



ISSLS

VIRTUAL ANNUAL MEETING 2021

MAY 31 – JUNE 1: COMMITTEE MEETINGS
JUNE 2-4: SCIENTIFIC PROGRAM

PROGRAM BOOK



PROGRAM-AT-A-GLANCE

Scientific program	Japan Standard Time (JST)	British Summer Time (BST)	Central Daylight Time (CDT - Chicago, USA)
Wednesday June 2	20:00 - 22:30	12:00 - 14:30	06:00 - 08:30
Welcome and Presidential Lecture by Helena Brisby - President	20:00 - 20:15	12:00 - 12:15	06:00 - 06:15
Session 1: Best Papers (Basic Science)	20:15 - 20:45	12:15 - 12:45	06:15 - 06:45
Session 2: Basic Science: disc biology, muscle, and bone quality	20:50 - 21:20	12:50 - 13:20	06:50 - 07:20
Session 3: Intervertebral discs and modic change	21:25 - 21:55	13:25 - 13:55	07:25 - 07:55
Session 4: Low back pain	22:00 - 22:30	14:00 - 14:30	08:00 - 08:30
First Business meeting (for members only)	22:35 - 23:15	14:35 - 15:15	08:35 - 09:15
Thursday, June 3	20:00 - 22:35	12:00 - 14:35	06:00 - 08:35
Special poster sessions 5:1-5:4	20:00 - 20:30	12:00 - 12:30	06:00 - 06:30
Session 6: Best Papers (clinical)	20:35 - 21:05	12:35 - 13:05	06:35 - 07:05
Session 7: Surgery	21:10 - 21:40	13:10 - 13:40	07:10 - 07:40
Session 8: Clinical trials, deformity and balance	21:45 - 22:15	13:45 - 14:15	07:45 - 08:15
Presidential lecture: Mamoru Kawakami Immediate Past President	22:20 - 22:35	14:20 - 14:35	08:20 - 08:35
Second business meeting (for members only)	22:40 - 23:05	14:40 - 15:05	08:40 - 09:05
Friday, June 4, 2021	20:00 - 22:20	12:00 - 14:20	06:00 - 08:20
Fellowship awards ceremony	20:00 - 20:20	12:00 - 12:20	06:00 - 06:20
Special poster sessions 9.1-9.4	20:25 - 20:55	12:25 - 12:55	06:25 - 06:55
Session 11 ISSLS Prize Ceremony	21:00 - 22:10	13:00 - 14:10	07:00 - 08:10
Closing remarks - Scott Blumenthal, First Vice President	22:10 - 22:20	14:10 - 14:20	08:10 - 08:20

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UPCOMING MEETINGS



ISSLS ANNUAL MEETING 2022
MAY 9-13, 2022 BOSTON, USA

Welcome to Boston

The meeting next year will be held in Boston, USA at the Boston Marriott Copley Place

Date: May 9-13, 2022

The local hosts James Kang and Andrew Schoenfeld wishes you a warm welcome!



MESSAGE FROM THE PRESIDENT



Dear friends and colleagues,

On behalf of the ISSLS Executive Committee, I would like to welcome you all to this year's annual meeting of ISSLS. For the first, and hopefully last, time this meeting will be held as a solely virtual meeting.

I know that we will all sorely miss the 'IRL' experiences, such as personal meetings, outings with new cultural experiences and tasting local food. However, we will have the luxury of enjoying a high-quality scientific programme and be involved in scientific discussions again! Since no ISSLS annual meeting took place last year, I am sure we have all been longing to share results and engage in research discussions, even if the format is a bit changed this year.

I would like to encourage you all to prepare yourselves before the actual meeting sessions by studying the e-posters so you can engage in the discussions, after the one-minute summaries by the presenters.

Discussions will take place via the chat function during the oral presentations and as live discussions during the special poster sessions.

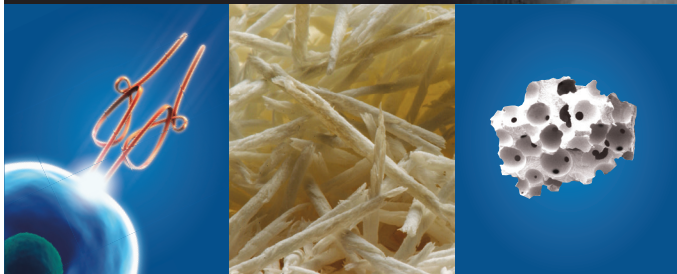
Further, don't forget to look at the general posters; there are a lot of interesting studies presented there. Of course, the winners of the prestigious ISSLS Prizes will also present their work at a special session, this year on the last day of the meeting. Don't miss this!

The past one and a half year have been very different in many perspectives and I know some of you have had, and still have, very tough times. I have come to realize how quickly we can adapt to changes, but also how much we miss things we previously have taken for granted. I will very much miss meeting you all in person, but so much look forward to seeing you all at the virtual meeting!

Helena Brisby

President of the ISSLS 2020/2021

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COMMITTEE MEETINGS

By invitation only, a Zoom link to the meetings is sent out prior to the meetings, if you have not received it please contact katarina.olinder@issls.org

Monday, May 31, 2021

Program Committee Meeting

Membership Committee Meeting

Strategy Group Meeting

Tuesday, June 1, 2021

Focus Group

Executive Committee Meeting

Wednesday, June 2, 2021

First Business Meeting

Thursday, June 3, 2021

Second Business Meeting

SPONSORS

With sincere appreciation the International Society for the Study of the Lumbar Spine thanks the following companies for their support of the 47th ISSLS Annual Meeting.



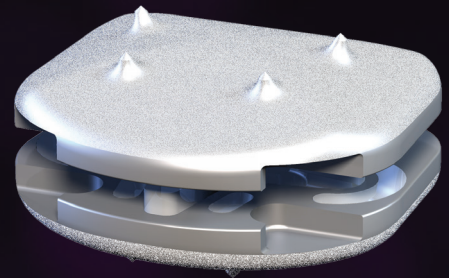


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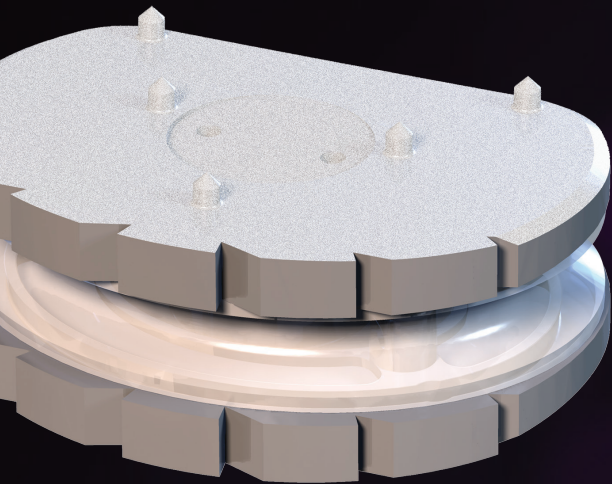
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WELCOME AND PRESIDENTIAL LECTURE BY HELENA BRISBY - PRESIDENT

Chair: Jeffrey Lotz (USA)

SESSION 1: BEST PAPERS (BASIC SCIENCE)

Chairs: James Iatridis (USA) and Keita Ito (The Netherlands)

- O01 Human Lumbar Discs are not sterile! - Defining the Normal Intervertebral Disc Microbiome
Shanmuganathan Rajasekaran (India)
S. Dilip Chand Raja, T. Chitraa, N. Sharon Miracle, M. Raveendran, M. Monica Steffi, K. Vijayanand id# 2759
- O02 Kyphosis and early disc degeneration induced by paraspinal muscle insufficiency in female TSC1mKO mice
Hwee Weng Dennis Hey (Singapore)
W. Lam, W. Zhuo, W. Chen, E. Combie, K. Tan, S. Cool, C. Chan, S. Tsai id# 2565
- O03 Chromatin accessibility maps of human nucleus pulposus cells identify degeneration grade-specific epigenome signatures and gene regulatory networks
AM Steven M. Presciutti (USA)
N.M. Khan, J. Cotney, H. Drissi id# 2593
- O04 Rapamycin Ameliorates Age-Associated Intervertebral Disc Degeneration In Male Marmosets
AM Rebecca Kritschil (USA)
D. Wang, C. Zhou, Q. Dong, D. Guo, J. Lee, G. Sowa, N. Vo id# 2675
- O05 Expression and distribution of M1 and M2 macrophages in the degeneration process of human lumbar intervertebral disc herniation: A histological and clinical efficacy analysis
Xiao-Chuan Li (China)
W. Fan, C. Huang, S. Luo, M. Wang id# 2543
- O06 Paraspinal muscle contractile function is impaired with chronic spine disease: a study using the ENT1 KO mouse
Alex M. Noonan (Canada)
C.A. Séguin, S.H. Brown id# 2597
- O07 Evaluating Senolytics as a treatment option for Lower Back Pain in SPARC-null mice
Matthew Mannarino (Canada)
H. Cherif , L. Haglund id# 2792

SESSION 2: BASIC SCIENCE: DISC BIOLOGY, MUSCLE, AND BONE QUALITY

Chairs: Daisuke Sakai (Japan) and Nam Vo (USA)

- O08 Disc 'Dysbiosis' as a cause of Inflammaging and Lumbar Intervertebral Disc Degeneration – Revelations form Next Generation Sequencing Analysis
S. Dilip Chand Raja (India),
S. Rajasekaran, T. Chitraa, M. Raveendran, N. Sharon Miracle, M. Monica Steffi, K. Vijayanand id# 2764
- O09 Effects of exosomes from mesenchymal stem cells on nucleus pulposus cells: a potential cell-free therapy.
Gianluca Vadala (Italy)
V. Tilotta, C. Cicione, G. Di Giacomo, L. Ambrosio, F. Russo, R. Papalia, V. Denaro id# 2780
- O10 Single-cell RNA-seq of human disc cells reveals new diagnostic and therapeutic biomarkers for intervertebral disc degeneration and back pain
Hosni HC Cherif (Canada)
A.A. Pacis., L. Haglund id# 2680
- O11 Potential of MSC secretome to modulate degenerative changes in a loaded annulus fibrosus organ culture model
Graciosa Q Teixeira (Germany)
A. Ekkerlein, R.M. Goncalves, J.R. Ferreira, A. Ignatius, H. Wilke, C. Neidlinger-Wilke id# 2504
- O12 The effect of posterior lumbar spinal surgery on biomechanical properties of rat paraspinal muscles 13 weeks post-surgery
Shun Yamamoto (Canada)
M. Malakoutian, T. Marine, J. Street, S.H. Brown, F. Rossi, M. Saito, T.R. Oxland id# 2733
- O13 The Impact of Preoperative Cross-sectional Area of Psoas Muscle on Postoperative Outcomes of Adult Spinal Deformity Surgery
Hikari Urakawa (USA)
K. Sato, J. Elysee, R. Lafage, A. Vaishnav, Y. Yao, H. Kim, F. Schwab, V. Lafage, S. Qureshi id# 2750
- O14 Thoracic Bone Mineral Density measured by Quantitative Computed Tomography in Patients undergoing Spine Surgery
Stephan N Salzmann (USA)
I. Okano, C. Jones, E. Basile, A. Iuso, J. Zhu, M. Reisener, E. Chiapparelli, J. Shue, J.A. Carrino, F.P. Girardi, F.P. Cammisa, A.A. Sama, A.P. Hughes id# 2724

