



**2nd International Workshop on Orthopedic and Spine Biomechanics**  
**13th to 15th April, 2018 Auditorium, ISIC**  
**Program**

**13<sup>th</sup> April, 2018: Clinical Orthopaedic Biomechanics**

Time	Topic
<b>0900-1015</b>	<b>Session I- Total Hip Arthroplasty</b>
	<b>Chairperson- Dr Sudhir Kapoor &amp; Dr Rajendra Sharma</b>
0900-0915	Biomechanics of a Normal, Arthritic and Artificial Hip - <b>Dr Puneet Mishra</b>
0915-0930	Current & novel designs of Modular Total Hip Arthroplasty - <b>Dr Sudhir Kapoor</b>
0930-0945	Stem Taper failure due to head bottoming out - <b>Dr Gerd Huber</b>
0945-1030	Panel discussion: How do I prolong life of my patients THA Moderator: <b>Dr Deepak Raina</b> Panelists: <b>Dr Sudhir Kapoor, Dr P V Kailey, Dr Puneet Mishra, Dr Gurinder Bedi, Ms Neha Malik, Dr Rajendra Sharma</b>
<b>1030-1215</b>	<b>Session II- Total Knee Arthroplasty</b>
	<b>Chairperson-Dr P V Kailey &amp; Dr Gurinder Bedi</b>
1030-1040	Mechanical vs Kinematic alignment – New paradigm in total knee arthroplasty - <b>Dr Chandeeep Singh</b>
1040-1050	Current & novel designs of Total Knee Arthroplasty - <b>Dr Gurinder Bedi</b>
1050-1100	Do Unloader braces really work - <b>Mr. Utkrisht Ahuja</b>
1100-1110	To squat or not to squat – a biomechanical answer - <b>Dr Vandana Phadke</b>
1110-1120	Biomechanics of unicompartmental knee replacement - <b>Dr P V Kailey</b>
1120-1135	Tea
1135-1225	Debate – Intra-operative aids in Total Knee Arthroplasty – What works for me and why Moderator: <b>Dr Sumit Khurana</b> Experience and eye-balling <b>Dr Rajeev Verma</b> Computer assisted navigation <b>Dr Vivek Mahajan</b> Patient specific instrumentation <b>Dr P V Kailey</b> Robotic arm <b>Mr. Ajay Teja</b>
<b>1225-1345</b>	<b>Session III – Designing a Biomechanical study</b>
	<b>Chairperson- Dr Vijay Goel &amp; Dr Gerd Huber</b>
1225-1255	Basics of experimental study design for orthopaedic implants - <b>Dr Vijay Goel</b>
1255-1330	Discussion on how to design a biomechanical study Moderator: <b>Dr Vijay Goel</b> Panelists: <b>Dr Gerd Huber, Dr Dinesh Kalyansundaram, Dr Vicky Varghese, Dr Ritabh Mittal</b>
1330-1415	<b>Lunch</b>



