



BIOMECHANICS2020

INTERNATIONAL CONFERENCE OF THE POLISH SOCIETY OF BIOMECHANICS

WARSAW, 9-10 SEPTEMBER 2021

THURSDAY, September 9th

from	to		
8:00	8:30	Opening ceremony	
8:30	9:45	CLINICAL BIOMECHANICS & MODELLING	
		Small Unsecured Objects Transported in a Vehicle and Their Impact on Human Head Injury – Blunt Injury Criterion Approach	J. Hruby, B. P. Wham, Z. Krobot, M. Semela
		The test of application a new structure in 3D printing elements of rehabilitation exoskeleton	M. John-Banach, A. John
		Assessment of proprioception in the knee joint in patients after ACL reconstruction – preliminary study	P. Zalewska, J. Skubich, T. Guszczyn, S. Piszczatowski
		Objective assessment of the functional status of chronic stroke patients with complex rehabilitation	M. Syczewska, K. Nowak, I. Sarzyńska-Długosz, M. Łukowicz, A. Nitera-Kowalik, R. Owiński, W. Bujalski, A. Malec, G. Sobota
		Does the exoskeleton therapy affect gait parameters in patients with cerebral palsy?	A. Trzyna, A. Brachman, T. Łosień, G. Sobota
9:45	10:30	<i>INVITED LECTURE: Do we need motion analysis in orthopaedic surgery?</i>	T. Dreher
10:30	10:45	Coffee break	
10:45	11:30	<i>INVITED LECTURE: Challenges of bone tissue engineering: from materials to multiscale modeling</i>	G. Nasello, S. Russo, J. M. García-Aznar, M. A. Pérez
11:30	12:45	SOFT & HARD TISSUE MECHANICS	
		Using Bayesian framework to calibrate Voce model parameters of ductile human parietal bone	M. Pekedis
		Numerical determination of the degree of mechanical anisotropy of the trabecular bone	A. Cichański, K. Nowicki
		Long bone locking plate positioning enhancement with finite-element model	M. Palka, R. Perz
		Ultrasound based system for objective examination of skeletal muscles stiffness	J. Żmigrodzki, S. Cygan, K. Wildner
		Influence of direction of bone conduction stimulation applied to the otic capsule on the human cochlea	P. Borkowski, P. Marek, K. Niemczyk, M. Lachowska

12:45	13:30	<i>INVITED LECTURE: An integrated, multi-scale approach to understand the role of mechanical loading in cartilage homeostasis and disease: Bridging from joint to chondrocyte.</i>	I. Jonkers
13:30	13:45	QUALISYS presentation: Live Mocap demo of Gait and Functional Assessments.	P. Almström, K. Hjältman, M. Sjölin
13:45	14:30	POSTER SESSION - part 1	
		BALANCE, GAIT & MOVEMENT	
		The dependence of postural stability on visual stimuli following a flight with different task loads in General Aviation pilots	E. Polak, A. Świczerewski, A. Gardzińska
		The effectiveness of original balance training programme on postural balance in middle-aged women – a pilot study	M. Grabowicz, A. Daniluk, A. Bugalska, S. Wójtowicz, K. Wiaderna, A. Hadamus
		Trends in balance maintaining rehabilitation based on review of currently used virtual reality using systems	G. Gruszka, P. Wodarski, M. Ples, M. Chmura, A. Bieniek, J. Jurkojć
		COP and head displacements in response to a visual stimuli created in virtual reality	P. Wodarski, M. Chmura, G. Gruszka, A. Bieniek, M. Ples, J. Jurkojć
		Comparison of optoelectronic and IMU-based systems used in the assessment of Nordic Walking gait	A. Bartoszek, A. Struzik, S. Jaroszczuk, B. Pietraszewski, M. Woźniewski
		Application supporting rehabilitation with the use of movement patterns registered with MoCap technique	A. Szczerba, S. Piszczatowski
		Assessment of the impact of ankle athletic taping on spatio-temporal gait parameters in healthy people	S. Wójtowicz, M. Bieda, A. Daniluk, A. Bugalska, K. Wiaderna, M. Grabowicz, A. Hadamus
		Biomechanics: origin of the concept and the science of movement	J.C. Muñoz, F. Montané, M.M. Vales Flores
		Problem of body configuration of physiotherapy students while lifting a load	W. S. Erdmann, E. Prętkiewicz-Abacjew, M. Opanowska
		Using stubby prosthesis after bilateral transfemoral amputation: a biomechanical case study	S. Winiarski, M. Kowal, Ż. Fiodorenko-Dumas, I. Dumas, A. Machnikowska, E. Gieysztor, M. Paprocka-Borowicz
		Transtibial amputee ramp gait - preliminary report	J. Otworowski, M. Murawa, A. Gramala, P. Drapikowski
		Assessment of influence of upper limb light-weight passive exoskeleton on motion performance of DMD patient and healthy young	W. Wojnicz, B. Zagrodny, M. Ludwicki, A. Sobierajska-Rek, J. Jabłońska-Brudło, M. Kaczmarczyk, K. Forsyjak, A. Jednachowska, M. Chodnicki
		The design of ankle rotary exercise device	P. Borkowski, J. Zuzda, R. Latosiewicz
		BIOMATERIALS & DENTISTRY	
		Tribological behaviour of tooth enamel in remineralization environments	E. Sajewicz, M. Piotrak
		Design of the device to support the treatment of malocclusion	E. Tymińska, M. Kodan, S. Wawrzyniak, A. Mazurkiewicz

