

Taiji Adachi PhD is Professor at the Laboratory of Biomechanics, Department of Biosystems Science, Institute for Frontier Life and Medical Sciences, Kyoto University. He received his BS (1990) in Mechanical Engineering at Kobe University, MS (1992) and PhD (1997) at Osaka University. He joined the Department of Mechanical Engineering as a Research Associate (1992) at Kobe University, worked as a Research Fellow at the Orthopaedic Research Laboratory at the University of Michigan (1997-99). He joined the Department of Mechanical Engineering as an Associate Professor (2004) at Kyoto University, and was promoted to Professor (2010-) at the Institute for Frontier Medical Sciences. He is working in the fields of cell and molecular biomechanics and mechanobiology, and has been a Member of World Council of Biomechanics since 2011.

### **Functional Roles of Mechanosensory Osteocytes in Bone Adaptation: In-Vitro and In-Silico Studies**

Day 1 (15th November 2023, Wednesday)

09.00 – 10.00 am | Ballroom 1

In bone adaptation by remodelling, mechanosensory osteocytes are believed to play important roles in regulating bone-resorbing osteoclasts and bone-forming osteoblasts. It has been believed that osteocytes, embedded in the mineralized bone matrix, play as mechanosensory cells and their intercellular communication through a network is essential to the spatial regulation of bone remodelling. In this study, to clarify the functional roles of mechanosensory osteocytes in bone adaptation, we took multiscale biomechanics approaches with a combination of in-vitro and in-silico experiments. We discuss how the mechanical stimuli sensed by osteocytes are integrated through the network to regulate macroscopic trabecular bone structure that meets its functional demands as a load-bearing structure.

## Keynote 2

## Ballroom 1



Prof Dr Andi Isra  
Mahyuddin  
Institut Teknologi  
Bandung, Indonesia

Prof. Dr. Ir. Andi Isra Mahyuddin, MSME is a professor in Mechanical Engineering, Faculty of Mechanical and Aerospace Engineering (FTMD), Institut Teknologi Bandung (ITB). He obtained his bachelor's degree in Mechanical Engineering from ITB in 1984 and received his master's degree in 1988 and doctoral degree in 1993 both from Purdue University, US. Andi handles the courses in Statics, Mechanics and Strength of Materials, Kinematics and Dynamics of Machinery, Electric Motors and Drives, and Engine Product Design. His current research interest is on Multibody Dynamics, Biomechanics/Gait Analysis, and Vehicle Dynamics.

### **Development of an Affordable Polycentric Knee Prosthetic in Indonesia: From the Design Stage to the Market**

Day 2 (16th November 2023, Thursday)

08.30 – 09.30 am | Ballroom 1

The number of Indonesians who have lost limbs and require prosthetic legs has been increasing annually, likely due to the high rate of motorcycle accidents. However, many amputees could not afford the expensive commercial prosthetics, and have to rely on basic and limited options that use monocentric knee joints. To address this problem, a cost-effective and improved prosthetic knee design based on a four-bar linkage mechanism is proposed. The knee-joint components will be modular and compatible with prosthetic industry standards. A systematic design approach will be used to ensure that the product meets the needs of the users. Additionally, this presentation discusses a collaboration scheme that involves a university's corporation to help bring the design to market, local prosthetic manufacturers to produce the leg prosthetics, and a humanitarian organization that will procure and distribute the products to the amputees. This scheme is proposed to foster the emergence of new university start-ups that are focused on social entrepreneurship.

## Keynote 3

## Ballroom 1



Prof Peter Lee  
Melbourne University,  
Australia

Peter (Vee Sin) Lee is a Professor in the Department of Mechanical Engineering at The University of Melbourne. He was a Research Fellow with the Biomaterials Group at the Institute of Materials Research and Engineering, Singapore from 1998–2001. In 2001, he joined the Defence Medical and Environmental Research Institute, DSO National Laboratories, Singapore, as the Head of the Bioengineering Laboratory. He was appointed as an Adjunct Associate Professor from 2002–2008 at the National University of Singapore, Division of Bioengineering. He joined University of Melbourne as a Senior Lecturer in 2008. His research interest include biomechanics (mechanism of injury, leading to effective prevention strategies) and rehabilitation engineering (lower limb prostheses and orthoses).