SESSION 3: INTERVERTEBRAL DISCS AND MODIC CHANGE

Chairs: Joo Han Kim (South Korea) and S Rajasekaran (India)

- O15 Modic changes and endplate defects but not spinal stenosis affect low back pain in patients with lumbar spinal stenosis
Masakazu Minetama (Japan)
M. Kawakami, M. Teraguchi, Y. Mera, T. Sumiya, M. Nakagawa, Y. Yamamoto, S. Matsuo, N. Sakon, T. Nakatani, T. Kitano, Y. Nakagawa id# 2599
- O16 A Prospective, Three-Year Longitudinal Study of Modic changes of the Lumbar Spine in a Population-Based Cohort: the Wakayama Spine Study
Hidenobu Tamai (Japan)
M. Teraguchi, H. Hashizume, H. Oka, D. Samartzis, S. Tanaka, M. Yoshida, N. Yoshimura, H. Yamada id# 2559
- O17 The lack of image-based dynamic components in Modic changes suggest that Modic changes are not actively involved in biomechanically induced pain
Hanna Hebelka (Sweden)
H. Brisby, A. Erkmar, K. Lagerstrand id# 2609
- O18 Integrative Analysis of Metabolomic, Genomic, and Imaging-based Phenotypes Identify Very Low Density Lipoprotein as a Potential Risk Factor for Lumbar Modic Changes
Dino Samartzis (USA)
Y. Li, J. Karppinen, K. Cheah, D. Chan, P.C. Sham id# 2784
- O19 Does Preoperative Modic changes influence outcomes of Microdiscectomy: A prospective comparative cohort study
S. Dilip Chand Raja (India)
S. Rajasekaran, K. Vijayanand, K. Dinesh, K. Rishi Mugesh, S. Ajoy Prasad id# 2766
- O20 Disc space narrowing influences clinical symptoms more in women than men : The Wakayama Spine Study
Yuyu Ishimoto (Japan)
N. Yoshimura, K. Walker-Bone, C. Cooper, G. Ntani, H. Hashizume, M. Teraguchi, S. Muraki, H. Oka, S. Tanaka, M. Yoshida, H. Yamada id# 2500
- O21 Age and disc degeneration in low back pain: comparison of large cohorts of symptomatic and asymptomatic female subjects demonstrates interactions of age, spinal level and degenerative features
Jeremy Fairbank (UK)
A. Jamaludin, T. Kadir, A. Zisserman, I. McCall, F. Williams, H. Lang, E. Buchanan, J. Urban id# 2618

SESSION 4: LOW BACK PAIN

Chairs: Michele Battié (Canada) and Fabio Zaina (Italy)

O22 The longitudinal analysis to determine whether current sexual activities among elderly people affect low back pain in future

Shoichiro Ohyama (Japan)

M. Hoshino, S. Takahashi, Y. Hori, A. Yabu, H. Terai, T. Tsujio, H. Nakamura id# 2600

O23 Healthcare utilization and pain outcomes in individuals with low back pain: an observational study of a large dataset

Anna H Bailes (USA)

S. Koscomb, O.C. Marroquin, A.D. Wasan, H.B. Gutstein, A. Delitto, N. Vo, G.A. Sowa id# 2802

O24 The association between subphenotypes of low back pain and degenerative imaging findings in a cohort of young adults from the Raine Study

Dino Samartzis (USA)

A. Smith, M. Hancock S. O'Hanlon, M. Krieser, P.B. O'Sullivan, F. Cicuttini, L.M. Straker, B. Adler, Y. Wang, J. Karppinen, D. Beales, P. Coenen, P. Kent id# 2803

O25 Epidemiology of lumbar degenerative phenotypes of children and adolescents: a large-scale imaging study

Zhong-Yuan Wan (China)

J. Zhang, H. Shan, T. Liu, F. Song, D. Samartzis, H. Wang id# 2772

O26 Classification of annular fissures and discography-provoked pain using multiparametric machine-learning analysis of magnetic resonance imaging

Kerstin M Lagerstrand (Sweden)

H. Hebelka, H. Brisby id# 2576

O27 Do both morphometric and mechanical characteristics of lumbar multifidus in people with chronic low back pain differ from those of asymptomatic counterparts?

Sabina Pinto (Hong Kong)

J. Cheung, Y. Zheng, M. Pang, J. Karppinen, D. Samartzis, A. Wong id# 2811

O28 Pelvic Compensation Accompanying Spinal Malalignment and Back Pain-Related Factors in a General Population

Shizumasa Murata (Japan)

H. Hashizume, S. Tsutsui, H. Oka, M. Teraguchi, Y. Ishimoto, K. Nagata, M. Takami, H. Iwasaki, A. Minamide, Y. Nakagawa, Y. Yukawa, N. Yoshimura, M. Yoshida, H. Yamada id# 2831

FIRST BUSINESS MEETING (for members only Zoom link is provided separately)

SPECIAL POSTER SESSIONS 5:1-5:4 (see page 15)

- 5.1: Pain generator and treatment
- 5.2: Surgery and clinical outcome
- 5.3. Osteoporosis, deformity, and balance
- 5.4. Artificial intelligence and novel techniques

SESSION 6: BEST PAPERS (CLINICAL)

Chairs: Yong Hai (China) and Paul Hodges (Australia)

- O29 Factors contributing to biomechanical changes in the lumbar spine following spaceflight and incidence for post-spaceflight intervertebral disc herniation
Jeannie F. Bailey (USA)
P. Nyayapati, G.T. Johnson, L. Dzieszinski, A.W. Scheffler, R. Crawford, R. Scheuring, C.W. O'Neill, D.G. Chang, A.R. Hargens, J.C. Lotz id# 2678
- O30 The Nocebo Effects of an MRI Report on the Patient and the Benefit of Reassurance - Results from a Randomized Clinical Trial of 44 patients
Shanmuganathan Rajasekaran (India)
S. Dilip Chand Raja, B. Pushpa, B. Anand, K. Rishi Mugesh, S. Ajoy Prasad id# 2761
- O31 Progression of lumbar disc degeneration on MRI is not associated with occurrence of LBP, and LBP related QOL: an epidemiological study with 10-year follow-up
Kenji Kobayashi (Japan)
K. Otani, M. Sekiguchi, R. Tominaga, T. Watanabe, S. Konno id# 2544
- O32 Extensive Subphenotyping of Lumbar Modic Changes and their Association with Low Back Pain in a Large Population-Based Cohort: the Wakayama Spine Study
Masatoshi Teraguchi (Japan)
H. Hashizume, H. Oka, D. Samartzis, H. Tamai, S. Tanaka, M. Yoshida, N. Yoshimura, H. Yamada id# 2507
- O33 Influence of lumbar developmental spinal stenosis on back pain, leg pain and disability – prospective cohort 2206 subjects
Jason Pui Yin Cheung (Hong Kong)
M. Lai, P. Cheung, D. Samartzis, J. Karppinen, K. Cheung id# 2534
- O34 Predicting the likelihood of complications in patients undergoing surgery for degenerative disorders of the lumbar spine – model development
Pascal Zehnder (Zürich)
U. Held, A. Luca, E. Munting, T. Pigott, T. Fekete, O. Distler, D. Haschtmann, R. Reitmeir, M. Loibl, A. Mannion id# 2753

- O35 Evaluation of the association between "appropriate use of surgery" and patient-rated outcome in degenerative spondylolisthesis: a prospective, controlled, multicentre study
Anne F Mannion (Switzerland)
F. Mariaux, O. Proebstl, T.F. Fekete, F.S. Kleinstueck, D. Jeszenszky, M. Kohler, D. Haschtmann, J. Lurie, A. Pearson, P. Otten, I.M. Norberg, M. Loibl, V. Pittet, F. Porchet.
id# 2685

SESSION 7: SURGERY

Chairs: Ashish Diwan (Australia) and Serena Hu (USA)

- O36 Risk factors for symptomatic adjacent segment disease following lumbar fusion: A systematic review and meta-analysis
Arnold Wong (China)
K. Lau, N. To, D. Samartzis, G. Harada, H. An id# 2822
- O37 Prospective comparison of the accuracy of the New England Spinal Metastasis Score (NESMS) to legacy scoring systems in spinal metastases
Andrew Schoenfeld (USA)
M. Ferrone, J. Schwab, M. Harris id# 2529
- O38 "Readmission-free survival" in metastatic spine tumour surgical patients: A novel concept
Naresh Kumar (Singapore)
A. Thomas, M.R. Ramos, J.Y. Tan, L. Shen, S. Madhu, K.G. Lopez, J. Tan, B. Vellayappan
id# 2602
- O39 Comparison of opioid use in multilevel lumbar spinal fusion patients before and after implementation of an institutional opioid minimizing
Marie-Jacqueline Reisener (USA)
A.P. Hughes, I. Okano, J. Zhu, A. Arzani, J. Kostas, S.N. Salzman, J. Shue, A.A. Sama, F.P. Girardi, E.M. Soffin id# 2708
- O40 Preoperative Cross-sectional Area of Psoas Muscle Impacts Postoperative Functional Outcomes of Posterior Lumbar Surgery
Hikari Urakawa (USA)
K. Sato, A.S. Vaishnav, R. Lee, C. Chaudhary, J. Mok, Y. Katsuura, S.A. Qureshi id# 2749
- O41 The extent, nature, and consequences of loss to follow-up in a long-established single-centre spine surgery registry of over 15'000 patients
Anne F Mannion (Switzerland)
D. O'Riordan, T.F. Fekete, F. Porchet, F.S. Kleinstueck, D. Jeszenszky, M. Loibl, R. Reitmeir, D. Haschtmann id# 2722

- O42 Decompressive surgery without instrumented fusion in patients with low-grade degenerative spondylolisthesis patients: long-term patient Reported outcome
Judith M.P. van Grafhorst (*The Netherlands*)
C.L. Vleggeert-Lankamp, W.C. Peul id# 2785

SESSION 8: CLINICAL TRIALS, DEFORMITY, AND BALANCE

Chairs: Tom Oxland (Canada) and Hans-Joachim Wilke (Germany)