		Clustering with self-organising maps in the analysis of muscle activity	M. Troka, W. Wojnicz, K. Szepietowska, I. Lubowiecka
		3D Bioreactors for cell culture: fluid dynamics aspects	N. Kizilova, J. Rokicki
14:30	15:15	<i>INVITED LECTURE: How sports biomechanics can foster in-field performance assessment: technical issues and applications in swimming</i>	G. Vannozzi
15:15	16:15	SPORTS BIOMECHANICS	
		Is optimal cruising velocity constant during distance running?	R. Maroński
		Barbell squat power measurement methods – experimental comparison	S. Cygan, J. Król, M. Groszyk
		Modelling record scores in the clean lift and its derivatives in the training of young weightlifters: a longitudinal study	A. Czaplicki, P. Szyszka
		A correlational analysis of shuttlecock velocity and flighting angle kinematic determinants in the badminton forehand smash	A. Ferreira, M. Górski, P. Tabor, J. Gajewski
16:15	16:30	Coffee break	
16:30	17:15	<i>INVITED LECTURE: Decomposition of EMG signals in biomechanics</i>	J. Richards
17:15	18:00	MORECKI & FIDELUS AWARD SESSION	
		Influence of strength and time parameters of hip adductor and adductor muscles on maintaining balance in the frontal plane in young healthy women	A. Bugalska, S. Wójtowicz, A. Daniluk, K. Wiaderna, M. Grabowicz, A. Hadamus
		Using nonlinear measures to evaluate postural control in healthy adults during bipedal standing on an unstable surface	J. Kędziorek, M. Błażkiewicz, K. Kaczmarczyk
		Experimental evaluation of a novel concept of an implant for direct skeletal attachment of limb prosthesis	P. Prochor
18:00	20:00	General Meeting of the Polish Society of Biomechanics / Walne Zebranie Polskiego Towarzystwa Biomechaniki	link to the meeting will be sent only to PTB members

FRIDAY, September 10th

from to

8:00	09:15	BIOMATERIALS & DENTISTRY	
		The influence of polyurethane double-J stent of various diameters on urological encrustation	K. Pasik
		Evaluation of structure of a hydrogel material based on sodium alginate under deformation	J. Kurowiak, T. Klekiel, A. Mackiewicz, R. Będziński
		Design process of bioresorbable stent	L.A. Mazurkiewicz, J. Małachowski, J. Buwała
		Experimental strength analysis of modern dental composites used in layered tooth crown restoration techniques	G. Milewski, B. Muszyński, A. Śledź
		Development of deformable models of the mandible	K. Sybilski, D. Kołodziejczyk, J. Małachowski
9:15	10:00	<i>INVITED LECTURE: Nano-Bioscience – A Precursor to Nanomedicine</i>	F. Caruso
10:00	10:15	Coffee break	
10:15	11:00	<i>INVITED LECTURE: Asymmetric Running with Prosthetic Limb</i>	H. Hobara
11:00	12:15	BALANCE, GAIT & MOVEMENT	
		Assessing fall risk in older women	P. Bobowik, I. Wiszomirska
		Minimal shoes improve stability in persons with a history of falls.	T. Cudejko, J. Gardiner, A. Akpan, K. D'Août
		Effects of various stance widths on postural control during squat	J. Kędziorek, M. Błażkiewicz
		Assessment of the effectiveness of rehabilitation after total hip replacement surgery using sample entropy	A. Hadamus, M. Błażkiewicz, D. Białoszewski, K. Wydra, A.J. Kowalska, E. Urbaniak, R. Boratyński, A. Kobza, W. Marczyński
		Muscle activity of the knee joint during gait in persons after ACL reconstruction – preliminary study	P. Zalewska, J. Skubich, T. Guszczyn, S. Piszczatowski
12:15	13:00	<i>INVITED LECTURE: In silico Experiments on Bone Adaptation by Remodeling</i>	T. Adachi
13:00	13:45	POSTER SESSION - part 2	
		SOFT & HARD TISSUE MECHANICS	
		Identification of the heterogeneous shear modulus distribution through isogeometric inverse analysis	B. Borzeszkowski, I. Lubowiecka, R. A. Sauer
		Optimization on mechanical behaviour of hip implant designs	H. Gökteş, E. Subaşı, M. Uzku, M. Kara, H. Biçici, E. C. Hadi Shirazi, K. N. Chethan, Ş. Mihçin
		Investigation on mechanics for use of PLA in total hip arthroplasty using FEM analysis	E. Celik, F. Alemdar, M. Bati, M. F. Dasdemir, O. A. Buyukbayraktar, M. Kara, K. N. Chethan, S. Mihcin
		Effect of dissection on the mechanical properties of human ascending aorta aneurysm	M. Kozuń, M. Kobielarz, T. Płonek, M. Jasiński