### **A Patient-Centric Measure-Model-Manufacture- Manage (4M) Platform for Safer Personalised Medical Implants**

Day 3 (17th November 2023, Friday)

08.30 – 09.30 am | Ballroom 1

Advances in computer-aided engineering, patient-specific computer models, and additive manufacturing transform patients' treatment through personalised solutions. Manufacturers and hospitals are now trialling 'bespoking' as the new standard of care in orthopaedics and maxillofacial surgery. However, there are significant challenges to facilitating personalised medical implant commercialisation and widespread use. Regulatory frameworks for personalised implants are in their early stages. Current standards for testing off-the-shelf devices are not directly transferrable to devices designed for individual patients. Instead, future test standards could be based on information from the patient's anatomy and even lifestyle. There is no well-defined framework or methodology to support the use and increase personalised implants' success rate. The fabrication of the implant is only the first step. Successful treatment requires a comprehensive approach to optimise the use of the personalised medical device. This presentation will focus on the development of a seamless framework based on the Measure-Model-Manufacture-Manage (4M) for point-of-care manufacturing. Comprehensive biomechanical measurements will be used to build patient-specific biomechanical models to represent the underlying physiology of the human body. The models will be used to analyse scenarios that are too expensive or infeasible to perform on patients directly (e.g. loading an implant to failure in the human body). The aim in the measure-model stage is to optimise implant/device design that considers all the biomechanical information before manufacturing using 3D printing. Finally, the measure-model-manufacture becomes a reinforcing loop that improves patient management and outcome. The presentation will also discuss our experience and benefits, from a researcher's perspective, working closely with physicians, industry, and government leaders in pushing the frontiers of personalised medical implants.

# Plenary Session

## Plenary 1

## Ballroom 1



Prof Fong-Chin Su  
National Cheng Kung  
University, Tainan, Taiwan

Fong-Chin Su is the Executive Vice President and Chair Professor of Biomedical Engineering, National Cheng Kung University (NCKU), Chairman of the Board, NCKU Research and Development Foundation, Chairman of the Board, NCKU Education Foundation, President of International Conference on Mechanics in Medicine and Biology (2018-2022), President of Academia-Industry Consortium for Southern Taiwan Science Park, Taiwan (2020-) and Councilor of World Council of Biomechanics (2014-26). In addition, he is Co-Editor-in-Chief of BioMed Engineering OnLine (Springer, 2015-2020) and Journal of Medical and Biological Engineering, associate editor of Journal of Mechanics in Medicine and Biology (Springer, 2015-2020), an editorial board member for Clinical Biomechanics and Journal of Applied Bionics and Biomechanics. Dr. Su has received several honours and awards including Outstanding Research Award of the Ministry of Science and Technology (2021 & 2011), Life Achievement Award, Taiwanese Society of Biomechanics (2018), among other distinguished awards.

## Smart Telerehabilitation Robotics for Dementia

Day 1 (15th November 2023, Wednesday)

14.15 – 15.00 pm | Ballroom 1

An in-depth understanding of hand functional performance may help improve not only movement, but also cognitive function. Intact human motor control relies on both intrinsic and extrinsic factors. Impaired finger force control is thought to be one of the barriers that primarily affects the ability of older adults to perform daily instrumental activities such as grooming, drinking, and eating. Therefore, a series of hand function control training systems have been developed to explore characteristics of force patterns when conducting functional tasks and to enable training and assessment of finger force control in functional postures. Five force sensors are utilized to record the applied force by the fingers. With these systems, patients' motivation is boosted through interactive games, while visual and auditory feedback are integrated for better intervention outcomes. In addition, near-infrared spectroscopy (NIRS) was used to monitor hemodynamic changes of the brain, which showed that the finger-force control training task resulted in higher brain activation in older adults than in younger adults.

Tipr, the cognitive/fine motor trainer, is designed especially for early to middle stage of dementia. The design is based on a previous product; PETS, which had conducted a successful clinical research to show the promising and scientific evidence-based progress in memory maintenance and improve brain activation on cognitive related brain areas. The system also offers the training of hand-eye coordination, finger force application, and finger synchronization with more brain activation involved. Tipr integrates nostalgic music and serious games to facilitate the cognitive/fine motor training. Training in patients with mild cognitive impairment significantly enhanced hand dexterity and cognitive function, consistent with previous findings that fine motor performance can distinguish patients with cognitive impairments from healthy individuals.