1415-1445	<b>Inauguration</b>
<b>1445-1615</b>	<b>Session – IV – Trauma</b>
	<b>Chairperson – Dr R K Arya &amp; Dr U K Sadhoo</b>
1445-1455	Whats better – SS or Titanium implants– a biomechanical and clinical perspective - <b>Mr. Rajshekhar Rao</b>
1455-1505	Ideal biomechanical construct for fixation of comminuted long bone fracture - <b>Dr Ritabh Mittal</b>
1505-1515	Is non-weight bearing/partial weight bearing a myth? - <b>Ms Anjali Gambhir</b>
1515-1525	Reliability studies for implant failure - <b>Dr Palaniappan Ramu</b>
1525-1615	Panel discussion– case based discussion of failure of fracture fixations Moderator: <b>Dr Pushkar Chawla</b> Panelists: <b>Dr R K Arya, Dr Hitesh Lall, Dr Ritabh Mittal, Dr U K Sadhoo, Dr Vivek Trikha</b>
<b>1615-1715</b>	<b>Tea Break</b>
<b>1645-1825</b>	<b>Session V – ACL Biomechanics</b>
	<b>Chairperson-Dr Deepak Chaudhary &amp; Dr Prateek Gupta</b>
1645-1655	Biomechanics of a ACL deficient knee - <b>Dr Deepak Chaudhary</b>
1655-1705	Evolution and future of ACL implants - <b>Dr Saurabh Sharma</b>
1705-1715	Rehab of ACL deficient knee - <b>Ms. Suparna Tandon</b>
1715-1725	Effect of preservation on the strength of ACL - <b>Dr Dinesh Kalyansundaram and Marieswaran Muthukrishnan</b>
1725-1735	What's the hype of core muscle strengthening - <b>Ms. Meena Makhija</b>
1735-1825	Panel discussion- ACL Biomechanics Moderator- <b>Dr Raju Easwaran</b> Panelists: <b>Dr Deepak Chaudhary, Dr Amite Pankaj, Dr Prateek Gupta, Ms. Suparna Tandon, Dr Dinesh Kalyanasundaram</b>
	<b>Free Paper Session</b>
	<b>Chairperson- Dr Patrick Kluger &amp; Dr Gerd Huber</b>
1825-1833	Pelvic Hiking Sheet (PHS): a new device to measure Hiking Angle - Dilip Kumar Sinha
1833-1841	Clinical correlation of Intra-operative Neuromonitoring in 188 individuals undergoing decompression and instrumentation of spine - Shakti A. Goel
1841-1849	Caregivers Too Need Care – The effect of correct posture on the Work Related Musculoskeletal Disorders in Nursing Staff - Arnab Sinha
1849-1857	Virtual Reality Applications in Spinal Cord Injured Individuals: The way forward - Nishu Tyagi
1857-1905	Comparison of theoretical model vs. meta modeling approach to predict pullout strength of pedicle screw



	- Vicky Varghese
1905 onwards	<b>Faculty Dinner</b>



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**Program**

**14<sup>th</sup> April 2018: Clinical Spine Biomechanics**

Time	Topic
0900-1230	<b>Session I</b>
	<b>Chairpersons- Dr Patrick Kluger &amp; Dr S L Yadav</b>
0900-0915	C1 pedicle screws or C1 lateral mass screws – a biomechanical comparison - <b>Dr Gerd Huber</b>
0915-0930	Biomechanical principles of fixation of thoracolumbar spine - <b>Dr Patrick Kluger</b>
0930-1015	Panel discussion: Design requirements for a thoracic and thoracolumbar spine trauma system Moderator-Dr H S Chhabra <b>Dr Patrick Kluger, Dr Bipin Walia, Dr Kenny David, Dr Vijay Goel, Dr Dilip Sinha, Dr S L Yadav, Dr Arun Bhanot, Dr Roop Singh, Dr K Das, Dr Gururaj Sangodimath</b>
1015-1030	Biomechanics of unstable cervical spine - <b>Dr Kshitij Chaudhary</b>
1030-1045	Biomechanical principles of fixation of cervical spine - <b>Dr Vijay Goel</b>
1045-1100	Biomechanical peculiarities of instability in junctional regions of spine - <b>Dr Kenny David</b>
1100-1115	Development of patient- and deformity-specific computational models for pediatric spine and rib cage deformities - <b>Dr Sriram Balasubramanian</b> ( via video conferencing)
1115-1145	<b>Tea Break</b>
1145-1230	Panel discussion: Can we improve the design of cervical spine stabilization systems Moderator: <b>Dr Bipin Walia</b> Panelist: <b>Dr Vijay Goel, Dr Gerd Huber, Dr Kshitij Chaudhary, Dr Manoj Sharma, Dr S L Yadav, Dr Manish Chadha, Dr Vikas Tandon, Dr Neeraj Gupta,</b>
1230-1530	<b>Session II instability in spine</b>
	<b>Chairperson- Dr Vijay Goel &amp; Dr Dinesh Kalyansundaram</b>
1230-1245	How degeneration affects Disc & Spine Biomechanics - <b>Dr H S Chhabra</b>
1245-1300	Biomechanical peculiarities of L5 vertebra - <b>Dr Bhavuk Garg</b>
1300-1315	Pathomechanics of SI Joint dysfunction - <b>Dr S L Yadav</b>
1315-1330	Biomechanics consideration in sacral & sacropelvic fixation - <b>Dr Manish Chadha</b>
1330-1415	Lunch
1415-1430	Biomechanical considerations of sagittal imbalance - <b>Dr Arun Bhanot</b>
1430-1445	Biomechanical consideration of coronal imbalance