- O43 Intervertebral disc repair with autologous nucleus pulposus-derived MSCs transplantation: a controlled clinical trial by 5-year follow-up
Dike Ruan (*China*)
C. Wang, Q. He, C. Zhang, C. Li, X. Bai, W. Ji, T. Wen id# 2548
- O44 Viable Disc Tissue Allograft Supplementation in the Treatment of Degenerated Intervertebral Discs the One Year Results of a Randomized Control Trial
Douglas P Beall (*USA*) id# 2677
- O45 Supervised exercise therapy versus unsupervised exercise for patients with lumbar spinal stenosis: one-year follow-up of a randomized controlled trial
Masakazu Minetama (*Japan*)
M. Kawakami, M. Teraguchi, Y. Mera, T. Sumiya, M. Nakagawa, Y. Yamamoto, S. Matsuo, N. Sakon, T. Nakatani, T. Kitano, Y. Nakagawa id# 2612
- O46 Cone of Economy Classification: Evolution, Concept of Stability, Severity Level, and Correlation to Patient-Reported Outcome Scores
Varun Sambhariya (*USA*),
R. Haddas, T. Kosztowski, A. Block, I. Lieberman id# 2523
- O47 Prevalence and characteristics of a spinal sagittal malalignment in patients with osteoporosis
Masayuki Miyagi (*Japan*)
T. Matsunaga, A. Kuroda, Y. Yokozeki, K. Murata, T. Koyama, A. Kawakubo, K. Uchida, T. Nakazawa, T. Imura, W. Saito, E. Shirasawa, S. Ikeda, Y. Mimura, G. Inoue, M. Takaso id# 2737
- O48 Global Balance of the Spine, an Independent Contributor to Physical Function and Falls in Older Adults: the SAFE Cohort Study
Stephane Genevay (*Switzerland*)
M. Hars, A. Faundez, j. fechtenbaum, K. Briot, C. Roux, F. Hermann, S. Ferrar, S. Boudabbous, A. Trombetti id# 2721

Thursday June 3, 2021 cont'd

O49 Learning-based coronal spine alignment prediction using smartphone-acquired scoliosis radiograph images

Teng Zhang (Hong Kong)

Y. Li, J. Cheung, K. Wong id# 2695

PRESIDENTIAL LECTURE: MAMORU KAWAKAMI IMMEDIATE PAST PRESIDENT

Chair: Kazuhiro Chiba

SECOND BUSINESS MEETING (for members only)

FELLOWSHIP AWARDS CEREMONY

Chair: Hirotaka Haro (Japan)

ISSLS Research Grant - Sponsored by Taisho Pharmaceutical

Olga Krupkova - 2019 winner

Graciosa Teixeira - 2020 winner

ISSLS Wiltse Lifetime Achievement Award

John O'Brien - 2020 winner

SPECIAL POSTER SESSIONS 9.1-9.4 (see page 19)

9.1: Intervertebral discs and modic change

9.2. Surgery and clinical outcome

9.3: Muscle and intervertebral discs

9.4: Surgery and clinical outcome

SESSION 11 ISSLS PRIZE

Introduction: Björn Rydevik, ISSLS Prize Chairman (10 min)

- O50 What are the risk factors for low back pain flares and does this depend on how flare is defined?
Paul Hodges (Australia) id# 2834
- O51 A Novel Inducible System to Regulate Transgene Expression of TIMP1
Nam N Vo (USA)
Y. Han, Z. Ouyang, R.A. Wawrose, S.R. Chen, M. Hallbaum, Q. Dong, E. Dando, Y. Tang, B. Wang, J.Y. Lee, J.D. Shaw, J.D. Kang, G.A. Sowa id# 2835
- O52 In vivo sagittal motion of the lumbar spine in low back pain patients: a radiological big data study
Fabio Galbusera (Milan)
F. Niemeyer, Y. Tao, A. Cina, L.M. Sconfienza, A. Kienle, H. Wilke id# 2538

CLOSING REMARKS - SCOTT BLUMENTHAL, FIRST VICE PRESIDENT

SPECIAL POSTER SESSION Thursday June 3

SESSION 5.1: PAIN GENERATOR AND TREATMENT

Chair: Christopher Colloca (USA) and Jiri Dvorak (Switzerland)

- SP501 A systematic review on the risk factors for chronic low back pain in older adults
Arnold Wong (*Hong Kong*)
T. Kwok, M. Leung, R. Mak, J. Tsang, C. Wong, M. Ferreira, M. Funabashi, L. Macedo id# 2771
- SP502 Epidural Steroid Compared To Placebo Injection In Patients With Sciatica: A Systematic Review And Meta-analysis
Eduard J.A. Verheijen (*Netherlands*)
C.A. Bonke, E.M. Amorij, C.L. Vleggeert-Lankamp id# 2626
- SP503 Biomarkers as a predictive tool for the outcome of pain and function in acute low back pain.
Valerio Tonelli Enrico (*United States*)
G. Sowa, M. Schneider, M. Haas id# 2690
- SP504 A Study on the Clinical Features of Interspinous Ligament Lesion in Adolescent Patients with Low Back Pain
Kenji Hatakeyama (*Japan*)
M. Urushibara, A. Kojima, S. Ohtori id# 2776
- SP505 Axial loading during MRI induce lumbar foraminal area changes and may have the potential to improve diagnostics of nerve root compromise
Helena Brisby (*Sweden*)
N. Rydberg, H. Hebelka, J. Hutchins, K. Lagerstrand id# 2649
- SP506 Women with lumbar degenerative spondylolisthesis demonstrate delayed abdominal reflex latency
John M. Popovich, Jr. (*USA*)
J. Cholewicki, A.S. Lee, L.W. Mysliwiec, M.D. Winkelpleck, J.N. Flood, P.K. Pathak, N.P. Reeves, R. Kothe id# 2801
- SP507 Influences of limited flexibility of the lower extremities and occurrence of low back pain in adolescent baseball players: a prospective cohort study
Kinshi Kato (*Japan*)
K. Otoshi, S. Yabuki, K. Otani, T. Nikaido, K. Watanabe, H. Kobayashi, J. Handa, S. Konno id# 2582

SESSION 5.2: SURGERY AND CLINICAL OUTCOME

Chair: John D Lurie (USA) and Kotaro Nishida (Japan)

- SP508 Loads at adjacent segment level before and after surgery – combined clinical and simulation study of 205 adult spinal deformity patients
Dominika Ignasiak (Switzerland)
P. Behm, A.F. Mannion, F. Kleinstück, T. Fekete, D. Haschtmann, D. Jeszenszky, L. Zimmermann, S. Wunderlin, A. Vila-Casademunt, F. Pellisé, I. Obeid, F.J. Sanchez Perez-Grueso, A. Alanay, C. YILGOR, S.J. Ferguson, M. Loibl id# 2654
- SP509 Peri-operative complications of open spine surgery in the elderly over 90 years of age
Takeru Tsujimoto (Japan)
M. Kanayama, K. Suda, F. Oha, M. Komatsu, M. Tanaka, Y. Hasegawa, T. Hashimoto, N. Iwasaki id# 2567
- SP510 Risk Factors for Adjacent Segment Degeneration Following Lumbar Fusion: A Meta-analysis
Arnold Wong (USA)
S. Patel, C. Mestyaneck, G. Harada, D. Samartzis id# 2832
- SP511 A retrospective analysis of patients with early deterioration of general condition after spinal metastasis surgery: Could we predict the early deterioration with the preoperative blood test?
Zhongying Zhang (Japan)
Y. Takeoka, T. Yurube, Y. Junya, Y. Kakiuchi, K. Yutaro, R. Tsujimoto, K. Miyazaki, H. Ohnishi, T. Takada, R. Kuroda, K. Kakutani id# 2823
- SP512 The “spinal metastasis invasiveness index”: A novel scoring system to assess surgical invasiveness
Naresh Kumar (Singapore)
M.R. Ramos, R. Patel, B.W. Tan, K.G. Lopez, C.P. Nolan, A. Kumar, D. Shree Kumar, L.M. Benneker id# 2605
- SP513 Can collective intelligence improve the outcome of spine surgery?
Tamas F Fekete (Switzerland)
D. Haschtmann, M. Loibl, F.S. Kleinstueck, D. Jeszenszky, A. Mannion id# 2720

SESSION 5.3. OSTEOPOROSIS, DEFORMITY, AND BALANCE

Chair: Cornelia Neidlinger Wilke (Germany) and James Kang (USA)

- SP514 Can We Predict the Cone of Economy Measurement using Only a Force Plate?
Varun Sambhariya(USA)
R. Haddas, A. Wood, I. Lieberman, P. Derman id# 2524
- SP515 Risk factors of worsening global spinal mal-alignment after osteoporotic vertebral fracture
Akira Iwata (Japan)
M. Kanayama, O. Fumihiro, T. Hashimoto, M. Takahata, N. Iwasaki id# 2519
- SP516 Age and Gender Related Differences in Gait Amongst Patients with Degenerative Spinal Disorders
Varun Sambhariya (USA)
R.Haddas,, I.H. Lieberman id# 2633
- SP517 Impact of Lumbar Fusion Length on Sitting Spino-pelvic Balance: Multi-segmental Versus Mono-segmental
Sinian Wang (China)
X. Sun, Y. Qiu id# 2557
- SP518 An Active Hybrid Model of the Human Lumbosacral Spine: Facet Joint Integration in a Multi-Objective Optimization of Muscle Forces
Alina Hoffmann (Germany)
R. Remus, B. Bender id# 2662
- SP519 Deficits in proprioceptive reweighting in middle-aged people with chronic low back pain and asymptomatic people: a cross-sectional study
Sabina Pinto (Hong Kong)
A. Wong, Y. Zheng, M. Pang, J. Cheung, J. Karppinen, D. Samartzis id# 2821
- SP520 Lumbar disc degeneration and vertebral fracture at thoracolumbar junction are risk factors for chronic low back pain with disability: 7 years' follow-up of the Wakayama Spine Study
Hiroshi Hashizume (Japan)
M. Teraguchi, H. Oka, Y. Ishimoto, K. Nagata, R. Kagotani, H. Iwahashi, M. Takami, S. Tsutsui, H. Iwasaki, A. Minamide, Y. Yukawa, S. Tanaka, M. Yoshida, N. Yoshimura, H. Yamada id# 2642

SESSION 5.4. ARTIFICIAL INTELLIGENCE AND NOVEL TECHNOLOGIES

Chair: Gen Inoue (Japan) and Dino Samartzis (USA)

- SP521 AI-based automated detection of traumatic thoracolumbar fractures on sagittal X-rays
Fabio Galbusera (Italy)
A. Cina, G. Sanchez, P. Varga, B. Gueorguiev-Rüegg, M. Alini, G. Schirò, P. Giorgi, E. Gallazzi id# 2539
- SP522 Learning-based fully automated prediction of lumbar disc degeneration progression with specified clinical parameters and preliminary validation
Jason Pui Yin Cheung (Hong Kong)
X. Kuang, M. Lai, K. Cheung, J. Karppinen, D. Samartzis, H. Wu, F. Zhao, Z. Zheng, T. Zhang id# 2693
- SP523 Disc Height Assessment and Inter-observer Variability Using Auto-segmentation
Douglas Beall (USA)
C. Hancock, M. Crotsenburg, N. Georgiev id# 2793
- SP524 Predicting Disc Re-Herniation After Lumbar Decompression: A Machine Learning Approach
Dino Samartzis (USA)
G.K. Harada, Z.K. Siyaji, G.M. Mallow, A.L. Hornung, F. Hassan, B.A. Basques, H.A. Mohammed, A.J. Sayari, H.S. An id# 2789
- SP525 A novel tool to provide predictable alignment data irrespective of source and image quality acquired on mobile phones: what engineers can offer clinicians
Teng Zhang (Hong Kong)
C. Zhu, Q. Lu, J. Liu, A. Diwan, J. Cheung id# 2696
- SP526 Proposal for a new scoring system for spinal degeneration: Mo-Fi-Disc
Emel Ozcan-Eksi (Turkey)
M. Eksi, O. Orhun, V. Turgut, M. Pamir id# 2594
- SP527 Radiographic Lumbar Spondylosis Evaluated by a Novel Semi-quantitative Method in a Population Based-cohort Study
Junichi Yamada (Japan)
K. Akeda, N. Takegami, T. Fujiwara, A. Sudo id# 2568