## Plenary 2

## Ballroom 1



Prof Dr Merry Tawhai  
*University of Auckland,  
New Zealand*

Merryn Tawhai is Professor of bioengineering and Director of the Auckland Bioengineering Institute at the University of Auckland. She was previously the Director of the New Zealand Medical Technologies Centre of Research Excellence and is currently on the Board of Directors for Cure Kids Ventures. Her particular research expertise is in computational analysis and models of pulmonary disease. She is leading the translation of data-driven digital human technologies to clinical implementation across several areas of application. Professor Tawhai is a Fellow of the Royal Society (New Zealand) Te Apārangī, the American Institute of Medical and Biological Engineering, and the International Academy of Medical and Biological Engineering, and an elected member of the Fleischner Society. She was awarded the MacDiarmid Medal by the Royal Society Te Apārangī in 2016 for the translational potential of her research.

### **Bioengineering Digital Lungs for Predicting Patient-Specific Treatment Outcome**

Day 2 (16th November 2023, Thursday)

09.30 – 10.15 am | Ballroom 1

We are establishing a 'digital human' framework with a focus on pulmonary disease, as a basis to develop mechanistic imaging and model-based biomarkers and to biophysically predict patient response to treatment. Our approach utilises routinely-acquired medical imaging to derive metrics for lung structure, from tissue heterogeneity to vascular morphometry and size to statistical shape models of lung and fissure shape. From the same imaging, we also derive geometric models of the lung, airways, and blood vessels that are specific to the individual patient, and introduce physiological measurements as boundary conditions for the simulation of soft tissue deformation, perfusion, ventilation, and gas exchange. This talk will consider quantitative multi-scale descriptions of lung structure and function as a tool for understanding lung tissue disease extent and progression – particularly in diseases that affect the compliance of the lung tissue – and the application of the digital human modelling framework to analyse haemodynamics and non-invasively estimate the extent of vascular remodelling in diseases of the pulmonary circulation.



Dr Edin has been servicing high performance sport for 12 years as a senior biomechanist at the National Sport Institute of Malaysia. His passion is to 'run' an effective high performance program and concurrently utilize musculoskeletal modelling to breakdown performance gains. Besides the biomechanics of sport, many other factors may affect an athlete's preparation. Most of which, he has experience managing across a range of sports, whilst always targeting the next performance gain. Currently, his interest lies with the exercise variations in relation to performance and/or injury. The future of high performance program may utilize musculoskeletal modelling and simulation but, different musculoskeletal models vary greatly, and the choice of the best model will depend on the implication sought.

## **Simulation of Track Cycling: Practices from the National Team**

Day 3 (17th November 2023, Friday)

09.30 – 10.15 am | Ballroom 1

Elite track cyclists may sprint up to speeds exceeding 70km/hr. An achievement that is mainly attributed to improved training methods that enhance physical capability. Nonetheless, in competitive events where the winner can be determined using a photo finish, any other advantage e.g., aerodynamics and bike efficiency, that contribute to performance is also important. Therefore, National track cycling teams may invest considerable resources in research and development to gain a performance advantage over competitors.

The Malaysian National track cycling team started their research and development over a decade ago, delivering a bronze and silver medal at the Olympic Games in Rio and Tokyo, respectively. As part of that research and development, computational modelling and simulation of track cycling was co-developed. The computation primarily concerns the power loss to rolling resistance and air resistance. Herewith, potential aerodynamic gains that may reduce this power loss, can then be used to compute speed gains. Current modelling and simulation of track cycling also includes physiological parameters of individual specific cyclist such as maximum torque, maximum cadence, and a fatigue component to better predict race outcomes.

Furthermore, advancements in technology allow us to test the efficiency of e.g., drive chains and bike frames. Which then can be included in the modelling and simulation of track cycling for improved outcome predictions. This talk will provide snapshots of the practices of the Malaysian track cycling team and the modelling used.



# Symposium Session

## Symposium 1:

### Biomechanics in Orthopaedics

Day 2 (16th November 2023, Thursday)  
15.00 – 16.00 pm | Ballroom 1



Prof Azlina Amir Abbas  
*Universiti Malaya, Malaysia*

Prof. Dr. Azlina Amir Abbas is a Professor of Orthopaedic Surgery at the Faculty of Medicine, Universiti Malaya. She was a Past President of the Malaysian Orthopaedic Association. Currently she heads the Joint Reconstruction Unit in her hospital, is the Chief Editor of the Malaysian Orthopaedic Journal and Chairperson of Selection for Postgraduate Orthopaedic Training (SPOT) subcommittee of the Orthopaedic Specialty Committee. She is a Steering Committee Member for the Training of Trainers Programme and was also a writing group member for the National Orthopaedic Curriculum, both of which were under the National Postgraduate Medical Curriculum Project.