	- <b>Dr Roop Singh</b>
1445-1530	Panel discussion: Specific design requirements for a spine deformity correction system Moderator: <b>Dr Bhavuk Garg</b> <b>Panelists: Dr Patrick Kluger, Dr Dinesh Kalyansundaram, Dr Vijay Goel, Dr Shankar Acharya, Dr Geeta Handa, Dr Rupinder Chahal, Dr Dilip Sinha, Dr SriKumar V, Dr Ankur Nanda, Dr B Mohapatra</b>
1530-1600	Tea
1600-1700	Free Paper Session
	<b>Chairperson-Dr Patrick Kluger &amp; Dr Gerd Huber</b>
1600-1608	A finite element study of heterotopic ossification formation on a spine functional unit - <b>Vardhan Singh Parihar</b>
1608-1616	Development of Cervical Spine Finite Element Models with Parametrizable Curvature - <b>Jobin John</b>
1616-1624	A new validated three-dimensional finite element model of the cervical spinal column to study artificial disc responses under physiological loads - <b>D Davidson Jebaseelan</b>
1624-1632	Effect of freezing and formalin preservation on biomechanical properties of human femur-ACL-tibial complex (FATC) - <b>M. Marieswaran</b>
1632-1640	Students or Sherpas? Spinal Musculoskeletal Disorders in Indian School Children due to carrying heavy back packs - <b>Deepak Sharan</b>
1640-1648	Analysis of Surface Electromyogram for Fatigue Condition in Biceps Brachii Muscle using Hilbert Marginal Spectrum - <b>S. Edward Jero</b>
1648-1656	Functional and radiological evaluation of cervical spondylotic myelopathy operated with posterior decompression and lateral mass fixation- a minimum two years follow-up - <b>Shakti A. Goel</b>
<b>1700-1715</b>	<b>Session III Osteoporotic spine</b>
	<b>Chairperson- Dr Shankar Acharya &amp; Dr H S Chhabra</b>
1700-1715	Bio-mechanical considerations of spinal care following vertebral/spinal surgery - <b>Dr SriKumar V</b>
1715-1730	Biomechanical considerations in non fusion instrumentation - <b>Dr Manoj Sharma</b>
1730-1745	Effect of osteoporosis on biomechanics of spine - <b>Dr Shankar Acharya</b>
1745-1800	Influence of Cement Stiffness on Vertebrae Fracture - <b>Dr Gerd Huber</b>
1800-1845	Setting up of a Biomechanics laboratory in emerging countries for implant design and testing : Opportunities and the way forward Moderator: <b>Dr Aditya Ingalhalikar</b> <b>Panelists: Dr Patrick Kluger, Dr Gerd Huber, Dr Vijay Goel, Dr Dinesh Kalyansundaram, Dr. Vicky Varghese, Dr Mangala Kohli, Dr H S Chhabra, Dr</b>



	<b>Tarush Rustagi, Dr Karthik Yelamarthy</b>
1845-1915	Best poster presentation award session (3+2X6)
1915 onwards	Banquet Dinner



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**Implant Design, Development & Testing**