SPECIAL POSTER SESSION Friday June 4

SESSION 9.1: INTERVERTEBRAL DISCS AND MODIC CHANGE

Chair: *Mauro Alini (Switzerland) and Svenja Illien Junger (USA)*

- SP901 The longitudinal impact of static intervertebral disc distraction on disc health –magnetic resonance imaging study in a rabbit model
Hee Weng Dennis Hey (Singapore)
W. Lam, X. Ren, K. Tan, W. Zhuo, K. Bhakoo, K. Tan, H. Wong id# 2689
- SP902 Lactate oxidative phosphorylation by annulus fibrosus cells: Evidence for lactate-dependent metabolic symbiosis in intervertebral discs
Dong Wang (USA)
R. Hartman, C. Han, J. Kang, J. Lee, G. Sowa, N. Vo id# 2577
- SP903 In-vitro and in-vivo maintenance of rat intervertebral disc homeostasis through Atg5-dependent autophagy
Ryu Tsujimoto (Japan)
T. Yurube, Y. Takeoka, Y. Kanda, K. Miyazaki, H. Ohnishi, Y. Kakiuchi, J. Yamamoto, Z. Zhang, T. Takada, R. Kuroda, K. Kakutani id# 2532
- SP904 Involvement of autophagy in human lumbar spine herniated and degenerative disc diseases
Takashi Yurube (Japan)
Y. Kakiuchi, M. Ito, R. Tsujimoto, Y. Kanda, K. Miyazaki, H. Ohnishi, Y. Takeoka, S. Miyazaki, J. Yamamoto, Z. Zhang, T. Takada, K. Tadokoro, R. Kuroda, K. Kakutani id# 2653
- SP905 Can the COX-2 Inhibitor Celecoxib Influence Discogenic Pain Signals? An In Vitro Study with Inflamed Annulus Fibrosus Cells
Sibylle Grad (Switzerland)
S. Häckel, S. Häne, J. Eglauf, J. Ma, Z. Li, J.J. Pfannkuche, M. Peroglio, S. Hoppe, L.M. Benneker, G.M. Lang, M. Alini id# 2732
- SP906 The pathophysiological duality of Modic Type 1 changes: Transcriptomical differences of infectious and sterile etiology
Irina Heggli (Switzerland)
R. Schüpbach, A. Jüngel, N. Farshad-Amacker, N. Herger, M. Betz, J. Spirig, F. Wanivenhaus, N. Ulrich, M. Farshad, O. Distler, S. Dudli id# 2661
- SP907 Type III collagen is a hallmark of the fibrotic pathomechanism in Modic type 1 changes and is linked to myofibroblast differentiation
Stefan Dudli (Switzerland)
I. Heggli, L. Guidici, R. Schüpbach, N. Farshad-Amacker, N. Herger, A. Juengel, M. Betz, J.M. Spirig, F. Wanivenhaus, N. Ulrich, F. Brunner, M. Farshad, O. Distler id# 2655

SESSION 9.2. SURGERY AND CLINICAL OUTCOME

Chair: Odysseas Paxinos (Greece) and Bradley Weiner (USA)

- SP908 Endplate Volumetric Bone Mineral Density Is a Predictor for Cage Subsidence following Lateral Lumbar Interbody Fusion: A Risk Factor Analysis
Conor Jones (USA)
I. Okano, S. Salzmann, E. Chiapparelli, M. Reisener, J. Shue, A. Sama, F. Cammisa, F. Girardi, A. Hughes id# 2598
- SP909 Gluteus maximus atrophy affects postoperative deterioration of sagittal alignment after short segment corrective fusion for adult spinal deformity
Masaru Tanaka (Japan)
M. Kanayama, T. Hashimoto, F. Oha, Y. Shimamura, T. Tsujimoto, Y. Hasegawa id# 2560
- SP910 Does sarcopenia affect short-term clinical outcomes following posterior/transforaminal lumbar interbody fusion?
Yuichi Y.H. Hasegawa (Japan)
M.M. Tanaka, M.M. Kanayama, T.T. Tsujimoto, Y.Y. Shimamura, F.F. Oha, T.T. Hashimoto, N.N. Iwasaki id# 2547
- SP911 Design and Implementation of an Enhanced Recovery After Surgery (ERAS) Protocol in Elective Lumbar Spine Fusion by Posterior Approach: A Retrospective, Comparative Study
Bhavuk Garg (India)
N. Mehta, T. Bansal, P. Khanna id# 2638
- SP912 Preoperative MRI-based Vertebral Bone Quality (VBQ) Score Assessment in Patients undergoing Lumbar Spinal Fusion
Stephan N Salzmann (USA)
I. Okano, C. Jones, J. Zhu, S. Lu, I. Onyekwere, V. Balaji, M. Reisener, E. Chiapparelli, J. Shue, J.A. Carrino, F.P. Girardi, F.P. Cammisa, A.A. Sama, A.P. Hughes id# 2730
- SP913 The Platelet derived from induced pluripotent stem cells accelerates bone union with adequate rigidity in posterolateral lumbar fusion surgery model in rats
Yasuhiro Shiga (Japan)
M. Sato, N. Mizuki, S. Orita, K. Inage, Y. Eguchi, M. Narita, T. Hozumi, G. Kim, T. Odagiri, T. Mukaihata, S. Maki, T. Furuya, K. Kosaka, N. Takayama, K. Eto, S. Ohtori id# 2734

SESSION 9.3: MUSCLE AND INTERVERTEBRAL DISCS

Chair: Jason Pui Cheung (Hong Kong) and Tim Yoon (USA)

- SP914 Trunk muscle mass is associated with low back pain, spinal malalignment, and physical function in female patients with lumbar spinal stenosis
Sachika Matsuo (Japan)
M. Kawakami, M. Teraguchi, Y. Mera, T. Sumiya, M. Minetama, M. Nakagawa, Y. Yamamoto, T. Nakatani, Y. Nakagawa id# 2562
- SP915 How Effective is Therapeutic Exercise for Back Pain in the Patients with Adult Spinal Deformity?; An analysis focused on minimal clinically important difference
Tatsuya Endo (Japan)
T. Ito, K. Sato, T. MIURA, J. Omata, R. Tominaga, M. Iwabuchi, O. Shirado id# 2797
- SP916 Obesity is associated with poor paraspinal muscle quality at upper lumbar levels and degenerated spine at lower lumbar levels: Is this a domino effect?
Emel Ozcan-Eksi (Turkey)
M. Eksi, O. Orhun, V. Turgut, M. Guduk, M. Kara, C. Canbolat, M. Pamir id# 2596
- SP917 Effect of Posture on Lumbopelvic Muscle Morphometry and Geometry in Adult Spinal Deformity Patients from Upright MRI
Noor Shaikh (Canada)
H. Zhang, N. Beresford-Cleary, J. Street, D. Wilson, T. Oxland id# 2731
- SP918 The natural course of the paravertebral muscles after the onset of osteoporotic vertebral fracture
Shinji Takahashi (Japan)
M. Hoshino, H. Terai, H. Toyoda, K. Tamai, Y. Hori, A. Yabu, H. Nakamura id# 2528
- SP919 The effectiveness of motor control exercise in improving lumbar multifidus muscles morphology in patients with low back pain - a systematic review
Sabina PINTO (Hong Kong)
S. Boghra, L. Macedo, Y. Zheng, M. Pang, J. Cheung, J. Karppinen, D. Samartzis, A. Wong id# 2820

SESSION 9.4: SURGERY AND CLINICAL OUTCOME

Chair: Jun Seok Bae (South Korea) and Anne Mannion (Switzerland)

SP920 Which Conditions Could Aggravate the Regional and Global Sagittal Balance following Single Level L5-S1 Posterior Lumbar Interbody Fusion?

Hyung Rae Lee (Korea, Republic of)

C. Jaehwan, C. Hwang, D. Lee, C. Lee id# 2688

SP921 Comparison of Outcomes of Primary and Revision Minimally Invasive Lumbar Microdiscectomy

Avani Vaishnav (USA)

H. Urakawa, J. Mok, C. Chaudhary, S. Qureshi id# 2742

SP922 Facet joint opening on CT is a predictor for poor clinical outcomes after less-invasive decompression surgery for lumbar spinal stenosis

Kentaro Yamada (Japan)

H. Toyoda, K. Tamai, S. Takahashi, A. Suzuki, M. Hoshino, H. Terai, H. Nakamura. id# 2706

SP923 The relative efficacy of lumbar fusion for low grade isthmic compared with degenerative spondylolisthesis

Daniel Haschtmann (Switzerland)

C. Brand, T.F. Fekete, D. Jeszenszky, F.S. Kleinstueck, M. Loibl, A. Mannion id# 2723

SP924 Improvement in gait pattern and its relationship with preoperative pelvic compensation after surgery in patients with sagittal plane deformity

Ho-Joong Kim (Korea)

J. W. Lee, J. Park, D. Ham, B. Kwon, O. Kwon id# 2580

SP925 Preoperative psychological predictors of satisfaction after lumbar surgery for lumbar spinal stenosis

Yoshio Yamamoto (Japan)

M. Kawakami, M. Minetama, M. Nakagawa, M. Teraguchi, Y. Mera, T. Sumiya, S. Matsuo, T. Kitano, Y. Nakagawa id# 2613

General Posters - Basic Science

- GP001 Can Small Leucine-Rich Proteoglycans be Ideal Molecular Targets for Regeneration in IVD? - evidence from proteomic signatures of fetal, adult, and degenerative discs
Shanmuganathan Rajasekaran (India)
S. Dilip Chand Raja, T. Chitraa, M. Raveendran, N. Sharon Miracle, K. Vijayanand, M. Monica Steffi id# 2758
- GP002 SERPIN'S: A potential target for molecular blockade in disc degeneration
Shanmuganathan Rajasekaran (India)
T. Chitraa, K. Vijayanand, M. Raveendran, N. Sharon Miracle, S. Dilip Chand Raja id# 2767
- GP003 Supplemented chondroitin sulfate proteoglycan promotes anabolic turnover in bovine nucleus pulposus cells under *in-vivo*-like physicochemical stresses
Yoshiki Takeoka (USA)
J.D. Kang, S. Mizuno id# 2540
- GP004 Larger Muscle Fibers and Fiber Bundles Manifest Smaller Elastic Modulus in Paraspinal Muscles of Rats and Humans
Masoud Malakoutian (Canada)
M. Theret, S. Yamamoto, I. Dehghan-Hamani, M. Lee, J. Street, F. Rossi, S. Brown, T. Oxland id# 2783
- GP005 RCAN1.4-calcineurin/NFAT signalling pathway is essential for hypoxic adaption of intervertebral discs
Bao Huang (China)
J. Chen, J. Liu, Z. Shan id# 2502
- GP006 Nose to back: spheroids derived from human nasal chondrocytes for nucleus pulposus repair
Jesil Kasamkattil (Switzerland)
O. Krupkova, A. Gryadunova, M. Gay, V. Mironov, I. Martin, A. Barbero, S. Schären, A. Mehrkens id# 2499
- GP007 Targeted proteomic analysis to explore the anti-inflammatory effects of notochordal cell-derived matrix
Frances Bach (Netherlands)
L. Laagland, F. Riemers, G. Erdmann, L. Creemers, C. Sachse, K. Ito, M. Templin, M. Tryfonidou id# 2620
- GP008 Regulators of Extracellular Matrix of Intervertebral Discs identified through Proteomic Analysis of Human Fetal Intervertebral Discs
Shanmuganathan Rajasekaran (India)
T. Chitraa, R. Muthurajan, D. Niek, S. Dilip Chand Raja, K. Vijayanand, N. Sharon Miracle, M. Monica Steffi id# 2762