Prof Dr Tunku  
Kamarul Zaman  
*Universiti Sains Malaysia,  
Malaysia*

Professor Dr. Tunku Kamarul Zaman is currently serving as the Director of the Advanced Medical and Dental Institute (AMDI) at Universiti Sains Malaysia in Penang, Malaysia, on secondment. He is an orthopaedic surgeon specializing in upper limb and microsurgery. He earned his medical degree (M.D.) from the National University of Malaysia in 1998. After working as a medical officer in the Ministry of Health, he pursued his Master's in Orthopaedics (M.S.Ortho) at the University of Malaya. He became a lecturer there upon completing his training in 2004. During his specialist training, he also obtained a diploma in tissue banking from the National University of Singapore in 2003. He has an extensive publication record, has presented research internationally, and holds numerous administrative positions, including previously serving as the Director of the University of Malaya Medical Centre (UMMC).



Assoc Prof Dr  
Ardiyansyah Syahrom  
*Universiti Teknologi Malaysia,  
Malaysia*

Ardiyansyah Syahrom is Associate Professor at school of Mechanical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, UTM. Presently, he is the director of Medical Devices and Technology Centre (MEDiTEC), Institute Human Centred Engineering (iHumEn). He is by profession a Mechanical Engineering with special interest in Biomechanics, Bone, Biomaterials and Sports Engineering. His previous administrative duties also include the Director of Sports Innovation and Technology Centre (SITC). He has published in reputed Journals and supervises many post-doctoral, doctoral and other post-graduate as well as undergraduate students. He sits in Innovation section in Malaysia Medical Devices Authority (MDA) committees, a member of many international societies, a reviewer to a number of academic journals and is the editor in Chief of the Journal Medical Devices Technology.



Dr Rukmanikanthan  
Shanmugam  
*Prince Court Medical Centre,  
Malaysia*

Dr. Rukmanikanthan Shanmugam, specializing in orthopaedic surgery, and currently practicing at a Prince court Medical Centre, Malaysia. Beyond his orthopaedic work, he has a profound passion for fields like mechanics and electronics. During his tenure as a senior lecturer at the University of Malaya, he had the privilege of overseeing the biomechanics laboratory. In this capacity, he actively guided and collaborated with students and fellow educators in the execution of biomechanical tests and the development of experiments related to orthopaedics. Furthermore, he embarked on a six-month fellowship in biomechanics at the AO Institute in Davos, Switzerland. This experience was particularly stimulating, as it provided an opportunity to collaboratively address complex challenges, harnessing their collective knowledge and expertise to find innovative solutions.

# Forum Session

## Forum 1:

### Women in Biomechanics: Challenges and Opportunities in the AP Region

Day 1 (15th November 2023, Wednesday)  
15.00 – 16.00 pm | Ballroom 1



**Prof Lizhen Wang**  
*Beihang University,  
China*

Lizhen Wang is a Professor in School of Biological Science and Medical Engineering of Beihang University. Her research focused on cross disciplinary research of biomechanics and biomaterials. She is actively involved in the development of various novel medical devices, such as biomimetic minimally biodegradable nucleus pulposus scaffold, nanofibrous tissue engineering scaffold with adjustable mechanical and electrical properties. Since 2012, Dr Wang's lab focuses on two main categories: soft tissue biomechanics, and bionic materials mechanics, then design the protective devices and medical devices to match with human tissues. Lizhen has generated over 100 peer-reviewed journal papers including 80 journal articles, 20 conference proceedings and book chapters. She is the Chair of World Association for Chinese Biomedical Engineers (WACBE) Young Committee, Associate Editor of Computer Methods in Biomechanics and Biomedical Engineering (CMBBE).



**Dr Juliana Usman**  
*Universiti Malaya,  
Malaysia*

Dr. Juliana Usman is a Senior Lecturer from the Department of Biomedical Engineering, Universiti Malaya. She is a member of the Centre for Applied Biomechanics, UM and the appointed secretary for the Malaysian Society of Biomechanics. She had served as the Head of the Biomedical Engineering Department in the Faculty of Engineering, Universiti Malaya from 2019 to 2021. She is a certified Chartered Engineer (CEng) from the Engineering Council of UK and a member of the Institute of Engineering and Technology (UK) and the Board of Engineers (Malaysia). Her research areas are in Sports Biomechanics (Injury Prevention and Performance Enhancement) and in Biomechanics and Motion Analysis. Her research interests include researches on knee OA biomechanics analysis and intervention, lower limb contributions in driving simulation study, biomechanics analysis in sports ie. badminton, bowling, rugby, table tennis, etc. and the effectiveness of massage chairs on multiple disorders including sleep and anxiety.