**15<sup>th</sup> April 2018**

Time	Topic
<b>0900-1040</b>	<b>Session I Meet the experts</b>
	<b>Chairperson- Dr John Mukhopadhyay &amp; Dr Roop Singh</b>
0900-0920	Historical evaluation of orthopedic trauma implants - <b>Dr John Mukhopadhyay</b>
0920-0940	Historical evolution of Spinal implants - <b>Dr Patrick Kluger</b>
0940-1040	Panel discussion- Basic considerations in orthopaedic & spine implant designing Moderator: <b>Dr Ritabh Mittal &amp; Dr Gururaj Sangodimath</b> Panelists: <b>Dr Gerd Huber, Dr Vijay Goel, Dr Dinesh Kalyansundaram, Dr H S Chhabra, Dr Rupinder Chahal, Dr John Mukhopadhyay, Dr Arnab Sinha, Dr M L Bansal, Dr Shakti Goel</b>
1040-1100	<b>Tea Break</b>
<b>1100-1300</b>	<b>Session II- Design thinking</b>
	<b>Chairperson- Dr Vijay Goel &amp; Dr Aditya Ingalhalikar</b>
1100-1140	Appropriate Innovations in Med Tech using Design Thinking - <b>Dr Prashant Jha, AIIMS</b>
1140-1300	Case Study and hands on workshop - <b>Dr Prashant Jha, AIIMS</b>
<b>1300-1600</b>	<b>Session III- Implant testing and regulation</b>
	<b>Chairperson- Dr Gerd Huber &amp; Mr. Dinesh Jotwani</b>
1300-1310	ASTM, FDA and ISO testing protocols for implant testing - <b>Dr Vijay Goel</b>
1310-1320	Standard testing vs. preclinical testing – what can we expect - <b>Dr Gerd Huber</b>
1320-1420	Lunch
1420-1435	From implant design to implant production - <b>Dr Aditya Ingalhalikar</b>
1435-1450	Rapid manufacturing of implants - <b>Dr Dinesh Kalyansundaram and Dilpreet Singh</b>
1450-1505	IPR and patenting for design - <b>Mr. Dinesh Jotwani</b>
1505-1525	Regulatory perspective for implant design and testing - <b>Dr. V. G. Somani, Joint Drugs Controller (India), Ministry of Health &amp; Family Welfare, Government of India, Central Drugs Standard Control Organisation, Directorate General of Health Services</b>
1525-1625	Future for implant designing and manufacturing (each company gets 10 mts to present x 6 industries)
1525-1535	New technologies in orthopedics – from design to implant deployment - Mr. Ketan Jajal





	New Future for implant designing and manufacturing - Dr Aditya Ingalhalikar
1625 onwards	Tea





## Posters List

S. No.	Participant	Title
1	Deepak Sharan	Musculoskeletal disorders due to handheld devices: Changing patterns in the past 12 years
2	Subin P George	Development of powered sitting standing mechanism for paraplegic patients
3	Subin P George	Bio inspired optimization technique for design of implants
4	Narayani Srivastava	A study of patient satisfaction level in inpatient spine department of multi-speciality hospital
5	Varun Kumar Agarwal	Total Robotic Surgery in Spine: A possibility with current technology
6	NishuTyagi	Predictors of biomechanical stress in musculoskeletal system of villagers: An observational rural perspective
7	Abhinandan Mallepally Reddy	Posterior instrumentation after a failed balloon kyphoplasty in the thoracolumbar junction: a case report.
8	Abhinandan Mallepally Reddy	Osteoporotic spinal fixation using vertebroplasty augmented pedicle screws-A retrospective Analysis
9	Abhinandan Mallepally Reddy	Four rod construct in complex spine surgeries
10	Amit	Extension tibial nailing
11	Ankur	Does TKR correct coronal malalignment
12	Adarsh	Distal tibial fracture
13	Suresh	Biomechnaical analysis of a new test for posterior shoulder instability
14	Alok	Reverse shoulder arthroplasty biomechanics
15	Lakhan	Affect of fatigue on AHD in wheelchair bound patients
16	Mayank Gupta	Long segment posterior fixation for thoracolumbar fracture with screws in fracture body
17	Rafiq Bhat	Low density screws for scoliosis
18	Rafiq Bhat	The Radiographic Failure of Cervical Plate Fixation in Traumatic Cervical Injuries
19	Anuj Gupta	PJK of two cases
20	Kalyan Varma	Biomechanics of fixation to pelvis in long constructs
21	Sandesh Pacha	Adjacent segment degenerative after TLIF
22	Vicky Varghese	Factors affecting surgical outcome of total knee arthroplasty
23	Vicky Varghese	Comparision of metamodel for building pull out strength calculator
24	Vicky Varghese	Comparision of single vs two screw pull out in osteoporotic bone model