General Posters - Basic Science cont'd

- GP009 Anti-hypertrophic Effect of Adipose Cell Derived Mesenchymal Stem Cells on Mechanically Stressed Ligamentum Flavum Cells
Joohan Kim (*Republic of Korea*) id# 2825
- GP010 The Effect of Vertebral Level on Biomechanical Properties of the Lumbar Paraspinal Muscles in a Rat Model
Masoud Malakoutian (*Canada*)
S. Yamamoto, S. Sadaram, J. Speidel, J. Liu, J. Street, S. Brown, T. Oxland id# 2805
- GP011 Tissue Digestion with Chondroitinase or Papain – a suitable method to create degenerated discs for in vitro experiments?
Jan Ulrich Jansen (*Germany*)
G. Teixeira, A. Vernengo, S. Grad, C. Neidlinger-Wilke, H. Wilke id# 2606
- GP012 Metformin reduces NF- κ B nuclear translocation under inflammatory stress in rat annulus fibrosus cells
Ayesha Firdous (*USA*)
Q. Dong, D. Wang, N. Vo, G. Sowa id# 2735
- GP013 The effect of anti-RANKL monoclonal antibody on spinal fusion in a mouse spinal fusion model
Soji Tani (*Japan*)
K. Ishikawa, T. Negishi-Koga, Y. Kudo, T. Toyone, K. Inagaki id# 2705
- GP014 Effect of different Cryopreservation Media on Human Nucleus Pulposus Cells' Viability and Trilineage Potential
Andreas Croft (*Switzerland*)
J. Guerrero, K. Oswald, S. Häckel, C. Albers, B. Gantenbein id# 2644
- GP015 Effect of Adiponectin receptor agonist AdipoRon on human intervertebral disc cell in a three-dimensional cell culture
Hiroki Ohnishi (*Japan*)
Z. Zhang, K. Miyazaki, R. Tsujimoto, Y. Kanda, Y. Kakiuchi, J. Yamamoto, T. Yurube, T. Takada, R. Kuroda, K. Kakutani id# 2554
- GP016 The effects of 3D culture on the expansion and maintenance of nucleus pulposus progenitor cell multipotency
Benjamin Gantenbein (*Switzerland*)
J. Guerrero, S. Häckel, A.S. Croft, C.E. Albers, id# 2643
- GP017 Homocysteine Induces Oxidative Stress and Ferroptosis of Nucleus Pulposus Via Enhancing Methylation of GPX4
Xuyang Zhang (*China*)
Z. Zheng, X. Wei, B. Huang, J. Chen, F. Zhao id# 2498

General Posters - Basic Science cont'd

- GP018 Investigating the effect of culture medium osmolarity on the phenotype and regenerative capacity of canine nucleus pulposus cells
Lisanne T Laagland (*The Netherlands*)
D.W. Poramba-Lyanage, F.C. Bach, L.B. Creemers, M.A. Tryfonidou id# 2629

General Posters - Epidemiology

- GP019 The Effect of 'Clinical Reporting' on The Perception of Severity and Prognosis of LBP - Results from Blinded Trials in Four Groups of Health Care Professionals
Shanmuganathan Rajasekaran (*India*)
S. Dilip Chand Raja , B. Pushpa, B. Anand, K. Rishi Mugesh, S. Ajoy Prasad id# 2765
- GP020 Relationship between lower extremity muscle tightness and low back pain in elementary school-aged baseball players: a cross-sectional study
Kinshi Kato (*Japan*)
K. Otoshi, S. Yabuki, K. Otani, T. Nikaido, K. Watanabe, H. Kobayashi, J. Handa, S. Konno id# 2581
- GP021 Low trunk muscle mass impacts on lumbar disability, kyphosis, and quality of life: A multicenter longitudinal study
Yusuke Hori (*Japan*)
M. Hoshino, M. Miyagi, K. Inage, S. Takahashi, S. Ohyama, T. Tsujio, A. Suzuki, H. Terai, H. Toyoda, S. Orita, G. Inoue, S. Ohtori, M. Takaso, H. Nakamura, id# 2509
- GP022 Central sensitivity is associated with chronic low back pain in the general population
Koji Akeda (*Japan*)
N. Takegami, J. Yamada, T. Fujiwara, A. Sudo id# 2738
- GP023 A Handheld Spine Scanner for Home Monitoring of Scoliosis Patients Can Reduce Clinic Attendance by 60%: A Prospective Longitudinal Study
Jack Z Wei (*Hong Kong*)
J. Ha, P. Yu, B. Cheung, J. Lau, K. Cheung id# 2828
- GP024 The profile of the spinal column in subjects with lumbar developmental spinal stenosis
Jason Pui Yin Cheung (*Hong Kong*)
M. Lai, P. Cheung, D. Samartzis, J. Karppinen, K. Cheung id# 2535
- GP025 Association between Low Back Pain in Activities of Daily Living and Quality of Life: A Population-based Cohort Study
Norihiko Takegami (*Japan*)
K. Akeda, J. Yamada, T. Fujiwara, A. Sudo id# 2578

General Posters - Epidemiology

- GP026 Trends of Spine Surgeries During COVID-19 Pandemic: Survey in Non-epidemic Region in Japan
Masaru Tanaka (Japan)
M. Kanayama, T. Hashimoto, F. Oha, Y. Shimamura, T. Tsujimoto, Y. Hasegawa id# 2556
- GP027 The difference of union rate of early stage spondylolysis among each affected lumbar spinal level in young athletes
Akihiro Nagamachi (Japan)
S. Yoshioka, K. Wada, Y. Yamasaki, A. Hashimoto, K. Sairyō. id# 2623
- GP028 Do Grit and Self-Control Impact Outcomes following Spine Surgery? A Retrospective Analysis
Avani Vaishnav (New York)
J. K. Mok, P. Louie, S. Qureshi id# 2810
- GP029 Current status of the oral hygiene in spine surgery patients
Yushi Hoshino (Japan)
Y. Kudou, I. Okano, H. Maruyama, I. Kawashima, A. Adachi, K. Yoshida, Y. Imaizumi, T. Toyone, K. Inagaki id# 2545
- GP030 Does lumbar spinal stenosis on MRI affect quality of life? -A large scale general population survey-: The Wakayama Spine Study-
Stashi Arita (Japan)
Y. Ishimoto, K. Nagata, H. Hashizume, Y. Nakagawa, A. Minamide, H. Iwasaki, Y. Yukawa, S. Tsutsu, M. Takami, S. Murata, R. Taiji, T. Kozaki, H. Oka, S. Tanaka, N. Yoshimura, M. Yoshida, H. Yamada id# 2704
- GP031 Effect of Postmenopausal State on Distribution of Bone Mineral Density in the Lumbar Spine
Avani Vaishnav (USA)
P. Louie, C. Chaudhary, M. McCarthy, Y. Katsuura, S. Qureshi id# 2745
- GP032 AGEs are associated with the intensity of back pain symptoms in patients with lumbar spinal stenosis
Masatoshi Teraguchi (Japan)
M. Kawakami, M. Nakagawa, M. Minetama, S. Matsuo, Y. Yamamoto, Y. Enyo, Y. Nakagawa id# 2506
- GP033 Reciprocal relationship between multifidus and psoas at L4-L5 level in women with low back pain
Emel Ozcan-Eksi (Turkey)
M. Eksi, V. Turgut, C. Canbolat, M. Pamir id# 2624
- GP034 Comparing Routine Elective Inpatient Spine Surgery to Orthopedic and Non-Orthopedic Surgery Trends

Mustfa Manzur (USA)
A. Samuel, S. Qureshi id# 2806

GP035 Future Activity Goals of Patients Considering Spine Surgery: A Pilot Study

Mustfa Manzur (USA)
M. Fontana, Y. Othman, A. Vaishnav, A. Khorana, H. Kim, J. Farmer, R. Huang, S. Iyer, H. Sandhu, T. Albert, C. MacLean, S. Qureshi id# 2808

GP036 Construct validity and responsiveness to change of the US English version of the Core Outcome Measures Index (COMI)

Anne Mannion (Switzerland)
A. Pearson, F. Mariaux, J. Lurie, K. McGuire, W. Abdu, F. Porchet, id# 2686

GP037 Total and subscale score patterns of Oswestry disability index and Short-Form 36 based on medical comorbidities, and sagittal and coronal parameters in degenerative scoliosis patient: A prospective study

Han-Dong Lee (South Korea)
C. Jeon, N. Chung, H. Chung, K. Park id# 2683

General Posters - Low back pain, Degenerative lumbar disease

GP038 Which movement and muscular activity biomarkers to discriminate non-specific low back pain patients from an asymptomatic population?

Florent Moissenet (Switzerland)
K. Rose-Dulcina, S. Armand, S Genevay id# 2781

GP039 Characteristics of relief and residual low back pain after discectomy in patients with lumbar disc herniation: analysis using a detailed visual analogue scale

Hiroshi Takahashi (Japan)
Y. Aoki, M. Inoue, J. Saito, K. Koyama, M. Koda, T. Abe, T. Funayama, H. Noguchi, K. Miura, K. Mataka, Y. Shibao, F. Eto, M. Kono, T. Asada, K. Sato, A. Nakajima, K. Nakagawa, S. Ohtori, M. Yamazaki id# 2520

GP040 Risk factors for low back pain increase in patients with rheumatoid arthritis

Kentaro Yamada (Japan)
A. Suzuki, S. Takahashi, A. Yabu, Y. Hori, H. Toyoda, H. Nakamura id# 2608

GP041 Lumbar Spinal Stenosis Stepwise Treatment Pathway: A Delphi Study for International Consensus

Christine Comer (UK)
B. Andre, A. Haig, A. Wong, C. Ammendolia, C.J. Standaert, C. Tomkins-Lane, E. Williamson, J. Fairbank, M. Melloh, M. Battie, M.J. Schneider id# 2718

GP042 Influences of intramuscular fatty degeneration on low back pain and activities of daily living in patients with lumbar spinal canal stenosis

Junji Nishimoto (Japan)
C. Goto, M. Fujimoto, M. Yamamoto, K. Saita, S. Ogihara id# 2558