**Dr Kim Hebert-Losier**  
*University of Waikato,  
New Zealand*

Dr Kim Hebert-Losier is a Senior Academic lead for Te Huataki Waiora School of Health (Tauranga Campus) and lead biomechanics researcher at the University of Waikato Adams Centre for High Performance. She has led and managed the biomechanics laboratory at the University of Adams Centre for High Performance since 2016, and has worked at the Swedish Winter Sports Research Center, Nebraska Athletics Performance Laboratory United States and the National Sports Institute of Malaysia.

## Forum 2:

### Robotics Rehabilitation: Current Practice and Way Forward

Day 3 (17th November 2023, Friday)  
15.00 – 16.00 pm | Ballroom 1



Dr Norhamizan Hamzah  
Universiti Malaya Medical  
Centre, Malaysia

Dr Norhamizan Hamzah is a senior medical lecturer and a clinical consultant in rehabilitation medicine at the Department of Rehabilitation Medicine, Universiti Malaya, Malaysia. She obtained her medical training degree MBChB at Leicester University Medical School UK and continued to work for several years with the NHS, UK. She obtained her Clinical Masters in Rehabilitation Medicine in 2012 from Universiti Malaya. She also has a PhD from Universiti Malaya in 2021 and honorary fellowship in rehabilitation medicine specifically on cognitive rehabilitation from the University of Nottingham, UK in 2018. She currently leads the Robotic and AI section, E-Health Unit, Universiti Malaya with various collaborations with Malaysian Association of Rehabilitation Physicians society (MARF), ASEAN Rehabilitation Medicine Association (ARMA) and MotusAcademy, Fourier Intelligence. Her clinical and research work predominantly focus on advanced technological and robotic rehabilitation, neurorehabilitation, clinical trials and cognitive neuroscience. She is also appointed as Adjunct Associate Professor for Osaka University with the United Graduate School for Child Development (UGSCD) from 2022.



Mr Banister Langgum  
Cyberdyne Inc.


Banister's holds a Master's in Physiotherapy with a specialization in Neurology from MAHSA University and completed his Bachelor's in Physiotherapy (Hons) at the same institution. With over seven years of experience, Banister has been actively involved in treating clients with a wide array of conditions, including musculoskeletal, neurology (such as Parkinson's and stroke) aside from the business development role. Banister is in-charge of the business development of the APACs region and has been developing the usage of Hybrid Assistive Limb (HAL) in developing countries such as Singapore, Malaysia and 12 more countries under the APACs region. He is also currently in the committee of research and development on a new way of utilizing robotics on the upper limb extremities. His vision is to create and accelerate the Social Innovation and the science and technology innovation for the future of Malaysia. A Cybernetics/human-collaborative robotics should be the way forward in the advancement of rehabilitation.




Mdm Wahidatul Abdah  
Ahmad Al-Hassan Pang  
WQ Park Health and  
Rehabilitation Centre

Wahidatul Abdah has graduated in Occupational Therapy from UKM since 2009. She is a Certified Functional Capacity Evaluator (USA), Certified Bobath Neurological Practitioner (UK) and a Certified Instrument Assisted Soft Tissue Mobilization (IASTM) Practitioner (Singapore). She has been one of the team member to start off founding the Malaysian Society of Hand Therapy (MSHT) in 2013. Her clinical areas of expertise are not only limited to musculoskeletal condition but also neurological condition and return to work. She has been invited as speaker in various settings at national level, tv stations, radio and international conference. She is also active as part of Medical Tweet Malaysia (MedTweetMY) to spread awareness and health education to public.