	Constitutive modelling of abdominal implants as experiment-related problem	D. Reznikov, A. Tomaszewska
	Characteristics of nerve roots mechanical properties exposed to uniaxial stretching tests	M.Palmerska, A.Mackiewicz, T.Klekiel, A.Noszczyk-Nowak, R.Będziński
	Standardisation procedure of infra-red imaging in biomechanics	B. Zagrodny
	Can tattoo influence a thermal image? A case report	B. Zagrodny
	CLINICAL & MODELLING	
	Kinematics of the human spine during locomotion in a person with lower limbs discrepancy - preliminary results	P. Tabor, T. Sacewicz, E. Olszewska, K. Górniak, M. Lichota, A. Mazurkiewicz, D. Iwańska, A. Mastalerz
	Jumping abilities in patients after liver transplantation and patients qualified for liver transplantation	A. Szulc, L. Skladaný, K. Buško, M. Rác, S. Adamcová-Selčová, J. Badinková
	Model development of the cerebral artery using tomography techniques and engineering software	M. Tomaszewski, R. Rzepliński, M. Kucewicz, M. Sługocki, J. Małachowski, B.Ciszek
	Model of the extraocular muscles control by information from vestibular system	R.R. Kaspransky, A.P. Kruchinina , Y.Y. Minayaylo
	Using spherical contact pairs to model the contact areas in the joints of the wrist	P. Ikoniak, A. Ciszewicz
	Assessing the feasibility of using spherical contact pairs to model the contact regions in the joints of the index finger	K. Kluza, A. Ciszewicz
	SPORTS BIOMECHANICS	
	Kinematic criteria for the evaluation of technique of dance sport athletes	S. Kuliś, J. Gajewski
	Kinematics of topspin backhand in female table tennis players – a comparative analysis	Z. Bańkosz, S. Winiarski
	Muscle performance of hip abductor and adductor in healthy and osteitis pubis professional soccer players: a comparative study	W.M. Elsaï, W.S. Mohammad
13:45	14:30 <i>INVITED LECTURE: The role of biomechanics in engineering functional tissue</i>	W. Świążzkowski
14:30	15:30 BIOFLUIDS & CARDIOLOGY	
	Biomechanical aspects of in vitro fertilization	N. Kizilova, L. Batyuk, A. Khalin
	An investigation of blood circulation biomechanics using computational fluid dynamics (CFD)	W. Wolański, M. Sobkowiak-Pilorz, M. Ples, M. Zimny, M. Gzik, W. Kaspera
	Analyses of blood flow through trileaflet and bileaflet aortic valve – will a trileaflet valve replace a bileaflet valve in the future?	A. Nieroda, M. Pawlikowski

		Patient-specific modeling for evaluation of Blalock-Taussig shunt performance	A.G. Kuchumov, A. Khairulin
15:30	15:45	Coffee break	
15:45	16:30	<i>INVITED LECTURE: Cortico-spinal adaptation to strength training</i>	J. Avela
16:30	17:30	SPINE BIOMECHANICS	
		A method to evaluate the muscle synergy of spine stabilization muscles in the deadlift exercise. Single case analysis.	A. Danecka, A. Rutkowska-Kucharska, R. Michnik
		Posture control in relation to the curvature and mobility of the spine in physically active older women	M. Sobera, A. Rutkowska-Kucharska, A. Sikora, P. Proskura
		The analysis of the impact of transverse connector of long segments spinal fixation system on mechanical parameters	K. Szkoda-Poliszuk, M. Żak, C. Pezowicz
		Numerical analysis of scoliosis brace	S. Grycuk, P. Mrozek
17:30	18:00	Closing ceremony	