- GP043 Risk factor analysis for fat infiltration in the lumbar paraspinal muscles in lumbar degenerative disease patients
Kenta Suzuki (Japan)
Y. Hasebe, M. Yamamoto, K. Akasaka, K. Saita, S. Ogihara id# 2651
- GP044 The comparison of spinopelvic parameters between normal population and patients with the lumbar degenerative disease at L5-S1
Han-Dong Lee (South Korea)
C. Jeon, N. Chung, H. Chung, K. Park id# 2681
- GP045 Endplate injuries in osteoporotic vertebral fractures were associated with the progression of vertebral collapse
Tatsuhiko Fujiwara (Japan)
K. Akeda, N. Takegami, J. Yamada, A. Sudo, T. Kondo, Y. Asanuma, T. Imanishi, T. Sudo id# 2702
- GP046 Intramuscular circulation of lumbar multifidus in different trunk positions on sitting - Comparison between subjects with and without LBP-
Masaru Kanda (Japan)
T. Kitamura, I. Konishi, Y. Suzuki, K. Watanabe, N. Sato id# 2778
- GP047 Risk factor analysis of lumbar paraspinal muscle atrophy in patients with lumbar degenerative diseases
Yuki Hasebe (Japan)
K. Suzuki, M. Yamamoto, K. Akasaka, K. Saita, S. Ogihara id# 2650
- GP048 Variation of Bone Mineral Density in the Lumbar Spine
Avani Vaishnav (USA)
P. Louie, C. Chaudhary, M. McCarthy, Y. Katsuura, S. Qureshi id# 2744
- GP049 Emerging tetrad issues remodeling treatment strategies for degenerative lumbar spine diseases
Zhong-Yuan Wan (China)
J. Zhang, K. Ma, F. Song, Z. Liu, H. Wang id# 2775
- GP050 Association between vertebral endplate structural defects and back pain: A systematic review and meta-analysis
Aliyu Lawan (Canada)
J. Crites Videman, M. C. Battié id# 2794
- GP051 Characteristics of acute lumbar vertebral fractures associated with osteoporosis
Hiroki Hirabayashi (Japan) id# 2501
- GP052 L3-L4 Level in Limbo: Does it belong to the Upper or the Lower Lumbar Spine?
Emel Ece Özcan-Ekşi (Turkey)
M. Ekşi, A. Yayla, O. Orhun, V. Turgut, M. Kara, M. Guduk, I. Usseli, B. Bozkurt id# 2589

General Posters - Surgery

- GP053 Effectiveness of amino-acid supplementation after decompression surgery for lumbar spinal stenosis: a randomized controlled trial
Masakazu Minetama (Japan)
M. Kawakami, M. Teraguchi, Y. Mera, T. Sumiya, M. Nakagawa, Y. Yamamoto, S. Matsuo, N. Sakon, T. Nakatani, T. Kitano, Y. Nakagawa id# 2583
- GP054 Is there a place for surgical repair in adults with spondylolysis or grade I spondylolisthesis? – A systematic review and treatment algorithm
Naresh Kumar (Singapore)
N. Pandita, S. Madhu, M.R. Ramos, B.W. Tan, J. Tan, K.G. Lopez, C.P. Nolan, D. Shree Kumar id# 2604
- GP055 Characteristics of Patients With Short-Term Versus Long-Term Readmission-Free Survival After Metastatic Spine Tumor Surgery
Naresh Kumar (Singapore)
S. Madhu, L. Sheng, S.S. Tang, S.A. Ramakrishnan, A. Thomas id# 2621
- GP056 Analysis of unplanned hospital readmissions up to two-years after metastatic spine tumour surgery
Andrew Thomas (Singapore)
S. Madhu, M.R. Ramos, L. Shen, J.Y. Tan, N. Kumar id# 2603
- GP057 Characteristics of patients with poor short-term outcomes after symptomatic postoperative lumbar spinal epidural hematoma
Takeru Tsujimoto (Japan)
M. Kanayama, F. Oha, Y. Shimamura, M. Tanaka, Y. Hasegawa, T. Hashimoto, N. Iwasaki id# 2555
- GP058 Does instability occur after transforaminal full-endoscopic ventral facetectomy?
Kazuya Kishima (Japan)
K. Yagi, M. Morimoto, H. Tezuka, K. Yamashita, Y. Takata, T. Maeda, T. Sakai, K. Sairyo id# 2663
- GP059 Transforaminal full-endoscopic discectomy for the patients with down-migrated lumbar disc herniation
Fumitake FT Tezuka (Japan)
K.K. Kishima, K.K. Yagi, K.K. Sugiura, M.M. Morimoto, K.K. Yamashita, Y.Y. Takata, T.T. Sakai, K.K. Sairyo id# 2809
- GP060 Clinical results of transforaminal full-endoscopic ventral facetectomy for lateral recess stenosis
Kazuya Kishima (Japan)
K. Yagi, M. Morimoto, F. Tezuka, K. Yamashita, Y. Takata, T. Maeda, T. Sakai, K. Sairyo. id# 2659

- GP061 Risk factors for deep surgical site infection following posterior instrumented surgery for spinal trauma: A multicenter study with registry of 623 consecutive adult cases
Satoshi Ogihara (*Japan*)
T. Yamazaki, S. Azuma, N. Kawamura, Y. Oshima, Y. Takeshita, S. Tanaka, K. Saita, T. Maruyama
id# 2526
- GP062 Hand grip strength can predict clinical outcomes and risk of falls after decompression and instrumented posterolateral fusion for lumbar spinal stenosis
Ji-Won Kwon (*South Korea*)
B. Lee, S. Lee, S. Sung, H. Lee, S. Moon *id# 2710*
- GP063 Incidence & Risk Factors of Postoperative Delirium After Spinal Surgery in Older Patients
Taewook Kang (*South Korea*)
S. Park, H. Jung *id# 2698*
- GP064 The advantages of revisional transforaminal full-endoscopic spine surgery for patients underwent posterior spine surgery
Kiyoshi Yagi (*Japan*)
K. Sugiura, M. Takeuchi, K. Kishima, M. Morimoto, F. Tezuka, K. Yamashita, T. Yoichiro, T. Sakai, T. Maeda, K. Sairyo *id# 2521*
- GP065 Uniportal-bichannel foraminoplasty for percutaneous endoscopic transforaminal discectomy: a technical note
Zhi Zhou (*China*)
H. Ni, C. Wang, Y. Fan, C. Feng, S. He *id# 2552*
- GP066 Percutaneous endoscopic transforaminal lumbar interbody fusion (PE-TLIF) with a Uniportal Bichannel Spinal Endoscopic System (UBISES): technical note
Jiajun Yan (*China*)
Z. Zhou, H. Ni, Y. Fan, C. Wang, Y. Zhu, C. Feng, J. Chen, G. Gu, S. He *id# 2553*
- GP067 Sacral Insufficiency Fracture after Instrumented Lumbosacral Fusion: Focusing Pelvic Deformation -A Retrospective Case Series-
Sang-II Kim (*South Korea*)
Y. Kim, K. Ha, R. Cho *id# 2551*
- GP068 Ten-year results of lumbar spinal stenosis with degenerative spondylolisthesis treated with decompression alone
Kazuyuki Watanabe (*Japan*)
K. Otani, T. Nikaido, K. Kato, H. Kobayashi, J. Handa, S. Yabuki, S. Kikuchi, S. Konno
id# 2754
- GP069 Trends and measures against postoperative wound dehiscence after surgery for spinal metastasis

Kenichiro Kakutani (Japan)

Y. Sakai, Z. Zhang, T. Yurube, J. Yamamoto, Y. Kakiuchi, Y. Takeoka, Y. Kanda, R. Tsujimoto, . Miyazaki, H. Ohnishi , T. Takada, S. Miyazaki, . Kuroda id# 2777

GP070 Risk assessment of abdominal and retroperitoneal organ injuries performing transforaminal full-endoscopic spine surgery

Kiyoshi Yagi (Japan)

K. Sugiura, M. Takeuchi, K. Kishima, M. Morimoto, F. Tezuka, K. Yamashita, Y. Takada, T. Sakai, T. Maeda, K. Sairyo id# 2579

GP071 Assessing Changes in Cervical Epidural Pressure During Biportal Endoscopic Lumbar Discectomy

Taewook Kang (South Korea)

S. Park, H. Jung id# 2697

General Posters - Fusion Surgery

GP072 Analysis of medium long-term effect of microendoscopic assisted mis-TLIF on lumbar instability and spondylolisthesis

Xu Xiang (China)

Y. Heping id# 2714

GP073 Lumbar and Anterior Cervical Spine Fusion Results using an Injectable Bioactive Glass Microfiber-Based Material for Bone Grafting

Adam Bruggeman (USA)

P. Slosar, E. Chung, H. Bae id# 2611

GP074 Postoperative endplate injury after minimally invasive lateral lumbar interbody fusion: Risk factor analysis

Sang-II Kim (South Korea)

Y. Kim, K. Ha, S. Yang id# 2550

GP075 The Feasibility of 3D Intraoperative Navigation in Lateral Lumbar Interbody Fusion: Perioperative Outcomes, Accuracy of Cage Placement and Radiation Exposure

Hikari Urakawa (USA)

A. Sivaganesan , A. Vaishnav, E. Sheha, C. Gang, S. Qureshi id# 2804

GP076 An Active Hybrid Model of the Human Lumbosacral Spine: Simple and Robust Modeling of Facet Joints

Robin Remus (Germany)

A. Hoffmann, B. Bender id# 2664

GP077 Lumbar Posterolateral Fusion using a Bioactive Fiber-Based Bone Graft Substitute: A Multi-Center Clinical Evaluation

Adam Bruggeman (USA)

P. Slosar, E. Chung, H. Bae id# 2729

- GP078 Minimally Invasive Spinal Fusion Surgery Using Percutaneous Pedicle Screwing Can Provide Better Lumbar Function in Early Stage than Conventional Methods in the Treatment of Degenerative Lumbar Spinal Diseases; A minimum of one-year follow-up study
Masumi Iwabuchi (Japan)
R. Tominaga, Y. Sakuma, T. Sato, S. Suzuki, O. Shirado id# 2511
- GP079 Incidence rate of adjacent-segment disorder after oblique lateral interbody fusion at more than two levels: Data from the Chiba Spine Surgery Registry database
Geundong Kim (Japan)
H. Takaoka, K. Inage, S. Orita, Y. Eguchi, Y. Shiga, T. Furuya, S. Maki, Y. Aoki, M. Inoue, T. Fujiyoshi, S. Nakamura, T. Kinoshita, T. Kamada, H. Takahashi, J. Saito, M. Norimoto, T. Kotani, T. Sakuma, Y. Iijima, T. Ishikawa, T. Umimura, M. Ohta, M. Narita, T. Sato, M. Sato, M. Suzuki, K. Enomoto, T. Hozumi, N. Mizuki, T. Otagiri, R. Tsuchiya, T. Mukaihata, T. Hishiya, S. Ohtori id# 2645
- GP080 Comparison of the facet fusion rates between percutaneous pedicle screw and cortical bone trajectory screw fixation for degenerative lumbar spondylolisthesis
Tomohiro Miyashita (Japan)
K. Kato, H. Ataka, S. Ohtori, T. Tanno id# 2703
- GP081 Polyethylene tapes at the proximal end in long spinal fusions reduce the revision rate due to Proximal Junctional Kyphosis
Yuji Kakiuchi (Japan)
K. Kakutani, Z. Zhang, T. Yurube, J. Yamamoto, Y. Kanda, R. Tsujimoto, K. Miyazaki, H. Ohnishi, T. Takada, R. Kuroda id# 2740
- GP082 Bilateral double iliac screw fixation for traumatic sacral fracture
Satoru Matsutani (Japan)
K. Masuda, T. Iga, T. Kondo id# 2485
- GP083 Evolution of Image Guidance in Minimally Invasive Transforaminal Lumbar Interbody Fusion (MI-TLIF): Comparing the Learning Curves of Fluoroscopy, Navigation, and Robotics
Avani Vaishnav (USA)
J. Mok, H. Urakawa, C. Chaudhary, S. Qureshi id# 2741
- GP084 The influence of ethnicity/race and sex on lumbar spinal fusion outcomes
Xiao Chen (USA)
A. Ballatori, S. Shahrestani, A. Ton, Z. Buser, J.C. Wang id# 2798
- GP085 Three-dimensional analysis for pedicle screw deviation in thoracolumbar spinal fusion
Tomonori Ozaki (Japan)
K. Yamada, H. Nakamura id# 2746
- GP086 Discrepancies in nosocomial urinary tract infection rates between patients receiving single-level and multi-level lumbar fusion
Zorica Buser (USA)
S. Shahrestani A. Ton, A. Ballatori, X. Chen, J.C. Wang, id# 2796