## Yamaguchi Medal Winner

Yamaguchi Winner	
 Dr Taeksang Lee <i>Myongji University</i>	Track: <i>Tissue Biomechanics</i> <span style="float: right;">ID: 101</span>  <h3 style="text-align: center;">A Bayesian Approach to Characterizing Anisotropic Properties of Skin from Suction Tests</h3> <p style="text-align: center;"><b>Day 2 (16th November 2023, Thursday)</b></p> <p style="text-align: center;"><b>10.45 – 11.45 pm   Ballroom 1</b></p>
<p>Taeksang Lee received B.S. and M.S. degrees in Mechanical Engineering from Sungkyunkwan University in 2014 and 2016, respectively, and Ph.D. degree from Purdue University in 2020. He had been a Staff Engineer in Mechatronics R&amp;D Center at Samsung Electronics from 2020 to 2021. In 2021, he joined Myongji University, where he is currently an Assistant Professor in Department of Mechanical Engineering. His research interests are focused on soft tissue biomechanics based on computational mechanics, machine learning, and multiphysics modeling and simulation.</p>	

Yamaguchi Winner	
 Dr Ryota Toyohara <i>Hokkaido University</i>	Track: <i>Organ Biomechanics</i> <span style="float: right;">ID: 107</span>  <h3 style="text-align: center;">Motion Resistance of Sacroiliac Joint Caused by Articular Surface Morphology</h3> <p style="text-align: center;"><b>Day 2 (16th November 2023, Thursday)</b></p> <p style="text-align: center;"><b>10.45 – 11.45 pm   Ballroom 1</b></p>
<p>Ryota Toyohara received B.Sc., M.Sc. and Ph.D. from Hokkaido University in Japan in 2019, 2021 and 2023, respectively. During M.Sc., he spent two-months at Medical University of Graz in Austria. Since 2023, he has been Assistant Professor (specially appointed) at Hokkaido University in Japan. His research interests involve stress environment and morphological characteristics of joints on tissue biomechanics. He has published 4 scientific journal papers.</p>	

## Yamaguchi Winner



Dr Kohta ITO  
Artificial Intelligence  
Research Center, AIST

Track: Gait and Kinesiology

ID: 147

### Dynamic Finite Element Simulation of 3D Foot during Stance Phase of Human Walking

Day 2 (16th November 2023, Thursday)

10.45 – 11.45 pm | Ballroom 1

Kohta Ito is a researcher at the National Institute of Advanced Industrial Science and Technology (AIST). He received Ph.D. in Engineering from Keio University in 2017. He worked at Keio University and Osaka University as a research associate before joining AIST in 2023. His research focuses on understanding the mechanical functions embedded in the human foot complex for the applications in various fields, including the medical, ergonomics, and physical anthropology field. He received the LG Research Award in the 4th Congress of the International Foot and Ankle Biomechanics in 2014.

## Yamaguchi Winner



Dr Shunichi Ishida  
Kobe University

Track: Cell and Molecular Biomechanics

ID: 220

### Self-Organized Patterns of Ferrofluid Droplets in Wall-Bounded Shear Flow

Day 2 (16th November 2023, Thursday)

10.45 – 11.45 pm | Ballroom 1

Dr. Ishida is an Assistant Professor in the Mechanical Engineering Department at Kobe University. He earned his Ph.D. in Medical Engineering from Tohoku University in 2018. He worked at Osaka University as a Project Assistant Professor before joining Kobe University in 2019. He specializes in Computational Biomechanics, particularly in the areas of cellular flow and gastric flow research.

## Yamaguchi Winner



Dr Yu-Lin You  
China Medical University

Track: Gait and Kinesiology

ID: 314

### **Effects of Proximal-Emphasized Exercise Equipment on Balance for Chronic Stroke Survivors**

**Day 2 (16th November 2023, Thursday)**

**10.45 – 11.45 pm | Ballroom 1**

Yu-Lin You currently holds the position of Assistant Professor at the Department of Sports Medicine, China Medical University, Taiwan. She completed her Bachelor's and Master's degrees in Sports Medicine at Kaohsiung Medical University in Taiwan, followed by the attainment of a Ph.D. in Biomedical Engineering from National Cheng Kung University. She also undertook postdoctoral training at both National Cheng Kung University and Kaohsiung Medical University. Her association with China Medical University commenced in 2022. Her interdisciplinary research centers on the biomechanics of human movement, musculoskeletal diseases or injuries, and the therapeutic effects of exercise in elderly populations. Throughout her career, she has made substantial contributions, exemplified by her publication record of 11 journal articles and 15 international conference papers. Notably, her team received the BEST ORAL AWARD at the A P Biomechanics Conference in 2019 and the BEST POSTER AWARD at the International Sports Biomechanics Conference and Annual Meeting of Taiwan Society of Biomechanics in Sports in 2011.



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