GP087 Bilateral Lumbar Erector Spinae Plane Blocks Reduce Postoperative Pain and Opioid Requirements in Minimally Invasive Transforaminal Lumbar Interbody Fusion (MI-TLIF)

Avani Vaishnav (USA)

D. Wetmore, J. Beckman, T. Albert, S. Qureshi id# 2743

GP088 The Role of Hounsfield Unit in Intraoperative Endplate Violation and Delayed Cage Subsidence with Oblique Lateral Interbody Fusion

Hao Wu (Hong Kong)

J. Cheung, T. Zhang, Z. Shan, X. Zhang, J. Liu, S. Fan, F. Zhao id# 2617

GP089 Lumbar PLIF reconstruction without inpatient admission. Results of a standardized care protocol in over 100 selected patients treated over a five-year period.

Drew A Bednar (Canada)

E.D. Bednar id# 2572

General Posters - Non-Surgical Treatment

GP090 The Outcome Of Epidural Injections In Sciatica Is Not Dependent On The Presence Of Disc Herniation On MRI: Assessment Of Short-term And Long-term Efficacy

Eduard J.A. Verheijen (Netherlands)

A.G. Munts, O.B. van Haagen, D. de Vries, C.L. Vleggeert-Lankamp id# 2627

GP091 Chronic low back pain and self-efficacy in the community

Koji Otani (Japan)

R.R. Ono, K.K. Uchida, S.S. Murata, M.M. Sekiguchi, S.S. Kikuchi, S.S. Konno id# 2782

GP092 Determining Low Back Pain Specific Targets for Physical Activity Interventions

Matthew Smuck (USA)

C. Tomkins-Lane, A. Muaremi, P. Zheng, M. Ith, R. Sun id# 2637

GP093 Comparative effectiveness of four major drugs prescribed for chronic low back pain in Japan

Gen Inoue (Japan)

T. Kaito, Y. Matsuyama, T. Yamashita, M. Kawakami, K. Takahashi, M. Yoshida, S. Imagama, S. Ohtori, T. Taguchi, H. Haro, H. Taneichi, M. Yamazaki, K. Nishida, H. Yamada, D. Kabata, A. Shintani, M. Iwasaki, M. Ito, N. Miyakoshi, H. Murakami, K. Yonenobu, T. Takura, J. Mochida id# 2490

GP094 Improved sagittal spinal alignment and balance by a "locomotion training" rehabilitation program in patients with "locomotive syndrome

Takashi Yurube (Japan)

T. Takeoka, N. Watanabe, H. Inaoka, Y. Kakiuchi, Y. Takeoka, Y. Kanda, R. Tsujimoto, K. Miyazaki, H. Ohnishi, S. Miyazaki, Z. Zhang, T. Takada, R. Kuroda, K. Kakutani" id# 2657

GP095 Plaster cast fixation for patients with osteoporotic vertebral compression fractures: Part 2 Comparison of reduction in standing position and suspension in supine position

Kazuji Aoki (Japan)

T. Uehara, J. Yamada, S. Yamada, . Inada id# 2516

GP096 Gabapentinoids associated with lower explantation rate in 203 patients with Spinal Cord Stimulation for Failed Back Surgery Syndrome

Mette Nissen (Finland)

T. Ikäheimo, V. Leinonen, M. Fraunberg id# 2755

GP097 Novel Inflammation-Preserving Treatment for Symptomatic Lumbar Disc Herniation: a Prospective Imaging and Clinical Outcomes Study

Alexander Tkachev (Denmark)

H. Albert, A. Sayari, M.T. Nolte, D. Samartzis id# 2790

GP098 SpineTrak: The First Randomized Control Trial Using the Apple Watch to Objectively Track Spine Surgical Patients

Christy Tomkins-Lane (Canada)

C. Leung, P. Fatemi, K. Yerneni, A. Desai, C. Tomkins-Lane, C. Zygorakis id# 2791

GP099 Foot tapping test as a predictor of postoperative gait disorder in lumbar spinal stenosis

Hiroshi Kobayashi (Japan)

K. Otani, T. Nikaido, K. Watanabe, K. Kato, J. Handa, S. Yabuki, S. Konno id# 2628

GP100 Extending the Straight Leg Raise Test for Improved Clinical Evaluation of Sciatica: Reliability of Hip Rotation and Ankle Dorsiflexion

Janne Pesonen (Finland)

M. Shacklock, P. Rantanen, L. Karttunen, J. Mäki, M. Kankaanpää, O. Ariaksinen, M. Rade id# 2656

GP101 Correlation between preoperative CT measurement/evaluation of lumbar paraspinous muscle and postoperative ambulatory status in patients with femoral neck fractures

Akihito Suto (Japan)

K. Fujii, T. Nakatani, K. Ogawa, T. Ichihara, S. Li id# 2712

GP102 Assessing nonspecific effects of osteopathic manipulative treatment for low back pain

Jacek Cholewicki (USA)

J.M. Popovich, Jr., A.S. Lee, L.A. DeStefano, J.J. Rowan, T.J. Francisco, L.L. Prokop, M.A. Zarkin, N.P. Reeves id# 2713

GP103 Cervical Spine Steroid Injections for Delay of Surgery for Cervical Spondylotic Myelopathy

Mustfa Manzur (USA)

A. Samuel, S. McAnany, T. Albert, A. Vaishnav, S. Iyer, S. Qureshi id# 2807

General Posters - Intervertebral disc (IVD)

GP104 Exploring the Core matrisome Profile of Fetal Intervertebral Discs in search of Molecular targets of therapeutic Potential

Shanmuganathan Rajasekaran (India)

T. Chitraa, D. Niek, M. Raveendran, S. Dilip Chand Raja , K. Vijayanand, N. Sharon Miracle, M. Monica Steffi id# 2760

GP105 Validity of Scoliotic discs as controls in Inter vertebral disc research

Shanmuganathan Rajasekaran (India)

T. Chitraa, K. Vijayanand, M. Raveendran, N. Sharon Miracle, S. Dilip Chand Raja id# 2768

GP106 Exploring the influence of Modic Changes and spinal level on macrophage differentiation in disc herniations

Geraldine Lafeber (Netherlands)

N. Djuric, S.G. van Duinen, C.L. Vleggeert-Lankamp. id# 2769

GP107 Increased risk of delamination following rapid pressurization of the intervertebral disc

Diane Gregory (Canada)

R. Ghelani, D. Zwambag id# 2673

GP108 Is the lumbar disc degeneration profile on imaging interconnected with the degenerative status of its adjacent or non-adjacent segments ?

Youping Tao (Germany)

F. Galbusera, F. Niemeyer, D. Samartzis, D. Vogele, H. Wilke id# 2646

GP109 The Residual Strain State of the Intervertebral Disc

Dawn M Elliott (USA)

H. Newman, J. Peloquin, E. Vresilovic id# 2676

GP110 Anatomical localization of type 1 Modic change

Yuji Yamada (Japan)

K. Sairyo, T. Maeda, M. Morimoto id# 2563

GP111 Spinal kinematics of Type 1 Modic change

Yuji Yamada (Japan)

K. Sairyo, T. Maeda, M. Morimoto id# 2564

GP112 Efficacy of growth differentiation factor-6 on three-dimensionally cultured human intervertebral disc cells and a rat tail puncture model

Kunihiko Miyazaki (Japan)

S. Miyazaki, Y. Kanda, R. Tsujimoto, H. Ohnishi, Y. Kakiuchi, J. Yamamoto, T. Yurube, Z. Zhang, T. Takada, R. Kuroda, K. Kakutani id# 2591

GP113 Intervertebral Disc Degeneration at Lower Lumbar Levels is Associated with More Coronally Aligned L1-L2 and Misaligned L5-S1 Facet Joints

Emel Ece Özcan-Ekşi (Turkey)

M. Eksi, O. Orhun, S. Huet, V. Turgut, M. Pamir id# 2587

GP114 End-plate defects could start the inflammatory process in the bone marrow and cause Modic changes

Emel Ece Özcan-Ekşi (Turkey)

M. Eksi, A. Yayla, O. Orhun, V. Turgut, M. Guduk, H. Arslan, I. Usseli, M. Kara id# 2590

GP115 Mole Holes in the Spine: Schmorl's Nodes Could be Associated with Intervertebral Disc Degeneration at Upper Lumbar Levels and End-plate Disease at Lower Lumbar Level

Emel Ozcan-Eksi (Turkey)

M. Eksi, O. Orhun, V. Turgut, M. Guduk, M. Kara id# 2595

GP116 Is the distribution pattern of Modic changes in vertebral end-plates associated with the severity of intervertebral disc degeneration?: A cross-sectional analysis of 527 Caucasians

Emel Ece Özcan-Ekşi (Turkey)

M. Eksi, A. Yayla, O. Orhun, V. Turgut, H. Arslan, M. Guduk, I. Usseli, M. Aytar, B. Bozkurt, S. Ozgen, M. Pamir id# 2586

GP117 Physiological method to provoke lumbar disc herniations

Laura Zengerle (Germany)

E. Debout, B. Kluger, H. Wilke id# 2537

GP118 Clinical Outcome of Anterior Lumbar Interbody Fusion Using a Stand-alone Cage for the Treatment of Symptomatic Disc Degeneration

Richard D Guyer (USA)

D.D. Ohnmeiss, S.L. Blumenthal, J.E. Zigler id# 2517

GP119 A computerised analysis of the aetiology of Modic Changes associated with intervertebral disc degeneration

Teng Zhang (Hong Kong)

Y. Hu, K. Luk, U. Chamoli, F. Zhao, X. Zhang, K. Sze, J. Cheung id# 2694

GP120 Lumbar disc extrusions reduce faster than bulging disc due to an active role of macrophages in sciatica

Niek Djuric (Netherlands)

X. Yang, A. El_Barzouhi, R. Ostelo, S.G. van Duinen, G.J. Lycklama à Nijeholt, B.F. Van der Kallen, W. Peul, C.L. Vleggeert-Lankamp id# 2709

GP121 Is Intradiscal Vacuum Phenomenon Associated with Intervertebral Disc Degeneration and Modic Changes?

Emel Ece Özcan-Ekşi (Turkey)

M. Eksi, M. Zarbizade, O. Orhun, D. Kucuksuleymanoglu, T. Dinc, S. Huet, B. Ozmen, id# 2588

GP122 Neutrophils in Modic type I changes are in an activated (pro-inflammatory) state

Irina Heggli (Switzerland)

R. Schüpbach, A. Jüngel, N. Farshad-Amacker, N. Herger, M. Betz, J. Spirig, F. Wanivenhaus, N. Ulrich, F. Brunner, M. Farshad, O. Distler, S. Dudli id# 2658

General Posters - Spinal Alignment, Adolescent Idiopathic Scoliosis(AIS)

GP123 Intradiscal pressure at L4L5 level in adolescent idiopathic scoliosis: A computational study based on musculoskeletal modelling approach

Tito Bassani (Italy)

N. Barba, D. Ignasiak, T. Villa, F. Galbusera id# 2514

GP124 Validity and responsiveness of the Core Outcome Measures Index (COMI) in patients with adolescent idiopathic scoliosis

Tamas F Fekete (Switzerland)

D. Haschtmann, D. Jeszenszky, S. Richner-Wunderlin, L. Zimmermann, K. Thekkanath, A. Mannion id# 2719

GP125 Altered proprioception on balance control, repositioning, and evoked potential in adolescent idiopathic scoliosis: A systematic review

Kenney Ki-Lee Lau (Hong Kong)

K.Y. Kwan, K.M. Cheung, A.Y. Wong id# 2815

GP126 The effect of curve location on the prediction rate of the severity index for adolescent idiopathic scoliosis

Claudio Vergari (France)

W. Skalli, K. Abelin-Genevois, J. Bernard, Z. Hu, J. Chun-yiu Cheng, W. Chiu Wing Chu, A. Assi, M. Karam, I. Ghanem, T. Bassani, F. Galbusera, L. Sconfienza, M. Brayda-Bruno, I. Courtois, E. Ebermeyer, R. Vialle, T. Langlais, J. Dubousset id# 2622

GP127 Relationship between radiological parameters of the lumbar spine and low back pain in the community

Yota Kaneko (Japan)

K. Otani, M. Sekiguchi, R. Tominaga, M. Nakamura, K. Kobayashi, S. Konno id# 2795

GP128 Dynamic Lumbopelvic-hip Alignment in the Patients with Degenerative Lumbar Spinal Canal Stenosis is Closely Correlated with Lower Limb Pain intensity during Walking; Three-dimensional motion analysis

Takuya Miura (Japan)

T. Ito, K. Sato, J. Omata, T. Endo, R. Tominaga, I. Masumi, O. Shirado id# 2641

GP129 Correction of apical vertical translation may prevent unfused lumbar intervertebral disc degeneration after posterior spinal fusion for adolescent idiopathic scoliosis

Satoshi Suzuki (Japan)

E. Okada, S. Nori, O. Tsuji, N. Nagoshi, N. Fujita, M. Yagi, M. Nakamura, M. Matsumoto, K. Watanabe id# 2774

GP130 Computed Tomography Study of the Relationship Between Pelvic Incidence and Osseous Contribution to Lumbar Lordosis in Children

Joseph F Baker (New Zealand) id# 2751

GP131 Impact of diffuse idiopathic skeletal hyperostosis on sagittal spinal alignment in the general elderly population: A Japanese cohort survey randomly sampled from a basic resident registry

Masashi Uehara (Japan)

J. Takahashi, S. Ikegami, R. Tokida, H. Nishimura, H. Kato id# 2592

- GP132 EOS Analysis of Sagittal Alignment of Spine and Pelvis in Korean Adult Population
Min-gu Jang (South Korea)
S. Kim id# 2814
- GP133 Minimally invasive versus conventional open approach for correction and posterior spinal fusion in patients with adolescent idiopathic scoliosis
Tamas F Fekete (Switzerland)
A. Mannion, D. Haschtmann, M. Loibl, F.S. Kleinstueck, D. Jeszenszky id# 2725
- GP134 Risk Factors for Worsening of Sagittal Imbalance after Revision Posterior Fusion Surgery in Patients with Adjacent Segment Disease
SangYun Seok (South Korea)
C. Jaehwan, W. Lee, H. Lee, C. Byun, D. Lee, C. Hwang, C. Lee id# 2542
- GP135 The impact of lower lumbar lordosis on surgical results after long spinal fusion
Ryo Taiji (Japan)
M. Takami, H. Hashizume, H. Iwasaki, S. Tsutsui, K. Nagata, S. Murata, T. Kozaki, H. Yamada id# 2833
- GP136 The comparison of the spinopelvic parameters between the decompression and the fusion for degenerative lumbar disease at L5-S1
Han-Dong Lee (South Korea)
C. Jeon, N. Chung, H. Chung, K. Park id# 2682

General Posters - Adult spinal deformity (ASD)

- GP137 Predicting spondylolisthesis correction with prone traction radiographs
Jason Pui Yin Cheung (Hong Kong)
P. Cheung id# 2533
- GP138 Functional Ability Classification based on Moderate and Severe Kinesophobia and Demoralization Scores in Degenerative Spine Patients
Ram Haddas (USA)
I.H. Lieberman, C.D. Sandu, V. Sambhariya, A. Block id# 2635
- GP139 Etiology and clinical manifestations of double-level versus single-level lumbar degenerative spondylolisthesis
Kazuhiro KH Hasegawa (Japan)
M. Okamoto, S. Hatsushikano, H. Shimoda, Y. Sato id# 2491
- GP140 The Effect of Scoliosis Support Orthosis Bracing on Adult Spinal Deformity Patients: Evaluation of Gait and Dynamic Balance
Ram Haddas (USA)
A. Satin, D.E. Mar, T. Belanger, I.H. Lieberman, R.S. Kakar id# 2631
- GP141 Hip extensor strength affects dynamic postural change on walking in the patients with adult spinal deformity; A three-dimensional motion analysis

Keita Sato (Japan)

T. Ito, J. Omata, T. Endo, T. Miura, R. Tominaga, M. Iwabuchi, O. Shirado id# 2799

GP142 Radiographic and Clinical results using dual rod for adult spinal deformity surgery

Shugo Kuraishi (Japan)

S.I. Ikegami, M.M. Uehara, H.H. Oba, T.T. Takizawa, R.R. Munakata, T.T. Hatakenaka, T.T. Kamanaka, J.J. Takahashi id# 2531

GP143 Correlation between Morphological Parameters of Vertebral Foramen and Aging

Masahiro Kashima (Japan)

Y. Yamada, N. Yoshida, H. Takami, T. Maeda, K. Sairyō id# 2569

GP144 Validity of the Global Alignment Proportion (GAP) Score in Predicting Mechanical Complications and Proximal Junctional Failure after Adult Spinal Deformity Surgery in Elderly Patients

Ho-Jong Kim (South Korea),

D-W. Ham B. Kwon, J. Park, O. Kwon, J. Lee id# 2756

GP145 The comparison of clinical and radiological parameters between degenerative scoliosis patients between with and without vertebral rotatory subluxation

Han-Dong Lee (South Korea)

C. Jeon, N. Chung, H. Chung, K. Park id# 2684

GP146 Junctional Kyphosis/Failure after Long Instrumentation for Posttraumatic Thoracolumbar Kyphosis: Characteristics and Risk Factors

Xiaojiang Pu (China)

B. Wang, B. Qian, Z. Liu, J. Jiang, Z. Zhu, Y. Qiu, X. Sun id# 2660

GP147 Surgical management of sagittal imbalance in adult degenerative thoracolumbar kyphoscoliosis: preoperative planning using computed tomography in the supine position

Takashi Chikawa (Japan)

H. Manabe, K. Sairyō id# 2607

General Posters - Imaging, biomechanics, Artificial intelligence (AI)

GP148 Different disc characteristics between young elite skiers with diverse training histories revealed with a novel quantitative magnetic resonance imaging method

Kerstin Lagerstrand (Sweden)

A. Baranto, H. Hebelka id# 2575

GP149 Deep learning based fully automated pathology classification of lumbar spine

Xihe Kuang (China)

J. Cheung, M. Lai, T. Zhang id# 2715

GP150 Effect of Pelvic Retroversion on Lumbopelvic Geometry and Muscle Morphometry from Upright MRI

Noor Shaikh (Canada)

H. Zhang, J. Shewchuk, J. Street, D. Wilson, T. Oxland id# 2525

- GP151 Investigation of Thoracic Muscle Morphology with Open Upright MRI
Anoosha Pai S (Canada)
H. Zhang, S.H. Brown, D.R. Wilson, J. Street, T.R. Oxland id# 2727
- GP152 Morphological Analysis of Paraspinal Muscles Using Magnetic Resonance Imaging and a novel software to Diagnose Sarcopenia
Shanmuganathan Rajasekaran (India)
S. Dilip Chand Raja , B. Balagurunathan, K. Rishi Mugesh, S. Ajoy Prasad id# 2763
- GP153 Trunk muscle analysis using dual-energy X-ray absorptiometry and magnetic resonance imaging
Masaru Tanaka (Japan)
M. Kanayama, T. Hashimoto, F. Oha, Y. Shimamura, T. Tsujimoto, Y. Hasegawa id# 2614
- GP154 MRI-SegFlow V2.0: a novel unsupervised deep learning pipeline enabling accurate semantic segmentation of lumbar MR images with preliminary validation
Xihe Kuang (China)
J. Cheung, H. Wu, C. Lam, C. Lam, R. Choy, D. Chan, T. Zhang id# 2739
- GP155 Fusion pattern analysis of posterior lumbar interbody fusion using CT scan multi-planer reconstruction images: difference between L5/S1 level and the other levels
Kengo Fujii (Japan)
T. Funayama, T. Tsukanishi, M. Yamazaki id# 2487
- GP156 A Comprehensive MRI Analysis of Paraspinal and Psoas Muscle Size, Lean Muscle, and Fatty Infiltration in Patients undergoing Lumbar Spinal Fusion
Stephan N Salzmann (USA)
I. Okano, E.T. Tan, O.C. Sax, E. Chiapparelli, M. Reisener, J. Shue, F.P. Girardi, F.P. Cammisa, A.A. Sama, D.B. Sneag, A.P. Hughes id# 2726
- GP157 Toxic annular tear and high signal intensity zone of patients with discogenic low back pain
Fumitake FT Tezuka (Japan)
K.K. Kishima, K.K. Yagi, K.K. Sugiura, M.M. Morimoto, K.K. Yamashita, K.K. Sairyō id# 2812
- GP158 Importance of the Epiphyseal Ring in OLIF Stand-alone Surgery: A Biomechanical Study on Cadaveric Spines
Fengdong Zhao (China)
X. Zhang, H. Wu, Y. Chen, T. Zhang, J. Cheung, P. Dolan, M. Adams id# 2497

ACKNOWLEDGEMENT

We wish to acknowledge the following ISSLS members who have been a great help in reviewing the abstracts submitted for the ISSLS Virtual meeting scientific program May 31 – June 2, 2021.

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